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URBAN TERRORISM: STRATEGIES FOR MITIGATING TERRORIST ATTACKS AGAINST THE DOMESTIC URBAN ENVIRONMENT

by

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A Dissertation Submitted to the Faculty of
Old Dominion University in Partial Fulfillment of the
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ABSTRACT

URBAN TERRORISM: STRATEGIES FOR MITIGATING TERRORIST ATTACKS AGAINST THE DOMESTIC URBAN ENVIRONMENT

John J. Kiefer
Old Dominion University, 2001
Chair: Dr. Wolfgang Pindur

This study identifies strategies to mitigate the impact of terrorist attacks against the domestic urban environment. It uses multiple qualitative research methods to identify patterns of attack used by terrorists against urban targets in the United States and suggest ways for policymakers to mitigate the effects of a terrorist attack through not only physical, but also organizational, political, legal, and social strategies. It uses case analysis, literature review, and interviews with experts in domestic terrorism preparedness to develop and suggest solutions.

Terrorism, as with other criminal acts, can have can best me met by implementing strategies to mitigate the impact of this form of crime. Governments are simultaneously confronted with a rapidly growing number of potential terrorist targets that must be secured, and constrained by democratic principles from utilizing many technological devices to secure those targets. Creating an effective security system that protects against a wide range of terrorist attacks while it continues to afford a maximum exercise of democratic freedoms and privileges is a formidable task.

Several broad, theory-based categories of defending urban spaces are considered. This study builds on past research and extends defensible space theory with careful consideration of the special challenges in dealing with terrorist attacks. The potential for

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terrorist attack is reviewed, and an understanding of who the domestic urban terrorists are, why they may attack the urban built environment, what might they attack, and what can be done about is developed. Recommendations for public policy and future research are presented.

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As with any worthwhile endeavor, the successful accomplishment of a doctoral program, and in particular the dissertation, requires a strong supporting cast of relatives, friends and associates. Each and every one of these people contributed in some very meaningful way to my ability to devote the past six years of my life to academic study. I would like to express my thanks to those who have made this possible.

First, I owe a debt of gratitude to the faculty of the Graduate Center for Urban Studies and Public Administration at Old Dominion University. These fine professors provided the foundation for my academic career. Second, I am grateful to my dissertation committee for their time and commitment to the project. Dr. Bill Whitehurst was invaluable in bringing his considerable background in public service to the process, as well as for his willingness to facilitate my contacts with government officials. Dr. Len Ruchelman was always accessible and willing to discuss theory, and his extensive experience with how cities function was a tremendous resource. I am deeply indebted to Dr. Wolfgang Pindur, Chair, for coordinating the entire process, reviewing myriad revisions, suggesting alternative paradigms for approaching each roadblock, and for professional guidance. The privilege of being mentored by Dr. Pindur has increased my educational experience immeasurably.

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CHAPTER I

INTRODUCTION

The genesis of modern terrorism in the United States was the bombing of New York's World Trade Center in 1993. This bombing incident was the largest international terrorist attack ever conducted in the continental United States. In 1994, the FBI successfully thwarted an attempt by terrorists to detonate a bomb in the Lincoln Tunnel. The 1995 Oklahoma City bombing was one of the largest explosions ever investigated by the FBI. That single bombing killed more Americans in the United States than any terrorist attack in the modern era (Terrorist Research and Analytical Center (U.S.), 1996). It demonstrated, for the first time, the real and deadly threat of terrorism to urban America.

BACKGROUND

To date, most of the American planning effort has been directed at response capabilities and security procedures. Very little attention has yet been paid to designing projects *from the start* in a manner that will mitigate the effects of a terrorist attack. The Nunn-Lugar-Domenici amendment to the FY97 National Defense Authorization Act, in response to concern about domestic terrorism, provided authority for the Defense Department to address domestic vulnerabilities (National defense panel, 1997). Yet the over $40 million allocated was used, according to H.

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Allen Holmes, assistant secretary of defense for special operations and low-intensity conflict, only for training, access to federal assistance (after an incident, and) exercises (National defense panel, 1997).

There has been recent statistical data that suggest that buildings and institutions, not people, have been the targets chosen by terrorists. The Federal Emergency Management Agency (FEMA), in an information pamphlet, states that terrorists look for visible targets where they can avoid detection before or after an attack such as large cities, major international events and high-profile landmarks. FEMA goes on to list likely targets for terrorist attacks as buildings, auditoriums, sports complexes, tunnels, bridges, transportation facilities, utilities, or other public services. Such facilities in urban areas are especially vulnerable.

Yet despite more effective physical security and technological countermeasures, it is extremely difficult to harden potential targets in urban areas. Even if the range of weapons is relatively short, it will be a considerable challenge to expand an anti-terrorist security zone beyond the immediate periphery of potential urban targets like sports facilities, government buildings, corporate headquarters, or power plants. Appropriate defense for urban public facilities requires planning for terrorist attack *well before* development of projects.

According to the FBI, most recent terrorist incidents in the United States have involved conventional explosives in the forms of car, pipe, or letter bombs (Terrorist Research and Analytical Center (U.S.), 1996). Future threats, however, may employ more exotic weapons, such as nuclear, biological, or chemical (NBC) agents. The increasing accessibility of these weapons of mass destruction has elevated

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significantly the concern over terrorism. In 1996, Georgia Senator Sam Nunn said that the United States had *a remarkable lack of domestic preparedness* to deal with NBC terrorist attacks. He went on to say that, "an attack of this kind is not a question of 'if' but 'when'" (Starr, 1996). Given the tremendous destructive threat in terms of both loss of life and damage to the built environment, urban planners and policymakers must consider the potential for terrorist acts against urban targets, particularly those involving Weapons of Mass Destruction (WMD) -- the use of nuclear, biological, or chemical agents -- as well as conventional munitions (bombs).

THE PROBLEM

Terrorist acts aimed at cities in the United States pose a significant problem. According to the final report of the National Defense Panel, created by Congress in 1996, the "defense of the homeland" will become a critical problem as more nations hostile to U.S. interests acquire weapons of mass destruction and the means to deliver them (National defense panel, 1997).

Richard Clarke, director of Counter terrorism with the National Security Council, agrees. "In the future, enemies are going to attack us. They're going to look for our Achilles' heel, and our Achilles' heel is here -- here in the homeland," Clarke said. He said the World Trade Center bombing by Islamic fundamentalists shows foreign terrorists' willingness to attack the United States directly (Dieffenbach, 1999).

Leaders also are worried about the increasing availability of weapons of mass destruction and the willingness of terrorists to use them. For example, the chemicals used to make both the Oklahoma City bomb and the toxic Sarin gas released in Tokyo

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in 1995 were purchased on the open market. Officials also are concerned that nuclear technology may fall into the wrong hands.

Besides becoming easier to get, these weapons are lethal. One expert described a 1979 incident in which a fraction of an ounce of anthrax was accidentally released in the Soviet Union, killing 69 people within a three mile radius. The release of a large amount of anthrax or other biological or chemical weapon in a major metropolitan area could result in thousands of casualties (Dieffenbach, 1999).

The FBI has investigated more than 160 cases involving the use or threatened use of weapons of mass destruction over the past two years. While most are hoaxes, they still spread panic. More importantly, only one event would be a catastrophe. In its series of reports, "Terrorism in the United States," the FBI says that supporters of formalized terrorist groups continue to view the United States as an attractive refuge and staging area. In addition, it said that extremists with loose affiliations to terrorist organizations continue to view the United States as both a staging area and target. The report notes that terrorists studying the attack against the World Trade Center and the Oklahoma City bombing "could prompt future terrorists to plan their attacks with greater care" (FBI Terrorist Research and Analytical Center, 1991). The recent terrorist bombings of the American Embassies in Nairobi, Kenya and Dar Es Salaam, Tanzania and the resulting U.S. retaliatory strikes against known terrorist strongholds in Afghanistan and Sudan have given a renewed sense of urgency to preparing for domestic terrorist attacks.

On the other side of the political spectrum, right wing extremist groups -- which generally adhere to an anti-government or racist ideology -- continued to gain

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supporters (Terrorist Research and Analytical Center (U.S.), 1996). Many of these recruits feel displaced by rapid changes in the U.S. culture and economy, or are seeking some form of personal affirmation (DeHennis, 1997). As American society continues to change, the potential for hate crimes by extremist right wing groups is an increasing concern.

During the 1995 seditious conspiracy trial in New York of Egyptian Shaykh Omar Abdel Rahman and several followers, one Sudanese national testified that Sudanese diplomats were aware of the conspiracy to bomb major landmarks in New York City. One Sudanese diplomat allegedly offered to help the conspirators place a bomb at the United Nations by providing diplomatic license plates. The U.S. Department of State, in coordination with the FBI, declared the diplomat at the Sudanese Mission to the United Nations persona non-grata in 1996 (Terrorist Research and Analytical Center (U.S.), 1996).

Some supporters in the United States are believed to be conducting criminal activity -- to include military-style training -- in support of terrorist groups' objectives (FBI). With the conviction of Shaykh Rahman, the detention of HAMAS leader Musa Abu Marzook, and the American retaliatory strikes against known terrorist strongholds in Kenya and Tanzania, it is possible that members of formal terrorist groups will be considering some form of retaliation.

Terrorists in the United States continued a general trend in which fewer attacks are occurring in the United States, but individual attacks are becoming more deadly (Driscol, 1996). Recipes for large explosives are available for any extremist willing to research them. It is likely that the United States will continue to face the

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threat of "spectacular terrorism" for the foreseeable future (Terrorist Research and Analytical Center (U.S.), 1996).

In recent years, numerous foreign and domestic terrorists were either apprehended or sentenced to prison. Several known terrorist groups and even some pariah nations have publicly threatened to retaliate. Other groups may be considering revenge, but have not broadcast their intent.

At first glance, the threat of domestic terrorism and the scope of potential methods and targets may appear overwhelming. Activity by right-wing extremist groups has remained difficult to assess because of the cell-type structure and other clandestine tactics many groups have adopted and the fact that most groups operate in rural areas. Problems have appeared to increase since the Oklahoma City bombing. Klanwatch -- a project of the nonprofit Southern Poverty Law Center that attempts to curb Klan and racist violence through litigation, education, and monitoring -- reported that "[t]here were 858 groups operating in the United States in 1996, a 6 percent increase over the 809 groups noted in 1994 and 1995" (Officials Bolster Action Vs. Far Right, 1997). Although others who track extremist activity acknowledge the difficulty when determining the level of threat, a concern for future activity remains. The same report, along with numerous others, warns of increased violence, including the possibility of biological and chemical attacks (Officials Bolster Action Vs. Far Right, 1997). Disagreement exists concerning the level of threat, but the need to prepare and plan for the possibility of an incident occurring in any jurisdiction, regardless of location or size, remains strong.

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RESEARCH QUESTIONS

The primary research questions are:

1. What strategies can be implemented to mitigate the impact of terrorist attacks on the urban built environment -- attacks using either conventional or weapons of mass destruction?

2. What are the unintended effects of these strategies?

3. Where are the gaps in existing terrorist/crime mitigation theories – especially in light of emerging threats from "weapons of mass destruction" i.e. biological, chemical, and nuclear weapons.

To best answer these questions, four sub-questions will be answered ("attack" for the purposes of the research is generally synonymous with "attempted attack."):

1. What types of terrorist attacks against the domestic urban built environment have taken place over the previous twenty years?

a. Who were the terrorists?

b. What did the terrorists attack?

c. When did the terrorists attack?

d. Where did the terrorists attack?

e. Why did the terrorists attack?

f. How did the terrorists attack?

2. What are the weaknesses/vulnerabilities in the preparedness for attack against the built environment of American urban areas?

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3. How can the involved agencies play a more effective role in ensuring the readiness of the urban built environment for terrorist attack?

THE LIMITATIONS

This study will be limited to terrorist (as defined by the FBI) attacks, both actual (attack actually caused damage to property and/or loss of life) and attempted (attack was preempted by law enforcement personnel). Because of the significant differences in politico-legal environments, it will examine only domestic (vice international) attacks. The subject of this study will be narrowed to attacks against the *urban* built environment. By this it is meant capital facilities and land assets commonly associated with and supportive of urban densities (generally over 1,000 persons per square mile), and, generally including regional or community-based water distribution, wastewater collection and treatment, storm drainage, transportation (including public transportation), and parks. It will specifically exclude people/assassinations, attacks against hardened military targets even if in an urban area (for example, a military base), or city-unique targets such as national monuments, embassies, or the White House. Finally, the study will also examine those attacks estimated by the FBI to be credible and serious. It will eliminate what the FBI or other law enforcement agencies have viewed and classified as frivolous threats, and will exclude attacks conducted by perpetrators later found to be mentally unbalanced.

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JUSTIFICATION FOR THE RESEARCH

This dissertation will contribute to practice and theory. Theory related to urban development and safety will be explored and extended to incorporate the recent phenomenon of urban terrorism. The case study approach, plus interviews with a purposeful sample of subject matter experts, will lead to a more complete understanding of the causes and consequences of terrorist acts in the United States. Clear, practical relevance beyond the research setting will be evident in that urban practice will be improved through refining urban design to prevent or mitigate the effects of terrorist attacks. It will give *a priori* consideration to the effects of a conventional, chemical, biological, or nuclear attack against urban targets.

METHODOLOGY

The dissertation will use multiple qualitative research methods to identify patterns of attack used by terrorists against urban targets in the United States and suggest ways for policymakers to design public facilities in urban areas to mitigate the effects of a terrorist attack. The methodology will proceed in six parts as follows:

1) It will begin by creating an inventory of domestic terrorist attacks against the urban built environment over the past twenty years.

2) Through careful analysis of each of the domestic terrorist attacks against the urban built environment, both successful and unsuccessful, shared patterns of attack will be analyzed and vulnerabilities identified. A matrix, showing what these attacks had in common and what was uncommon with regard to types of built

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environment, method of attack, and vulnerability, will be constructed. This will form a foundation for further analysis. The matrix is provided as Appendix A.

3) Next, trends will be identified and definitions operationalized. A conscious effort will be made to ensure that this study meets the criteria for a quality research design. Multiple sources of evidence will be analyzed using triangulation (Yin, 1984) and will provide the basis for the development of interview questions.

4) A comprehensive literature review will be undertaken to suggest and develop ideas for mitigating the effects of urban terrorism on the built environment and to further refine interview questions.

5) Expert testimony will be gathered through interviews with experts in terrorism, urban design, and emergency management. An explanatory letter will be mailed to the participants to describe the purpose and extent of involvement in the interview process, the method of selection, and secure participant's agreement to participate. Follow-up telephone contact will be made. These interviews will aid in refining the initial suggestions for reducing the severity of terrorist attack developed previously through the inventory of incidents and literature review, and will assist in further qualitative development of those ideas.

6) Given the ideas developed in the steps outlined above, several strategies for mitigating the impact of terrorist attack on the urban built environment will be identified. They will provide the basis for the conclusions and recommendations for mitigating the effects of terrorism on the urban built environment.

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One instrument will be used in this study: an interview format and questions guide (Appendix B). The interview format and questions guide will provide the structure and framework for conducting the interviews with a purposeful sample of experts, selected from the agencies that have major responsibility for domestic terrorism incidents. The guide will list the introductory comments by the interviewer, a review of agreement to participate and tape the interview, a list of questions (from general to specific, with a conclusion back to the broad question), and the debrief comments.

The purpose of the interviews is to aid in refining the initial suggestions for reducing the severity of terrorist attack developed in the inventory case study analysis and literature review. They will assist in further qualitative development of those ideas. One or two broad questions will be asked to prompt the initial response in the expert, and several more focused questions will be used if the interviewee has not provided depth in explanation of the initial response. The goal will be to elicit specific vulnerabilities, causes, and ideas for mitigating terrorist attacks against urban areas.

OUTLINE OF THIS REPORT

Chapter I will describe the research problem by giving a statement of the problem, the background and significance of the problem, state the research questions, and provide operational definitions. Chapter II will review the literature related to urban design for safety and terrorism. Chapter III will detail the methodology for the study, and Chapter IV will present the study results and analysis. Chapter V will offer conclusions and recommendations for further research.

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DEFINITIONS

Definitions adopted by researchers are often not uniform, so key and controversial terms are defined to establish positions taken in the research.

Conventional weapons – utilize missiles or (non-nuclear) explosions and, as a function of their design, inflict physical injury by imparting kinetic energy but not foreseeably to a specified part of the body (Coupland, 1996).

Terrorism - this study will use a current and detailed definition of terrorism given by the Federal Bureau of Investigation. Terrorism is officially defined by the Bureau as: "the unlawful use of force or violence against persons or property to intimidate or coerce a government, the civilian population, or any segment thereof, in furtherance of political or social goals" (FBI Terrorist Research and Analytical Center, 1991).

Urban – is defined for purposes of this study as "an inhabited place; a place larger than a village or town: a large, prominent or important center of population: a relatively permanent and highly organized center having a population with varied skills, lacking self-sufficiency in the production of food, and usually depending on manufacture and commerce to satisfy the wants of its inhabitants" (Merriam Webster Dictionary).

Weapons of Mass Destruction - Weapons that cause indiscriminate, widespread destruction. Such weapons include nuclear, biological, and chemical weapons in any form, and associated delivery systems. These three types of weapons are also referred to as NBC weapons (United States Air Force Counterproliferation Master Plan).

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SCOPE, KEY ASSUMPTIONS AND LIMITS OF THE STUDY

The dissertation is limited in scope due to both resources and time constraints. It will examine and suggest strategies to mitigate the impact of urban terrorist attack against the urban built environment. The cases used in the inventory of terrorist incidents over the past twenty years will meet the criteria and limitations outlined below. Specifically, it will be limited to:

1. *Terrorist* (as defined by the FBI) attacks, both actual (attack actually caused damage to property and/or loss of life) and attempted (attack was preempted by law enforcement personnel);

2. *Domestic* (vice international) attacks;

3. Attacks against the *urban* built environment means capital facilities and land assets commonly associated with and supportive of urban densities (generally over 1,000 persons per square mile); and, generally including regional or community-based water distribution, wastewater collection and treatment, storm drainage, transportation (including public transportation), and parks (The New Jersey State Planning Commission, 1992). It will *exclude* such attacks that involve specific people/assassinations, attacks against hardened military targets even if in an urban area such as a military base, or city-unique targets such as national monuments, embassies, or the White House;

4. Attacks estimated by the FBI to be credible and serious (i.e. will eliminate frivolous threats) -- but the study will specifically exclude attacks conducted by perpetrators later found to be mentally unbalanced.

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A purposeful sample of experts, selected by the researcher both for their expertise and for availability, will be used in the interviews.

CONCLUSION

This chapter has laid the foundations for the report. It has introduced the research problem and research questions. Then the research was explained and justified, definitions were presented, the methodology was briefly described, the report was outlined, and the limitations were given. On these foundations, the report can proceed with a detailed description of the research.

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CHAPTER II

REVIEW OF THE LITERATURE

INTRODUCTION

This study will suggest strategies to mitigate the impact of terrorist attack on the urban built environment. In this chapter, several broad, theory-based categories of strategies are considered. It builds on past research and extends defensible space theory with careful consideration of the special challenges in dealing with terrorist attacks. The potential for terrorist attack is reviewed, and an understanding of who the domestic urban terrorists are, why they may attack the urban built environment, what might they attack, and what can be done about it will be developed. These questions will be the focus of the research in subsequent chapters.

Several broad theories regarding defending physical territory against criminal acts have been developed, and will be described in detail later in this chapter. The concept of defensible space originated along with the earliest cities, where there was a need to provide physical separation from outside the community to ensure physical safety. The has been described in myriad histories, but by none more articulately than the noted urban critique Lewis Mumford in his classical work *History of the City*.

During the Second World War, Harold Lasswell linked physical defensibility to political and military readiness as a matter of public policy, coining the now famous concept of "The Garrison State." The idea that physical spaces could somehow be influenced to enhance safety as a matter of public policy was expanded upon by the work of Jane Jacobs in *The Death and Life of Great American Cities.*

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Jacobs, writing in the early sixties and in the wake of large scale urban renewal in American cities, argued that *a priori* design of urban spaces could be employed to enhance the safety of citizens. Jacobs stressed passive measures that would promote common ownership and surveillance of urban spaces.

In the early 1970's, Oscar Newman published his work, *Defensible Space.* Newman built on the earlier ideas of Jacobs and Lasswell, and argued for designing urban spaces to maximize defensibility and safety. In the late 1970's, the concept of defending territory to enhance safety was taken one step further by advocates of proactive designs for security. Where Jacobs and Newman had argued for passive measures, the newer theorists, generally lead by Jeffery and his concept of CPTED (Crime Prevention Through Environmental Design), argued for proactive measures that encompassed active surveillance devices, hardened entry points, and adequate lighting to deter crime.

As the concept of CPTED was developed and embraced by its proponents, it soon became apparent that the proactive approaches inherent in a CPTED philosophy were expensive, especially when compared to the essentially non-existent defensibility provided by the passive measures advocated by Jacobs and Newman. In order to best utilize limited proactive defensive measures, new theories on where crime occurs were developed. The premise was that, if one could determine the most likely targets for criminal acts, one could best employ limited defensive resources at those locations. This work was pioneered by the Brantinghams with their theory on the Geometry of Crime and Pattern Theory, and continued with the works of Mawbry with his theory on the Diffusion of Benefits, Allatt with Displacement Theory, Felson

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& Cohen with Routine Activity Theory, Sherman and Spelman with Crime-clustering Theory, Plaster & Carter with their Theories of Territorial Reinforcement, Combs & Crowe with their theory of Target Hardening, and LaVigne with Theories on Designing-in Crime Prevention.

The work of the above theorists in determining which areas were likely targets for criminal acts was largely dependent on yet other theorists, particularly Cornish & Clark with their Rational Choice Theory that took yet another step by attempting to understand how criminals made the decision to attack a target. The evolution and shifting major focus of the major theories regarding defending physical territory against crime is shown below in Table 1. Figure 1, following, provides an overview of the development of the major theories related to defending territory against criminal acts.

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Table 1. The Evolution and Shifting Major Focus of Major Theories Regarding Defending Physical Territory Against Crime

Physical Separation from Outside the Community *Beginning to 1950s* *Societal Influences: "The Huns at the Gate"*	**The Historical City; Lewis Mumford and others** **The Garrison State; Harold Lasswell**
Passive Social Barriers Within the Community *1950s-1970s* *Societal Influences: Civil Rights, Great Society*	**Jane Jacobs**
Passive Physical Barriers Within the Community *1970s* *Societal Influences: Rising Crime Rates*	**Defensible Space; Oscar Newman** **CPTED; Jeffery** **Routine Activity Theory; Felson & Cohen**
Targeting Specific Locations Within the Community *1970s-1980s* *Societal Influences: Social Stratification, Gated Communities*	**Theories on Geometry of Crime; Brantinghams** **Theory on Diffusion of Benefits; Mawby** **Displacement Theory; Allat** **Situational Crime Prevention Theory; Clarke** **Pattern Theory; Brantinghams** **Rational Choice Theory; Cornish & Clarke**
Physical Separation Within the Community *1990s* *Societal Influences: Continuing Social Stratification, Domestic Terrorism*	**Theories of Territorial Reinforcement; Plaster & Carter** **Theories on Designing-in Crime Prevention; LaVigne** **Theory of Target Hardening; Combs, Crowe**

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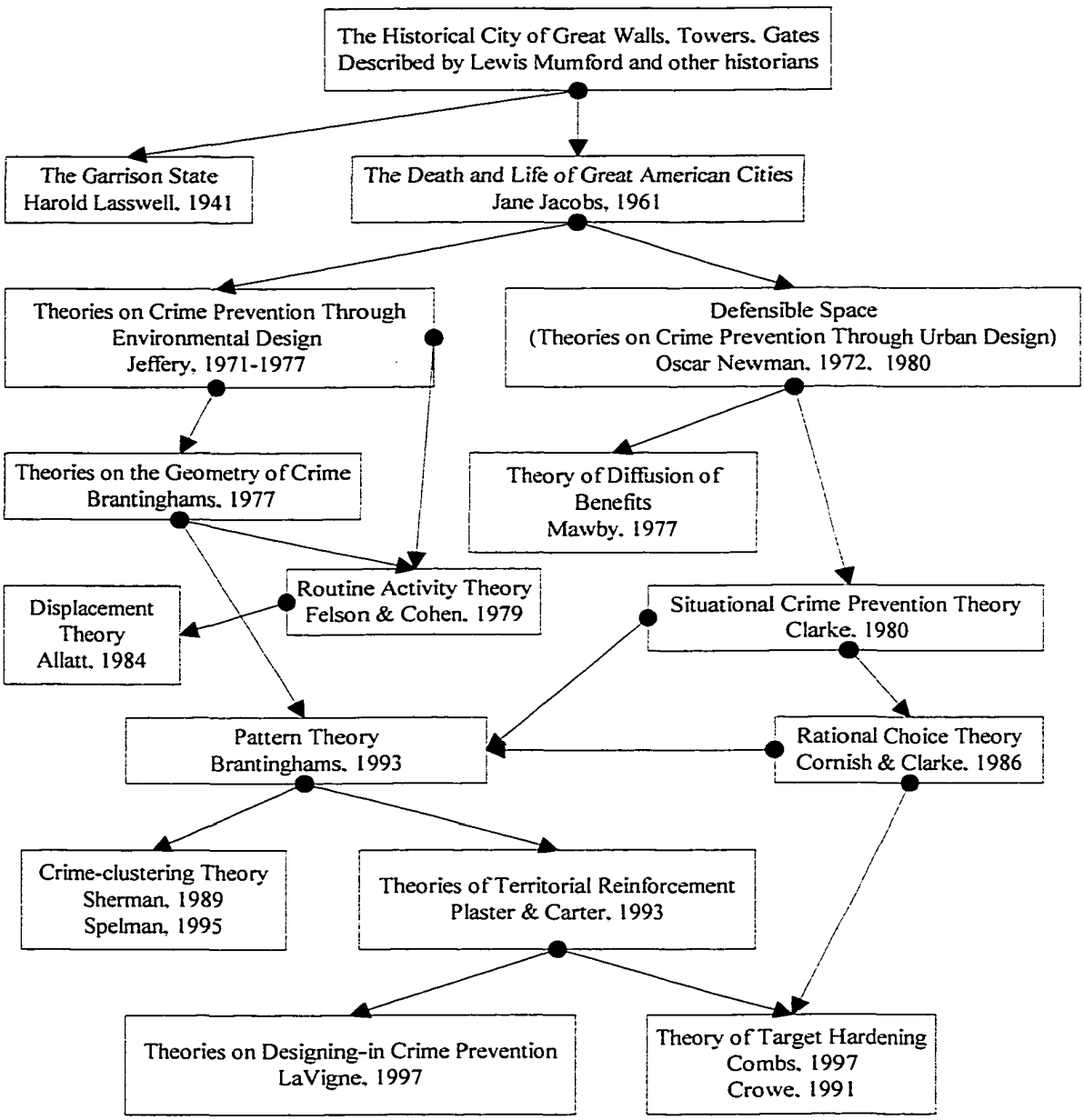
Figure 1. The Relationship of Major Theories Regarding Defending Physical Territory Against Crime



This chart is adapted from a chart provided at the College of Architecture and Urban Studies at Virginia Tech at http://www.arch.vt.edu/crimeprev/pages/hdevbody.html

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Terrorism is a criminal act, and, as with other criminal acts, strategies can be undertaken to mitigate the impact of this form of crime. Former FBI Director William Webster told a congressional subcommittee in 1987 that the most important characteristic of the FBI's definition of terrorism "is emphasizing the criminal aspect of it" (U.S. House of Representatives, 1987).

Governments are simultaneously confronted with a rapidly growing number of potential terrorist targets that must be secured, and constrained by democratic principles from utilizing many technological devices to secure those targets. Creating an effective security system that protects against a wide range of terrorist attacks while it continues to afford a maximum exercise of democratic freedoms and privileges is a formidable task indeed. As this study is limited to examining strategies to mitigate terrorist attacks on the urban built environment, this chapter will begin by examining the basis for mitigating and preventing criminal acts in urban areas.

THE THEORETICAL FRAMEWORK FOR A TERRITORIAL DEFENSE AGAINST TERRORISM

Defending Space: The Walled City

Lewis Mumford theorized that the paranoid physical structure of the city manifested itself in the walled city. The great cities of antiquity, he noted in his classic work, "The City in History," controlled access to their space by designing and building great walls, with massive gates to control and limit those who entered. In

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Mumford's words, "The protected economy of the medieval corporation was, in origin, based on the corporate superiority of the walled town over the barbarous, insecure life of the open country" (Mumford, 1961).

Harold Lasswell's Garrison State Construct

The formulation of the garrison state construct represents Harold Lasswell's most provocative and challenging scenario for the future. In the development of the garrison state construct, Lasswell was stimulated by the work of Auguste Comte, who had suggested a social evolution moving through feudal to industrial (Comte, 1970) and Herbert Spencer, for whom societies were either military or industrial (Spencer, 1940). Lasswell theorized that the garrison state would develop from the industrial state in response to technical advancement (Lasswell, 1941).

Lasswell offered the garrison state construct in 1937 in response to the Sino-Japanese War. He reasoned that technological changes within the military would alter the relationship between the military institutions and the civilian societies of which they were a part. This projection was consistent with his general perspective that technological change is always accompanied by social dislocations and that these dislocations were responsible for psychological tensions that threaten the rationality of political processes (Lasswell, 1941).

The crucial technological development that prompted Lasswell's reflections and resulted in the garrison state construct was the introduction of air power to military efforts. He perceived that military air power would make civilians as vulnerable to attack as were military installations and personnel. In essence, he argued

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that the development of military air power generated a democratization of risk. The garrison state construct became a widely embraced theory of civil-military relationships. Many intellectuals subscribed to it, as did representatives of the mass media. The construct of the garrison state has been expanded to describe any broadly applied exclusionary physical barriers among society or segments of society (Lasswell, 1941).

Defense From Within

The concept that physical form could affect the level of security in an urban community was perhaps first proposed by Jane Jacobs (1961) in her now seminal work, *The Death and Life of the Great American City*. This work was first and foremost an attack on the urban planning practices of the 1950's, such as slum clearance and urban renewal, which Jacobs saw as unnecessarily destroying a number of the older urban neighborhoods. Jacobs argued that several factors within such neighborhoods provided a natural security blanket for the entire community: the structures were close to the street, with stoops, porches and street-level windows; members of the community used such structures and the street itself for social interaction; and through the closeness of the communities, strangers could easily be identified. Thus, the physical nature of the neighborhoods encouraged social interaction, which then increased overall security. When these communities were "renewed," the much different physical environment (larger housing and commercial complexes, wider and more-traveled streets, etc.) weakened the social community and greatly reduced the effectiveness of this natural method of law enforcement.

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Jacobs countered the accepted wisdom of the time that demanded wide streets, tall buildings well set back from the street and each other, and turned toward courtyards rather than out to the sidewalk. She found that the new homogeneity was dull, that dullness was a blight that drained vitality from the streets, and that streets that did not attract people soon deteriorated. Jacobs theorized that people are attracted by people, not by open spaces, and she pointed to the old, richly textured neighborhoods that were a mix of housing, businesses and industry as the models to be emulated (Jacobs, 1961).

Today, Jacobs' observations have become so much a part of the theory of urban life that it is hard to imagine how controversial they were at the time – principles such as the importance of neighborhoods, mixed-use developments that contain housing shops, and offices, the need for density and the recognition that people, more than anything else, ensure the safety of public areas (Jacobs, 1961).

THEORIES ON DESIGNING TO DETER CRIME

As noted by Mumford, Lasswell and Jacobs, the oldest forms of crime prevention were undertaken with the knowledge that making changes to places might prevent undesirable compromises to personal safety. Oscar Newman's (1972) work built on Jacob's argument that physical structure was an important aspect of creating a secure environment. Newman argued that the degree that a space is considered private influences whether that place will be secure. Very public places, in which no one can claim ownership, are dangerous, in that no one community has a stake enforcing security. The key, according to Newman, is to "privatize" many public places around

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where people live. For instance, Newman argues that multi-family housing complexes could be designed in which only a small number of units share a common entrance, and door and windows all face this common area. Through this physical modification, the lobby, stoop and sidewalk area, usually very public, becomes much more private, as residents know who should be there, and are aware when "intruders" are present. Conversely, potential criminals will see the area as less accessible, and less an opportune environment for criminal activity (Newman, 1972).

Newman stimulated interest in the link between the built environment and crime. Newman's theory was based on a comparison of two urban areas and asserted that the differences in design were the principal reasons for the differences in crime. However, the limited number of places observed and the failure to take into account other differences suggested to some that his conclusions may have been overstated (Mahew, 1979; Mawby, 1977; Merry, 1981; Taylor et al., 1980).

To address these concerns, Newman expanded on his theories in a later book (Newman, 1980). Other studies of the influence of design have compared more sites (Coleman, 1985; Poyner, 1983; Poyner & Webb, 1991). All pointed to the association of design features and crime, particularly features that allow unfettered movement through urban areas.

These theories all generally argue that physical features that offer better surveillance and proximity of sites to well-used locations enable control of spaces (Newman, 1972) (Jacobs, 1961). Newman theorized that four elements of physical design, both individually and in concert, contribute to the creation of secure environments. The first element of this theory is the territorial definition of the

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physical environment, which is the area of influence. This definition works by subdividing the environment into zones toward which the users of the space easily adopt proprietary attitudes. These users of space become responsible for the cleanliness and safety of the space as if it were their own (Newman, 1972).

The second element of the theory is the positioning of windows to allow the users of the space to survey the exterior and interior public areas of their environment naturally. The goal of surveillance is to avoid designing blind spots and allow supervision of open areas that legitimate users use in a safe manner. The third element of the theory is adaptation of the building form to avoid the stigma of peculiarity that allows others to perceive the vulnerability and isolation of the occupants (Newman, 1996).

The fourth element of the theory involves enhancing safety by locating buildings in functionally sympathetic urban areas adjacent to non-threatening activities. Placing compatible-use building types together is a key concept in zoning and building codes and land use plans (Newman, 1995).

Newman based his theory on the assumption that territorial behavior involves personalizing or marking a place or object and communicating that it is owned by a person or group. Defensive responses may sometimes occur when territorial boundaries are violated (Newman, 1976). Newman theorized that a range of territories make up a person's territorial network. These include public, secondary, and private territories. The longer a person occupies a territory, the more psychologically comfortable and familiar he or she becomes with it. For example, public territories, such as bus seats or city sidewalks, are the least personalized.

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Secondary territories, such as neighborhoods, which are also characterized by shared ownership among members of a group or culture, are more familiar and personalized. Primary territories, such as homes and apartments, are most personalized (Newman & Franck, 1980).

Newman's fundamental assumption is that most criminals behave with some rationality, selecting for their crimes locations they believe will offer high rewards but very low risk of being caught. To deter crime, then, spaces should convey to would be intruders a strong sense that, if they enter, they are very likely to be observed, to be identified as intruders, and to have difficulty escaping.

Defensible space theory has received strong supporting evidence from studies in Britain and the United States (Newman & Franck, 1980) (Newman & Franck, 1982) (Perkins et al., 1992) (Taylor et al., 1984) (Taylor, 1988). Studies of varying quality began testing these ideas in the early 1970's and continued at a rapid pace for the next dozen years. In 1980, a theory was formulated that made a distinction between "first generation" and "second generation" defensible space (Taylor et al., 1980). In the latter version, researchers considered more carefully how the impact of physical features on crime mitigation might depend upon other social and cultural features in the setting.

Yet many disagreed with defensible space theory. Some have argued that the principles are too mechanistic and narrow to account for the complex issues of fear and crime (Brennan, 1997). Other critics object to the concept of territoriality that forms the basis of the theory, while still others believe that Newman and his colleagues did a poor job of picking matched sites for comparison and analyzing their

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data (Krupat & Kubzansky, 1987). One of the major limitations to expanding the number of defensible space designs has been the lack of research about how potential terrorists view or use the physical features in question.

What these arguments clearly suggest, is that natural police power is significantly superior to the more artificial, state-imposed police power. In other words, the existence of a social community which "looks out for its own," and of a physical structure which encourages such community and allows for widespread community surveillance, is better able to deter criminals and respond to crime when it does happen. While Newman readily admits that in contemporary urban America a situation can not be envisioned in which no state police presence was required (Newman, 1972), the effectiveness of this artificial police power depends greatly on how equipped the communities are to prevent crime.

THEORIES ON "DESIGNING-IN" CRIME PREVENTION

C. Ray Jeffery, a criminologist from Florida State University, coined the term "CPTED" and studied the relationship between the physical environment and incidence of crime (Cisneros, 1995). Studies were undertaken where criminals were interviewed as to why they chose a certain location for the crime that was committed, and what the influencing factors, if any, were to that environment. Based on these studies, several theories about "designing-in" crime prevention emerged. Crime Prevention Through Environmental Design (CPTED) is a theory that links the design, planning and structure of cities, communities, buildings and neighborhoods (National Crime Prevention Council, 1997).

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The CPTED approach is a set of widely used techniques based on the defensible space argument. It first and foremost emphasizes the need to create a natural environment of limited access, surveillance and territoriality. The most widely used CPTED design modifications have become extremely popular among designers because they are seen as more incremental and less costly to install: for instance, the process of target hardening uses barriers to entry (such as alarms, locks, bars, street layout, unbreakable glass, etc.), surveillance tools (better lighting, cameras, etc.) and other deterrents (property identification programs) to create a more secure environment. In these ways, the CPTED approach is a more practical corollary to the defensible space theory. Also, in contrast to the theories of Newman and Jacobs, many of its features would undoubtedly be considered artificial or mechanical.

CPTED theorizes that the physical environment has an important impact on the types and location of crime both on small and large scale projects. The concept is that the physical environment can be manipulated to produce behavioral effects that will reduce the incidence and fear of crime, and thus improve the quality of life.

The theory of CPTED was born in the 1960s after several studies were conducted on the effect of the physical environment on crime. Early CPTED concepts are associated with the work of not only Jeffery but also the already cited and ground-breaking theories of Oscar Newman and that of Jane Jacobs.

CPTED differs from traditional target hardening by emphasizing the development of three strategies; natural surveillance, natural access control and territorial reinforcement. Natural surveillance is a design concept that is directed at facilitating or keeping intruders under observation by natural means. Natural access

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control is directed at decreasing criminal activity and opportunity. Proponents of CPTED theorized that one can deny access to a target and create a perception of risk to offenders. This is commonly accomplished by designing access to one central location.

Theories of territorial reinforcement expand upon this by advocating the establishment of boundaries by using physical design to differentiate public, semi-public and private space. Curbs, landscaping, sidewalks and grade changes are commonly used tools (Plaster & Carter, 1993). Clearly, this information is only the tip of the CPTED iceberg and many of these strategies overlap.

Theories of "designing in" crime prevention may be effective, but it is extremely difficult to determine if a design is effective. LaVigne (La Vigne, 1997) theorized that physical design and crime levels were correlated. She compared the Washington, D.C. Metro to three other urban rail transit systems and found that the Metro had less crime than the other systems. She also compared subway station crime to crime in the areas above-ground. If the system had no influence on crime then the above-ground crime levels and station crime levels should be correlated. If the system design prevented crime, then there should be no relationship between station and above ground crime. LaVigne (La Vigne, 1997) found that, except for assaults, ground level and station crime were not correlated. Although this is not a strong research design, it is the best evidence available to date that system design influences crime patterns.

Several other scholars have continued to advance theories of defensible space. Concentration of crime at places is predicted by routine activity theory (Cohen, 1998;

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Felson, 1998) and offender search theory (Brantingham & Brantingham, 1981). Sherman theorized that crime was clustered, in his studies of Boston and Minneapolis (Sherman et al., 1989).

Additional evidence supporting crime concentration theory at places has been found for specific types of crime. In studies of Kansas City and Indianapolis, crimes were found to be highly concentrated at a few places (Sherman & Rogan, 1995). Combining the results from several studies, Spelman theorized that 10 percent of the victims in the United States are involved in about 40 percent of the victimizations, that 10 percent of the offenders are involved in over 50 percent of the crimes, and that 10 percent of the places are sites for about 60 percent of the crimes (Spelman & Eck, 1989). Further, Spelman theorized that the concentration of crimes at a few places is relatively stable over time (Spelman, 1995a; Spelman, 1995b). These theories suggest that something about a few places facilitates crimes and something about most places prevents crimes.

THEORIES ON BLOCKING TERRORIST OPPORTUNITIES

Clarke argues that changes to places should involve making crime more difficult, risky, less rewarding, or less excusable. This theory is known as opportunity blocking (Clarke, 1992; Clarke, 1995). Opportunity blocking does not have to be done at places. It can also be built into potential terrorist targets.

A theory that one can design methods for blocking crime opportunities is called Situational Crime Prevention (Clarke, 1992; Clarke, 1995). Rather than look for a generic solution to a specific crime problem at a place, Situational Crime

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Prevention involves a thorough examination of the problem and then development of a unique set of interventions to address this problem. Such an approach is advocated by not only situational crime prevention (Clarke, 1992), but also by problem-oriented policing theory (Goldstein, 1990).

Situational crime prevention theorizes that environmental approaches are an important dimension to any crime prevention strategy. The fundamental thrust is that it is possible to avoid "designing crime in(to)" urban areas. Planning developments to take advantage of routine activity theory results in an area less conducive for crime (Clarke, 1983).

Critics of a situational theories of crime prevention say that it costs too much money, therefore it is more likely to redistribute victimization away from the wealthy to the poor. It also discounts the fact that not all offenders are determined to offend, but are rather opportunistic. Critics of a situational approach argue that it ignores the "diffusion of benefits," i.e. a theory that says if there is a reduced concentration of targets, the whole area may benefit (Mawby, 1977).

Proponents of opportunity blocking theory argue that it may have a greater direct effect on offenders than other crime prevention strategies. This is because place-focused tactics might influence terrorists when they are deciding to commit a specific terrorist act. Most offender based strategies try to sway offenders weeks, months, or years before they confront a tempting criminal opportunity (Clarke, 1983). Clarke theorizes that, if offenders pay closer attention to the situation immediately before them than to the uncertain long-term risks of their behavior, it is quite possible that prevention at places may have a greater impact on offending than increases in

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penalties or less tangible increases in risks (e.g., decreases in police response time, increased police presence, or greater numbers of arrests and convictions).

THEORIES OF TARGET HARDENING

Physical security has, as its objective, "the hardening of the target against which an attack may be made" (Combs, 1997). According to Combs, no blueprint for physical security measures against terrorist attack has been adopted. Still, there are certain considerations and countermeasures that have begun to achieve acceptance in both the government and the business community. The question, *can good planning and design make potential terrorist targets in urban areas less vulnerable*? has not yet been answered.

Traditional crime prevention theories typically argue for making a target harder to get to by means of psychological and physical barriers (signage/closed circuit television/fences/locks), and response methods (security staff, adequate laws/procedures/education). This is also known as target hardening, and is an effective and widely used strategy to reduce crime (Crowe, 1991).

The theory that place-focused interventions may cause the displacement of criminals to less protected locations is commonly raised as a threat to their effectiveness. Patricia Allatt (Allatt, 1984) has been one of the few researchers to explicitly test this theory for displacement effects. In addition to identifying the target areas which received improved security, she examined other locations in the area immediately adjacent to the target area. And she used a control area that was far enough from the treatment area that it would not be contaminated by displacement.

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She found that crime in the target area increased by 9 percent one year after implementation, but in the control area crime had increased 77 percent. This suggests the program may have reduced potential crime, compared to what would have been in the absence of the program. Crime increased 86 percent in the displacement area, but relative to the control area this was only a 9 percent increase over what could have been expected without the program. Thus, she was able to determine that displacement may have occurred, but was small relative to the overall program effect on the target area (Allatt, 1984).

Target hardening appears to reduce crime without major displacement effects. However, with only two studies, more rigorous research would make valuable contributions to our knowledge of what works in place-focused crime prevention.

Assessing Physical Vulnerabilities

It is slowly being recognized by the government and business communities that security measures against terrorism must go beyond the level of normal crime prevention. Combs theorizes that, although indeed criminals, terrorists are not "normal" criminals: their goals, their willingness to sacrifice innocent lives, and their willingness to die in their attacks make them extraordinary criminals, against whom extraordinary measures must be taken if security is to be achieved and maintained (Combs, 1997). *The nature and extent of these measures remain undetermined.*

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THE THEORY OF THE RATIONAL TERRORIST

Research indicates that terrorists operate in a rational fashion; that is, they prefer to commit acts that require the least effort, provide the highest benefits, and pose the lowest risks. Researchers have applied this rational offender theory to a range of crimes (Clarke, 1992) (Clarke, 1983) (Clarke & Cornish, 1985). Some types of terrorists follow a multistage planning process that begins with the selection of an area where they feel they can operate comfortably, with low costs in terms of time and effort, and where they stand a good chance of obtaining a reward for their efforts (Rengert, 1989). Subsequently, they select targets within that area (Taylor & Gottfredson, 1986). This view theorizes that terrorist acts are most likely to occur when potential terrorists encounter a suitable target where the chances of detection by others are thought to be low or the terrorist, if detected, will be able to exit without being identified or apprehended. The features of the physical environment can influence the chances of a terrorist act occurring. They affect potential terrorists' perceptions about a possible attack site.

Rational offender theory would also suggest that crime prevention measures may produce diffusion of benefits rather than displacement of crime. This would occur if offenders experience increased fear of detection (that is, they perceive that the risk of committing a crime has increased) and/or decreased likelihood of gain (that is, they perceive that the reward of crime is reduced) beyond the actual scope of the intervention. Diffusion of benefits is defined by Clarke (Clarke, 1992) as "the spread of the beneficial influence of an intervention beyond the places which are directly targeted, the individuals who are the subject of control, the crimes which are the focus

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of intervention, or the time periods in which an intervention is brought." When potential offenders are deterred (by increased fear of detection and greater actual or perceived risk of arrest) or discouraged (by reduced actual or perceived rewards of crime) beyond the degree merited by the preventive measures taken, diffusion of benefits will occur. Clearly, practitioners should seek to design interventions that reduce the total amount of crime and/or that displace activity to less serious crime or to less victimized populations. Better still would be the design of interventions whose effects reach beyond their target and thus produce diffusion of benefits (Clarke, 1992).

Terrorists may decide whether or not to commit a terrorist act in a location after they determine the following:

o How easy will it be to enter the area?

o How visible, attractive, or vulnerable do targets appear?

o What are the chances of being seen?

o If seen, will the people in the area do something about it?

o Is there a quick, direct route for leaving the location after the crime is committed (Clarke, 1983)?

In order to assess the impact of the physical environment on domestic terrorist attacks, and in order to suggest strategies to mitigate the impact of those attacks, the questions *What types of terrorist attacks against the domestic urban built environment have taken place already? Who were the attackers? What did they attack? Why did they attack it? What are the most likely urban targets for terrorist*

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attack? How will they attack the target? What options for reducing the severity of the attack (zoning, codes, etc.)? must be addressed.

LINKING THEORIES OF DEFENSIBLE SPACE TO THEORIES OF THE RATIONAL TERRORIST

Beyond Traditional Concepts of Defensible Space

Physical design changes are but one first step. Merry studied the criminal's views on areas conducive to committing crimes. She theorized that there are differences between areas that criminals and the general public feel are prime locations for crimes. Her main conclusion was that design can provide preconditions for effective control, but it cannot create such control if the social fabric of the community is fragmented. For example, in older urban locations in many cities, residents and entrepreneurs are often of different ethnic backgrounds (e.g., African-American residents vs. Korean or Arab-American entrepreneurs) and therefore have different cultures. Merry theorized that it is difficult for each group to interpret the behavior of the other (Merry, 1981), which in turn may impede entrepreneurs' contributions to informal control over events on the street. An important role for police community-relations councils and local business organizations then, may be to develop strategies so these entrepreneurs can contribute meaningfully to resident-based control over street life.

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THEORIES OF CRIMES IN SUPPORT OF TERRORISM

Richard Quinney presents an interesting theory on the way government should respond to crimes in support of terrorism. He divides crimes into two basic types depending upon the motive of the perpetrator: crimes that are intended for purely personal profit are referred to as lumpen crimes, while crimes that reflect increased social consciousness are referred to as "crimes of resistance." Although the crimes committed may be identical (i.e., robbery may be either a lumpen crime or a crime of resistance), Quinney suggests that governmental responses vary depending on the motive and intended victim. Consequently, if the victim of the robbery is simply another member of the working class and the motive is personal profit, the governmental response would be substantially different than if the victim were a member of the corporate community and the stolen money was to be used to fund a worker's revolution. The latter offense would, of course, be defined as terrorism and subject to more intense law enforcement and prosecutorial efforts (Quinney, 1980).

THEORIES OF TERRORIST BEHAVIOR AND GOVERNMENT RESPONSE

Durkheim theorized that a certain level of crime as well as other forms of deviant conduct (including terrorism) was viewed as "normal" in any society (Durkheim, 1966). Only when levels of deviance reached disruptive proportions were they perceived as indicative of social pathology. Crime and deviance came to be seen as functional -- performing some useful purpose for the maintenance of social order. Using this line of reasoning, Kai Erikson wrote: "Deviant forms of behavior, by marking the outer edges of group life, give the inner structure its special character and

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thus supply the framework within which the people of the group develop an orderly sense of their own cultural identity" (Erikson, 1966). If deviant behavior is to some extent tolerated because of its "utility," Erikson asks under what conditions does society say enough is enough, and in what manner does society say it? Erikson goes on to maintain "we invoke emergency measures when the volume of deviance threatens to grow beyond some level we have learned to consider 'normal'" (Erikson, 1966). His analysis of crime waves in seventeenth century Puritan society resulted in a theory suggesting two things: first, that "emergency" social responses to deviance occur when society is threatened if the behavior is allowed to continue; and second, that the response is apt to be highly publicized and punitively more severe than that toward other deviants (Erikson, 1966).

The application of this approach to governmental responses to terrorism is identical to that provided by Erikson's deviating Puritans: certain types of terror may be "condoned," as long as it is not too violent, too destructive, or too organized. The FBI routinely addresses this issue in officially labeling some acts as terroristic while ignoring other acts that appear equally harmful. However, once the bounds of "acceptability" are crossed, the government will muster all possible resources to publicly condemn the offenders. The prosecutor will give the terrorism case the highest priority as investigative and law enforcement assets are called in to assist in bringing the offenders to justice. At trial, the terms "terrorism" and "terrorist" would be emphasized in the courtroom, and demands for maximum sentencing become common. According to the Erikson's theory, the theme of any governmental response to terrorism is to restore the "symmetry and orderliness of nature itself," (Erikson,

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1966) to bring society back into a state of equilibrium and thwart social change that might accelerate into anarchy.

THEORIES OF CONFLICT AND CONSENSUS AS VARIABLES

Some theorists see evidence of continuing conflict even in a society supposedly characterized by overwhelming stability and consensus (Turk, 1979). As Murray Edelman noted: "We have compelling evidence from a variety of kinds of observation that political beliefs, demands, and attitudes, far from being fixed and stable, are frequently sporadic in appearance, fluctuating in intensity, ambivalent in composition, and therefore logically inconsistent in pattern and structure" (Edelman, 1971). Although non-partisan conflict theory (or cultural deviance theory, as older versions in criminology are known) has a long tradition in the criminological literature, that perspective has assumed a more prominent place in sociological theory within the past two decades (Blalock, 1989) (Boulding, 1989).

Of the few non-partisan conflict discussions of the response to terrorism that are available, Austin Turk's model of political criminality provides the most comprehensive examination of the types of behavior one might expect the judicial system to exhibit in responding to terrorism (Turk, 1982b). In particular, he describes three distinguishing features of political crimes: 1) explicit politically; 2) exceptional vagueness; and 3) greater permissiveness regarding law enforcement. Regarding the criminalization of terrorism, Turk's theory is straightforward: "Politicality, vagueness, and permissiveness in the legal definitions of political criminality are especially apparent in the growing preoccupation with terrorism" (Turk, 1982a).

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On some issues, Turk's hypotheses are similar to the suggestions of Erikson's consensus approach. For example, both perspectives agree that when political authority is threatened, governmental agents are apt to focus upon the "consensual rather than the coercive foundations of law," (Turk, 1982b) maintaining that the prosecution of terrorists is for the common good. Consequently, the terrorist who commits murder is defined as an "assassin," the arsonist is guilty of "sabotage," and some minor offenses may be transformed into "conspiracy to overthrow the government," "sedition," or "treason." In other places, Turk seems to contradict this basic argument by suggesting that political offenders (such as terrorists) are frequently charged with non-political crimes to avoid giving the public the impression that a serious social problem exists. The consistency with which government officials have persuaded the federal courts that persons charged with assassination or attempted assassination of the president should be committed to mental institutions is cited as evidence of this approach to governmental intervention (Turk, 1982a).

THEORIES ABOUT TERRORIST IDENTITY: EXTREMISTS RIGHT AND LEFT

Profiles and typological theories of terrorist groups have become commonplace. Since Charles Russell and Bowman Miller first published their theories in "Profile of a Terrorist" in 1977 (Russell, 1977), attention has been focused repeatedly upon the demographic and psychological characteristics of the men and women who turn to terroristic violence (Clutterbuck, 1980). Researchers describe terrorists as young, generally between eighteen and thirty-five years old; primarily male, although a larger percentage of women are involved than in traditional criminality; and better

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educated than others in their age group (Rubenstein, 1987). Researchers also say that, contrary to Marxist theory, these men and women generally were from middle or upper income families whose parents were predominantly professional or white-collar workers (Russell, 1977) (Becker, 1977).

Virtually all of these findings are based upon studies of international terrorism. With terroristic activity occurring infrequently within the United States and with international terrorism dominating the news, the domestic American terrorist has been an ignored and frequently forgotten source of violence. Most people assume that the extremists in America who are willing to use terrorism as a political or social lever are closely related to their European cousins -- politically leftist with anarchist overtones (Wilkinson, 1987).

This view of the terrorist as universally leftist and Marxist permeates not only the news media but has left its mark upon academic studies of terrorism. The typological theories developed to create some order from the numerous terrorist groups reveal researchers' fascination and preoccupation with leftist violence (Flemming, 1988). Ever since Russell and Miller' theories on the three major varieties of the 'urban guerilla' as 'anarchist,' 'Marxist-Leninist,' and 'nationalist,' research in terrorism has focused upon leftist political violence. We have accepted, with few reservations, that "it is the combination of these three in specific contexts which produces the variant left extremist philosophies espoused by most terrorists today" (Russell, 1977).

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THEORETICAL TYPOLOGIES OF AMERICAN TERRORISTS

Typologies of terrorists and terrorist groups abound. Peter Flemming, Michael Stohl, and Alex Schmid have theorized that there are nearly fifty different typologies that attempt to categorize the varieties of terrorism (Flemming, 1988). They further reduce these typologies to four major types: (1) those based on terrorist group behavior; (2) those based on the motivation of the terrorist; (3) those that discriminate on the basis of the method of operation or types of targets selected by the terrorist group; and (4) those that use the historical origins of a terrorist group to distinguish it from other groups (Flemming, 1988).

According to the theories of Flemming and his colleagues, the best typologies are mutually exclusive, are valid and reliable, and have a high degree of functional utility. In other words, one should be able to assign a terrorist group to one, and only one, category in any typology; different persons should be able to correctly label the category in which the terrorist group fits within the typology; and finally, the categories within the typology should be able to help us predict different behaviors or actions by terrorist groups assigned to those categories (Flemming, 1988).

Due to the relatively small number of persons identified as having been involved in terrorism in America, typological theories with large numbers of categories limit any efforts to make meaningful statistical comparisons. The FBI has categorically divided terrorists' activities into 'domestic' and 'international' terrorism. For the purpose of this study, 'domestic terrorism' will be divided further into: (1) left-wing, (2) right-wing, and (3) single-issue terrorism. Single-issue terrorists in the United States have focused primarily upon environmental issues. However, due to the

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small number of persons who have been indicted for these acts, no statistical comparisons can be made. These distinctions are very similar to one of Paul Wilkinson's theoretical typologies, which identified four categories of extremism: Left, Right, ethno-religious, and single-issue extremist movements (Wilkinson, 1987).

THEORIES REGARDING THE CHARACTERISTICS OF LEFT-WING AND RIGHT-WING AMERICAN TERRORISTS

Wilkinson theorized that the 'extreme Left' is characterized by extreme egalitarianism, an extreme hatred of racism and capitalism, and an overt opposition to militarism. He described those within the 'extreme Right' as having "a belief in the intrinsic superiority of their own race or national group and the need to make their own race or national group supreme over other groups ... and a belief in the necessity and desirability of war as a means of realizing national or racial destiny" (Flemming, 1988).

THEORIES REGARDING TERRORIST IDEOLOGY

While left-wing terrorist groups in America have adopted primarily a political focus, most right-wing terrorists are ideologically bound by religious beliefs. The Christian Identity Movement provides the link that has tied rightist groups in America together. Frequently referred to as the "British Theory," the Christian Identity Movement is based on the belief that Aryans, not Jews, are God's chosen people-a conviction widely held by many fundamentalist churches in America. Sheldon Emry, pastor of the Lord's Covenant Church in Phoenix, Arizona, is one of the movement's

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chief spokesmen. His radio program "America's Promise" was broadcast widely throughout the United States during the 1970s and 1980s. Members and leaders of SPC, the Aryan Nations, and CSA have come from among those sharing that belief. The movement, which is anti-Semitic and anti-black, argues that America is the Promised Land, reserved for the Aryan people of God. Similar to Shiite terrorism in its justification of violence, right-wing religious extremists in America advocate the use of terrorism as a prelude to war - the Armageddon, which will establish Christ's kingdom (Hoffman, 1988).

Left-wing extremists traditionally have been sympathetic to, if not ardent advocates of, Marxism and, unlike religious rightwing groups in the United States, are apt to view religion, as Marx did, as 'the opiate of the masses.' Advocating the overthrow of capitalism as an economic and political system, Marx maintained the necessity of a 'worker' revolution before a classless society could be installed (Marx, 1970). Religion, according to Marxist theory, has prevented the development of a proletariat collective consciousness necessary for revolutionary action, slows that process. While some left-wing extremist groups in America may not explicitly espouse Marxism, they share one major ideological similarity -- a disdain for U.S. capitalism and its 'imperialism' and 'colonialism.' That commonality has led leftist groups to seek funding from similar sources. For example, while the El Rukns were seeking Libyan funds to bomb buildings in Chicago, Moammar Kaddafi was simultaneously funding the travels of such diverse extremists as Vernon Bellecourt, Bill Means, and Kwame Ture (a.k.a. Stokely Carmichael).

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THEORIES ON HUMAN NATURE AND ECONOMIC STRUCTURE

Underlying both left- and right-wing terrorist group ideologies are their views on human nature and human motivation. The basic beliefs on these issues provide the framework by which extremists of either type view the world, American government, and social programs funded by tax money. The groups categorized as right-wing repeatedly write of their belief that people should be rewarded based on the value of their labor. Described by George Homans as 'distributive justice,' (Homans, 1974) the theory suggests the commonly held belief that humans are motivated by rewards and punishments. When combined with the religious influence of the Christian Identity Movement, most right-wing terrorists express a strong belief in the 'protestant ethic' (Weber, 1976). Logically expanded, these basic views are central to the right-wing terrorists' opposition to affirmative action, welfare, and educational programs for the economically disadvantaged that exclude non-minorities.

With their strong belief in the righteousness of capitalism and a disdain for communism, terrorists of the right have little sympathy for the wayward and dispossessed. While many Americans harbor the same attitudes, the violent extremists of the Right see as futile any attempts to rectify the perceived injustices of affirmative action or welfare fraud through legislative change (Beam, 1987). Common to many Americans who retain a strong belief in state's rights, right-wing extremists desire to maintain control over public funds at the local level. Consequently, the anti-tax beliefs of SPC permeate most of the groups of the extreme Right. With the Zionist Occupation Government (ZOG) firmly in control, the seemingly disparate extremists of the Christian Identity Movement turned to militant action under the guise of

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preparing for Christ's Second Coming (Anti-Defamation League of B'nai B'rith, 1982).

Leftist ideology holds to Marx's maxim "From each according to his abilities, to each according to his need" (Marx, 1956). Believing that capitalist societies unleash and encourage a manipulative greed in humans, leftist terrorist groups in America today typically aspire to create a social system devoid of the greed they maintain characterizes American society. Consequently, such disparate groups as the FALN and the Macheteros, the UFF, and the NAFF held similar views regarding the United States (Cullen, 1984). All of these groups were allied ideologically by their opposition to capitalism's presumed exploitation of blacks, Hispanics, and the working class (Fernandez, 1987). They perceived welfare and affirmative action programs as inadequate efforts to reform postindustrial capitalist society while maintaining the corrupt status quo. Such efforts were viewed as attempts to pacify the dissatisfied masses and prevent the development of the collective consciousness necessary for revolutionary action. Having given up on their ability to change the system without violent action, these left-wing extremists turned to Leon Trotsky's views on 'heroic terrorism' out of frustration and despair (Trotsky, 1974). The effectiveness of the Puerto Rican nationalist groups was greatly diminished in 1987 with the imprisonment of most of its key leadership. Most of these leaders, however, were released by President Clinton in September of 1999.

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THEORIES ABOUT WHY CITIES ARE IDEAL TARGETS: THE URBAN CONNECTION

Leftist groups found urban areas more to their liking, while right-wing extremists have preferred the countryside. Many members of leftist groups are blacks or Hispanics, and large concentrations of Puerto Ricans live in Chicago and Hartford. Blacks also disproportionately live in urban areas. Much of the explanation has to do with the ideological and tactical differences between the two (Janke, 1983).

The Christian Identity Movement spawned its radical terrorists during the past decade only. In contrast, violent left-wing extremists in America have been in the business of terrorism at least since the 1960s. During that time, leftist radicals learned to focus their attention on urban areas in America and, to some extent, developed a fear of basing their operations in the countryside. According to Janke, part of that fear grew because of revolutionary failures in the 1960s (Janke, 1983).

When Fidel Castro defeated the Batista regime in Cuba in 1959, he became the darling of the oppressed masses. By mounting a campaign of extortion, terror, and conventional guerilla warfare, Castro first concentrated on taking the rural countryside of Cuba. Since the export of sugar was the economic base of the island, Castro gradually strangled Havana by capturing and controlling the plantations of rural Cuba (Janke, 1983).

With Che Guevara at his side, Castro became the leading spokesperson for revolution in the Americas. At the Tricontinental Conference in 1966, Guevara presented the idea of exporting Castro's revolution to Bolivia. By mounting a rural revolutionary campaign, he believed the Bolivian government could be overthrown

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and the base created there could be used to further export revolution to neighboring countries, particularly to his homeland of Argentina. (Janke, 1983) However, Guevara's capture and death in October of 1967 had a chilling effect on the advocates of rural revolution. The failure of the National Liberation Army (ELN) to wage a successful rural campaign in Bolivia was carefully scrutinized by leftist strategists in Latin and North America. They turned to a more radical approach, one brought forward by despair and frustration at being unable to mount a successful conventional guerilla campaign or to develop the collective consciousness of the masses. The urban strategies of Carlos Marighella and Abraham Guillen became the logical alternative to rural revolution (Marighella, 1971) (Guillen, 1973).

The urban setting was described by Marighella in the *Mini-manual of the Urban Guerilla* as the ideal location for terrorist operations. Originally published in 1967, the *Mini-manual* has been found among the possessions of almost every leftist terrorist group in America, perhaps due to Castro's distribution of it to the Venceremos Brigades, the leftist students who came to Cuba in the late 1960s to help with sugar cane harvests. The manual advocated an urban location for two reasons. Theoretically, it provided the opportunity to strike at the very seat of capitalism; tactically, it offered the anonymity of the crowd as a safe haven for its revolutionary members (Marighella, 1971).

But even though Leftist have targeted urban areas in their doctrinal publications, the literature shows that terrorist attacks from the right on the urban built environment cannot be dismissed (Beam, 1987). Almost exclusively based in rural America, violent extremists of the right have met with much the same fate as

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Guevara's army. With their fixed bunker-style camps, they have been identified with ease, and were arrested and prosecuted in large numbers during the 1980s and 1990s. Despite these weaknesses, they had specific reasons for choosing to locate in the hinterlands of America. With the purported imminence of Armageddon, these groups viewed their survivalist camps as necessary and required by God. They interpret biblical passages that speak of end-time events as being addressed directly to and for them. Numerous scriptures are interpreted by the militant Right as commands by God to prepare for Armageddon (Beam, 1987) .

However, the camps of the Christian Identity extremists were more than just a tactical choice; they represented an effort to escape the pollutants of urban life -- large concentrations of ethnic minorities, a tolerance for homosexual rights, and a liberal press. (Beam, 1987) These camps frequently housed entire families, with a church as the center of social life. CSA, for example, at one time housed upwards of one hundred persons. Most of the camp's inhabitants never became involved in terrorist activity (Beam, 1987).

THEORIES ABOUT HOW THE TERRORISTS MAY ATTACK: THE TACTICAL APPROACH

Extremist groups that engage in violent action to overthrow established governments are faced with a paradox. On the one hand, the criminal nature of much of their activities requires that they maintain a clandestine existence. On the other hand, the organization must engage in political and propagandistic activity to elicit

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public support for the movement. All violent extremists, whether leftist or rightist, are faced with the dilemma of needing both secrecy and publicity (Laqueur, 1977).

Inspired by the writings of noted South American revolutionary theorists Abraham Guillen and Carlos Marighela, leftist revolutionaries in the United States adopted the use of cellular structures: safe houses, "mail drops" as a means of communication, and a variety of other clandestine tactics that have been successful in maintaining the anonymity of group members. The best example is provided by members of the UFF, the leftist revolutionary band headed by Levasseur. Members of the group successfully evaded capture for nearly a decade before their arrests in 1984. The leader of the UFF, Raymond Levasseur, had been on the FBI's Ten Most Wanted list since 1977. As James Greenleaf, an FBI special agent involved in the manhunt, explained, "UFF members have an ability to blend in with the community as average citizens.... If you are willing to cut your ties with the past, it's pretty easy to disappear in this country" (Cullen, 1984). In adopting a clandestine cellular approach, however, their ability to recruit and to engage in legitimate political propagandizing is severely restricted (Laqueur, 1977).

According to Laqueur, Christian Identity extremists chose to build popular support by creating 'survivalist' camps. Such camps also allowed male members to bring their families to live on the compound. Unfortunately, from the terrorist's point of view, such permanent sites are easily located and observed by law enforcement personnel (Laqueur, 1977). Abraham Guillen made the same observations regarding the failures of the Tupamaros in Uruguay: the establishment of 'fixed fronts' for

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supplies, support, and propaganda were easy targets for governmental responses (Guillen, 1973).

In addition, the right-wing terrorist groups chose to link their organizations nationally rather than develop distinct clandestine cells. Apparently, this issue was debated extensively by the members of various Identity groups. Within two years the major leaders of right-wing terrorist groups from around the country were on trial for conspiring to overthrow the U.S. government. Major pieces of evidence introduced during their trials included verbal and written communications to almost every known leader in the movement, newsletters, and evidence of a computerized national telephone network (United States v. Miles et. al.).

THEORIES ABOUT WHAT THE TERRORISTS MAY ATTACK: TARGETS

Almost all violent extremist movements select two basic types of targets: those that help to fund their operations and those that help to further the political or social causes advocated by the organization. Marighela referred to the first of these targets as "the appropriation of government resources" (Marighella, 1971). Both left- and right-wing extremists in America have found robbery necessary for funding the revolution. Few have found sufficient external support to make ends meet otherwise. Others, like the El Rukns, have solicited funds from outside sources (Laqueur, 1977).

Consequently, most violent extremist groups, Left and Right, are forced to stoop to "ordinary" criminality to support their causes. In fact, some of the biggest armored car robberies in American history have involved American terrorists. It is one of the few similarities between the two polar types (Laqueur, 1977).

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Beyond the issue of funding, however, leftist and rightist groups bear marked differences in target selection. Since terrorism is, in many ways, a staged media event, the symbolic nature of the target frequently is as important to the terrorist as the extent of damage the incident causes. For both, the targets ultimately selected bear the mark of their respective ideologies (Bowman, 1994).

Bowman theorizes that targets generally follow broad categories based on the motives of the group or on the individual planning the attack. Domestic groups, including right-wing, issue-oriented, radical organizations and separatists, often choose targets for a specific purpose. Targets normally fall into five broad categories, some that overlap, depending on the motives of those planning the attack (Bowman, 1994).

According to Bowman's theory, symbolic or public message targets represent the first, the most common, and by far the largest, category. These may include prominent landmarks, electrical utilities, pipelines, state and local government buildings, universities, certain federal government buildings, and businesses and industries involved in such areas as chemical production, animal research, forest or wood products, and refineries (Bowman, 1994).

The second category includes government-owned or -operated facilities. These consist of tunnels, computer facilities, airports, state capitols, bridges and overpasses, maritime facilities (e.g., locks and harbors), and law enforcement buildings and support structures (Bowman, 1994).

The third category involves military targets (e.g., military bases, museums, and testing facilities). While generally more secure than other potential targets, these

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offer an immense opportunity to embarrass the military and the U.S. government (Bowman, 1994).

Cyber targets comprise the fourth category of potential targets. An enormous psychological impact could result from targeting utilities, hacking into their networks and control systems, and shutting them down. Other potential cyber targets include air traffic control centers, financial networks, utility distribution networks, emergency 9-1-1 centers, and other vital services that rely on computer-operated control systems and networks (Bowman, 1994).

Individual victims represent the fifth and last major target category. Kidnapping, extortion, assassination, and other human target attacks accomplish terrorist objectives. While intimidation remains the most common tactic used against individuals to gain compliance, domestic terrorists continue to employ violence. Individuals most likely targeted include elected government officials, law enforcement personnel, tax collectors, court clerks, members of the judiciary and prosecution systems, and families in each of these categories (Bowman, 1994).

Threat assessment in this area requires not only evaluation of the individual or group making the threat but also an assessment of the vulnerability of the potential victim. This last category is beyond the scope of this study.

Militant members of the Christian Identity movement have frequently spoken of striking out against Jews. In reality, their activities have been limited primarily to strikes against Jewish persons and property or against groups supportive of activities considered immoral by Identity members, such as adult theaters and organizations allegedly promoting homosexual rights. Order members were indicted for

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firebombing the Embassy theater in Seattle, Washington; attempting to burn the Congregation Ahavath Israel Synagogue in Boise, Idaho; and for machine-gunning Jewish talk show host Alan Berg outside his home in Denver, Colorado. Similarly, two Aryan Nations members were arrested in Seattle in May 1990 for conspiring to bomb black bars in Tacoma, Korean businesses in south Tacoma, and a Jewish synagogue in Seattle, Washington (FBI Says Two Men Planned Bomb Attack on Homosexual Bar, 1990). CSA member Richard Wayne Snell was convicted of the 1984 shooting death of a black Arkansas state trooper and is now on death row for the slaying of a Jewish Texarkana, Arkansas pawnshop owner. Another CSA member, William Thomas, was linked with the August 1983 firebombing of the Jewish Community Center in Bloomington, Indiana.

Although the violent acts of right-wing extremists have been limited primarily to racial and religious "enemies," there have been ominous and foreboding exceptions that indicated the leaders of the extreme Right intended to expand their terrorist activities. James Ellison, CSA leader turned prosecution witness, testified at the 1988 national trial of right-wing extremist leaders that Robert Miles, former KKK leader, gave him a thirty-gallon barrel of cyanide and declared: "The ones who would be killed would not really matter. It would be a good cleansing."" Ellison claimed the Washington, D.C., water system was suggested as a possible target. Although Miles was acquitted of the charges, more recent threats have been received that suggested the release of dangerous chemicals in densely populated areas. The evidence suggests a move toward more indiscriminate violence by right-wing terrorists (Group Weighed Cyanide Assault, 1988).

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Extremists of the Left have been much more politically oriented in their selection of targets. Rather than churches, synagogues, homosexual bars, and non-governmental individuals, leftist terrorists have focused upon (1) representatives of government, civil and military personnel, buildings, and equipment; and (2) large corporations -- symbols of capitalism. For example, the 1986 federal indictments of eight members of the UFF listed the bombings of two county courthouses in Massachusetts; twelve bombings of major corporations such as IBM, Honeywell, Mobil Oil and Union Carbide; one bank; and four Army and Navy reserve centers or recruiting offices. They financed their operations from 1976 to 1984 by robbing eight banks in Maine, Connecticut, Vermont, New York, and Virginia. M19CO was responsible for a series of similar bombings from 1983-1985. During that period the group bombed five federal and military installations, including the U.S. Capitol, and three other targets: the South African Consulate, the Patrolmen's Benevolent Association, and the Israeli Aircraft Industries Building. FALN bombings in Chicago followed similar patterns. The 1983 indictment of four FALN leaders cited the bombings of four banks, thirteen corporate buildings, five military installations or buildings, as well as the headquarters of the Chicago Police Department, the Cook County Building, and a U.S. Post Office building (U.S. House of Representatives, 1987).

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CHAPTER III

METHODOLOGY

According to Crowe, a fair amount is known about designing and redesigning locations so that a setting's physical features--given certain social and cultural conditions--help discourage criminal acts (Crowe, 1991). Yet what other strategies contribute to mitigating the impact of terrorist attack against the urban built environment? What might be the unintended effects of these strategies? Research to date clearly counters the notion that physical environment features have stand-alone effects on criminal acts and related problems. Their effectiveness depends on other features of the setting in question, especially local social, cultural, and organizational dynamics. Too little is known to test specific hypotheses at this stage.

RESEARCH QUESTIONS

This research will use an exploratory approach to examine three major questions regarding strategies to mitigate the impact of terrorism on the urban built environment. It will suggest policies and strategies to mitigate the impact of terrorist attacks. To do that, it will answer the following questions (potential data sources are provided after the sub-questions on the following page):

1. What strategies can be implemented to mitigate the impact of terrorist attacks on urban areas -- attacks using either conventional and/or weapons of mass destruction?

2. What might be the unintended effects of these strategies?

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3. Where are the gaps in existing terrorist/crime mitigation theories – especially in light of emerging threats from "weapons of mass destruction" i.e. biological, chemical, and nuclear weapons.

To best answer these questions, several sub-questions will be answered ("attack" for the purposes of the research is generally synonymous with "attempted attack."):

1. What types of terrorist attacks against the domestic urban built environment have taken place already? (retrospective data – case study of entire population of cases over past twenty years that meet criteria for this study).

   a. Who were the terrorists?

   b. What did the terrorists attack?

   c. When did the terrorists attack?

   d. Where did the terrorists attack?

   e. Why did the terrorists attack?

   f. How did the terrorists attack?

2. What are the weaknesses/vulnerabilities in the preparedness for attack against the build environment of American urban areas? (retrospective data – case studies, government reports, independent reports and analysis; prospective data – expert interviews).

3. What should be done differently? (retrospective data – government reports, independent reports and analysis; prospective data – expert interviews).

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4. How can the involved agencies play a more effective role in ensuring the readiness of the urban built environment for terrorist attack? (retrospective data – government reports, independent reports and analysis; prospective data – expert interviews).

STUDY DESIGN

This study investigated the theoretical and applied aspects of implementing strategies to mitigate the impact of terrorist attacks against the urban built environment using a descriptive research design. A qualitative method of data collection and analysis was used to more fully document mitigation strategies.

THE INVENTORY OF RECENT TERRORIST ATTACKS AGAINST THE URBAN BUILT ENVIRONMENT

As the first step in the study, it was necessary to take inventory of who the domestic terrorists were, what in the urban built environment they were attacking, when they were attacking their targets, where they were attacking the urban target, why they were conducting the attack, and how they were attacking. To do this, it was necessary to carefully examine the population of incidents of domestic terrorist attacks against the urban built environment.

The study began with a thorough examination of terrorist attacks against the U.S. urban built environment over the past twenty years. The twenty-year time period was used because it was in the early 1980s that domestic terrorism first became a real concern for U.S. policy makers (FBI, 1996). The 1980s saw a significant increase in

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the number of terrorist incidents throughout the world beginning with the highly visible release of American hostages in Iran, and through the evolution of "get tough" Reagan initiatives toward terrorists, both domestic and international. The incidents were selected to ensure that they were domestic incidents, that they were viewed as acts of terrorism based on F.B.I. guidelines, that they occurred in urban settings based on the Census Bureau's criteria for "urban," and that the targets were some form of the urban built environment, as opposed to an assassination, airport, or a unique political target such as an embassy or national monument.

SPECIFIC CASE SELECTION CRITERIA

All cases selected were post 1980. This is because, as a result of the Iran hostage crisis in 1979, the ability of terrorism to directly affect the American populace was generally realized by most citizens, and certainly government leadership. It was also the period when, beginning with airports, the federal government took the first steps to mitigate the impact of terrorism on our citizens, both internationally and domestically. It was, in effect, the genesis of domestic preparedness efforts.

A second of the criteria was that the terrorist attack took place in an urban area, and was primarily targeted against some part of an urban built environment, i.e. not a targeted assassination. This was important in order to eliminate "non-generalizable" attacks - attacks on national monuments, embassies, consulates, the UN – that could not easily be viewed as having broad, metropolitan applicability of mitigating strategies.

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As a result of careful study of these cases, a matrix was developed showing the "who," "what," "when," "where," "why," and "how" of attacks. A condensed version of that matrix is provided in Appendix A. The overall purpose of analyzing the wide range of terrorist attacks over the period 1980-2000 was to identify commonalities of attacks and provide a common framework for identifying weaknesses.

THE INVENTORY OF CURRENT REPORTS ON TERRORIST ATTACKS AGAINST THE URBAN BUILT ENVIRONMENT

After determining the "who," "what," "when," "where," "why," and "how" of the domestic terrorist attacks against the urban built environment over the past twenty years, it was then necessary to carefully determine what had been done, and what measures were in place, to mitigate future attacks. To do this, it was necessary to review government and independent reports on domestic terrorism preparedness policy initiatives from myriad agencies at the federal, state, regional and local level. The purpose of examining the reports was to further identify weaknesses in domestic urban terrorism defenses, determine what has already been done, and identify promising initiatives.

INTERVIEW PARTICIPANTS

Based on information generated by both the inventory of terrorist incidents in the cases studies, and a review of current reports, an analysis of policy direction conducted through interviews was conducted with a purposeful sample of subject

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matter experts. The interviews would provide an opportunity to clarify policy alternatives, develop additional strategies, and prioritize those strategies to mitigate domestic terrorist attacks.

According to Rubin and Rubin (Rubin & Rubin, 1995), the design of a study guides the researcher in what and whom to ask. They note that whom the researcher chooses to interview should match the definition of the subject of the research. The Rubins point out that the people interviewed should satisfy three requirements: they should be knowledgeable about the cultural arena or the situation or experience being studied; they should be willing to talk; and when people in the arena have different perspectives, the interviewees should represent the range of points of view (Rubin & Rubin, 1995).

The next step in the study involved semi-structured face-to-face interviews with a purposeful sample of twelve first-line disaster planners and responders. Easterby-Smith notes that this type of interview is particularly appropriate when "it is necessary to understand the constructs that the interviewee uses as a basis for her opinions and beliefs about a particular matter or situation." (Easterby-Smith et al., 1991). The participants for the interviews consisted of 12 key disaster planners from federal, state and local agencies that have responsibilities for responding to terrorist attacks against the urban built environment. The specific criteria for selection as an interview participant was middle- to senior level administrative responsibility in one of the government agencies that Governor Gilmore of Virginia, at the direction of President Clinton, tasked in 1998 with assessing domestic terrorism preparedness. The participants are among the most knowledgeable in the field.

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An explanatory letter was mailed to the 12 interview participants to describe the purpose and extent of involvement in the interview, the method of selection, and secure their agreement to participate. In the event that the primary participant could not participate, they were asked to name a key staff member who best represented the agency position to participate in the interview. Telephone contact was made with the prospective experts to confirm participation and to identify the key staff member where applicable. No identified experts declined participation.

INTERVIEW FORMAT AND QUESTIONS GUIDE

The importance of interviews is summarized by Burgess, who notes that "the importance of interviews is the opportunity for the researcher to probe deeply to uncover new clues, open up new dimensions of a problem and to secure vivid, accurate, inclusive accounts that are based on personal experience" (Burgess, 1982). In the structured interviews that this study will use, Lincoln and Guba point out the importance of defining the problem before the interview, formulating the questions, and expecting that the respondent answers in terms of the interviewer's framework and definition of the problem (Lincoln, 1985).

One instrument was used in this study: an interview format and questions guide. The interview format and questions guide (Appendix B) provided the structure and framework for conducting the interviews with the selected experts from federal and local agencies. The guide lists the introductory comments by the interviewer, a review of agreement to participate and tape the interview, a list of questions (from

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general to specific, with a conclusion back to the broad question), and the debrief comments.

The purpose of the interviews was to develop a deeper understanding of, and to enhance the broad strategies suggested by the literature review and case analysis. One to two broad questions were asked to prompt the initial response in the manager, and seven more focused questions were used when the interviewee had not provided depth in explanation in their initial responses. The questions included:

1. What do you consider the most likely urban target(s) for terrorist attack?
2. Why?
3. Why do you think it/they are they vulnerable?
4. Which terrorist group(s) do you consider the most likely to launch a domestic attack? Right/left, foreign/domestic, specific?
5. What do you consider the most likely method(s) of terrorist attack against an urban target? (conventional/nuclear/biological/chemical)
6. Given the broad range of weapons, including weapons of mass destruction, that may be employed by terrorists, what ways of protecting urban targets do you consider most promising? Least promising?
7. What should we be doing differently to protect urban targets?
8. Who should be primarily responsible for ensuring our cities are prepared for a terrorist attack?
9. How can involved agencies play a more effective role?
10. What do you consider to be the downside or unintended impacts of enhancing the protection of urban areas against terrorist attack?

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11. What might be some unintended outcomes that must be considered in strengthening the preparation of urban infrastructure for terrorist attacks?

The same researcher conducted all twelve interviews. The Interview Format and Questions Guide is included as Appendix B.

DATA COLLECTION PROCEDURES

This study will use in-depth interviews as part of the strategy to collect data. Kahn and Cannel (Patton, 1990) note that in-depth interviewing is a data collection method relied on quite extensively by qualitative researchers. They describe it as "a conversation with a purpose."

According to Burgess, (Burgess, 1982) the primary purpose of the interview is to understand the meanings interviewees attach to issues and situations in contexts that are not structured in advance by the researcher's assumptions. He summarizes the importance of interviews by saying: "(the interview) is . . . the opportunity for the researcher to probe deeply to uncover new clues, open up new dimensions of a problem and to secure vivid, accurate inclusive accounts that are based on personal experience." Most interviews are conducted on a one-to-one basis, between the interviewer and the interviewee.

The label 'qualitative interview' has been used to describe a broad range of different types of interview, from those that are supposedly totally 'non-directive' or 'open' to those where the interviewer takes to the interview a prepared list of questions which he or she is determined to ask. Notes Burgess, ". . . between these

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two extremes is an abyss of practice and therefore theory about the purpose and nature of the qualitative interview" (Burgess, 1982). Burgess says the main reason for conducting qualitative interviews is to understand ... "how individuals construct the meaning and significance of their situations . . . from . . . the complex personal framework of beliefs and values, which they have developed over their lives in order to help explain and predict events in their world." It is important, then, to be able to conduct interviews so that the opportunity is present for these insights to be gained. Failure to achieve this might well result in a superficial exchange of information, which might well have been better and more cost effectively achieved via a semi--structured questionnaire (Patton, 1990).

According to Burgess, semi-structured or unstructured interviews are appropriate methods when:

- It is necessary to understand the constructs that the interviewee uses as a basis for opinions and beliefs about a particular matter or situation;
- The aim of the interview is to develop an understanding of the respondent's 'world' so that the researcher might influence it, either independently or collaboratively, as might be the case with action research.

Burgess adds that they are also useful when:

- The step-by-step logic of a situation is not clear;
- The subject matter is highly confidential or commercially sensitive;
- The interviewee may be reluctant to be truthful about this issue other than confidentially in a one-to-one situation.

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Jones (Jones, 1998) highlights a number of issues that must be considered in order for interviews to be successful. The first is the problem of how much structure to put in the interview. She makes the point that:

> . . . there is no such thing as presuppositionless research. In preparing for interviews researchers will have, and should have, some broad questions in mind, and the more interviews they do and the more patterns they see in the data, the more likely they are to use this grounded understanding to want to explore in certain directions rather than others.

According to Jones, researchers are free and encouraged to make choices as they collect their data as to which line of questioning they should explore further and which lines of inquiry to discard. They do need a framework from which to begin to plot out the developing themes, but cautions that although researchers are to some extent tied to their frameworks, they should not be 'tied up by them'. Jones goes on to suggest that one way in which this can be achieved is to prepare a 'topic guide', which can be used as a loose structure for the questions. Although there may be some deviation from the sequence so as to follow interesting lines of inquiry and to facilitate an unbroken discussion, the interviewer should attempt to cover all the issues mentioned (Jones, 1998).

On the subject of structure, Jones warns against assuming that a "non-directive" interview, where the interviewee talks freely without interruption or intervention, is the way to achieve a clear picture of the interviewee's perspective. She says that it is more likely to produce no clear picture in the mind of the interviewee of what questions or issues the interviewer is interested in, and in the

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mind of the interviewer of what questions the interviewee is answering. According to Jones, too many assumptions of this kind lead to poor data that is difficult to interpret. She says that researchers are likely to be more successful if they are clear at the outset about the exact areas of their interest.

McClelland says that understanding issues from an interviewee's point of view can be extremely difficult, especially when the respondent may not have a clearly articulated view of the answers to the questions posed, or may not wish to divulge sensitive information. He conducted studies about common sense notions concerning motivations, claiming that people cannot be trusted to say exactly what their motives are, as they often get ideas about their own motives from commonly accepted half-truths. Often people simply are not aware of their own motives. Mangham (1996) met this problem in his studies of managerial competence. He found that although many managers complained that they needed subordinates who could better motivate staff, when they were asked what exactly they meant by motivation they gave ambiguous answers and became confused.

According to Mayo, the skills of an interviewer center around the ability to recognize what is relevant and remember it, or tape it, so that afterwards detailed notes can be made. This requires the interviewer to be perceptive and sensitive to events, so that lines of inquiry can be changed and adapted during the interview. Above all, interviewers need to be able to listen, and to refrain from projecting their own opinions or feelings into the situation. This is more difficult than it sounds, since one of the ways of obtaining trust is to empathize with the respondent. The

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interviewer needs to listen to what interviewees want to say, and what they do not want to say, without helping them (Mayo, 1949).

The interviewer needs also to understand the importance placed on the social interaction between interviewer and interviewee. Jones suggests people will attribute meaning and significance to the particular research situations they are in. The questions an interviewer may ask and the answers an interviewee gives will often depend on the way in which their situations are defined (Jones, 1998).

According to Jones, preliminary telephone calls are best followed up by letter. This fulfils three purposes. One is credibility, especially if the letter is on the notepaper of an independent body such as a university. Secondly, it may assist cooperation in the future; and thirdly, it provides the opportunity to send further details about the research. This, says Jones, is the opportunity to set out in detail what is required. The location of the interview and the setting in which it takes place can also be important (Jones, 1998).

Tripp notes that there is also the question of the effects of using audio tape recording in interviews. The decision on whether or not to use a tape recorder depends much on an interviewee's anxiety about confidentiality and the use to which any information divulged could be put. The deciding factor should not be whether or not to tape, or whether permission will or will not be given, but rather what effect its use will have on the interview interaction in terms of the relationship and the data created (Tripp, 1983).

Patton points out that the relevance of the research to interviewees is another factor that will affect the quality of the data provided. In addition, interest and

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commitment shown by the interviewer often produces far better results than clinical detachment. This can be achieved in several practical ways. One way is by conducting more than one interview, or by offering the interviewee the opportunity to comment on the transcripts of the tape or on completed field notes. Another is to offer interviewees a summary of the results or conclusions, and to make sure that one is sent to them. These strategies are not just 'ploys' to obtain compliance with a researcher's wishes; they can, for example, form important ways of validating data and gaining new insights (Patton, 1990).

Twelve agencies throughout the United States that had responsibility for domestic preparedness against terrorist attack were telephoned and requested to provide assistance in the study. The interviews were briefly described as part of a larger study to determine strategies to mitigate the impact of terrorist attack against the urban built environment. Agencies were asked for access to a key person on their staff, usually by name based on earlier identification of someone with specific policy-making responsibility, who might be interviewed about their judgments on terrorist mitigation strategies. Telephone contact was made with the representative to confirm their willingness to participate and an interview time was arranged. All interviews took place during the five month period between May 20th, 2000 and October 31st, 2000.

The interview was conducted in either the participant's office or another quiet, private area within the agency. During the initial two to three minutes of conversation the researcher focused on gaining a professional rapport with the manager, and answered any questions the manager had about the study, confidentiality, and taping

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of the interview. All interviewees were assured that their comments would be kept confidential and, if used as a verbatim comment in the written study, no identifying information would be used.

In all interviews, the tape recorder was placed in an unobtrusive location between the two persons. The tape ran throughout the entire interview and upon completion of the formal interview, the tape was turned off and the researcher asked if the manager had further comments/questions, responded as necessary, and ended the meeting. The taped interviews ranged from 20 to 40 minutes, and were transcribed verbatim.

The broad question, "where do you think cities in general are most vulnerable to terrorist attack?" was used to initiate the interview. Techniques to seek elaboration on specific areas were used (Babbie, 1973), such as "how are they vulnerable to biological (chemical, nuclear, conventional) weapons," "what makes water supplies vulnerable targets," "what would you suggest as an effective strategy to meet this vulnerability." The more focused questions listed on the interview format were used as follow-up in areas that had not been mentioned or where the interviewee needed more structured questioning to focus their thoughts. These interview data provided information about the vulnerability of infrastructure to terrorist attack and suggested strategies to address these vulnerabilities.

DATA ANALYSIS PROCEDURES

The analysis was based on what Marshall & Rossman (Marshall, 1989) call data "reduction" and "interpretation," where a large amount of information is reduced

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to key patterns, categories and themes, and then interpreted. Tesch (Tesch, 1990) calls this process "de-contextualization" and "re-contextualization;" a process resulting in a "higher level" analysis. According to Tesch, "While much work in the analysis process consists of 'taking apart,' the final goal is the emergence of a larger, consolidated picture" (Tesch, 1990).

ANALYSIS OF THE INTERVIEWS

Data analysis of the interview transcriptions included identification of the vulnerabilities of the urban built environment to terrorist attacks. The coding procedure used to reduce the information to categories is one recommended by Tesch; "segmenting" the information and then generating categories (Tesch, 1990) (Marshall, 1989) through a systematic process of analyzing textual data. All phrases or bullets of data that indicated a vulnerability were lifted from the interview in verbatim form. A master list of phrases/sentences was then organized to reflect categories of like items. Judgments of which items were similar were made based on the researcher's background knowledge of both terrorism and the urban built environment.

RELIABILITY AND VALIDITY

Validity and reliability related to the qualitative methodologies used in the study are reviewed here, specifically validity of the qualitative data collection methods and the predictive validity of these qualitative techniques. As Kirk and Miller (Patton, 1990) point out, the language of validity and reliability was originally

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developed for use in quantitative social science, and many procedures have been devised for assessing different facets of each.

According to Lincoln & Guba, there are several canons that can be phrased as questions to which all research must respond (Lincoln, 1985). First, how credible are the particular findings of the study? By what criteria can we judge them? Second, how transferable and applicable are these findings to another setting or group of people? Third, how can we be reasonably sure that the findings would be replicated if the study were conducted with the same participants in the same context? And, fourth, how can we be sure that the findings are reflective of the subjects and the inquiry itself rather than a creation of the researcher's biases or prejudices?

Lincoln and Guba (Lincoln, 1985) refer to these questions as establishing the "truth value" of the study, its applicability, consistency, and neutrality. They point out that every systematic inquiry into the human condition must address these issues. Although Lincoln and Guba match these terms to the conventional positivist paradigm - internal validity, external validity, reliability, and objectivity - they then demonstrate how inappropriate these constructs are for naturalistic or qualitative inquiry.

Lincoln and Guba propose four alternative constructs that more accurately reflect the assumptions of the qualitative paradigm. The first is *credibility,* in which the goal is to demonstrate that the inquiry was conducted in such a manner as to ensure that the subject was accurately identified and described. The inquiry then must be "credible to the constructors of the original multiple realities. According to Lincoln & Guba, the strength of the qualitative study that aims to explore a problem

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or describe a setting, a process, a social group, or a pattern of interaction will be its validity. An in-depth description showing the complexities of variables and interactions will be so embedded with data derived from the setting that it cannot help but be valid. Within the parameters of that setting, population, and theoretical framework, the research will be valid (Lincoln, 1985).

The second construct Lincoln and Guba propose *is transferability,* in which the burden of demonstrating the applicability of one set of findings to another context rests more with the investigator who would make that transfer than with the original investigator. Kennedy (Kennedy, 1979) refers to this as the second decision span in generalizing. That is, the first decision span allows the researcher to generalize the findings about a particular sample to the population from which that sample was drawn (assuming adequate population specification and random selection of the sample). The second decision span occurs when an investigator wants to apply the findings about the population of interest to a second population believed or presumed sufficiently similar to the first to warrant that application. This second decision span entails judgments about the relevancy of the first study to the second setting.

According to Lincoln & Guba, a qualitative study's transferability or generalizability to other settings may be problematic. The generalization of qualitative findings to other populations, settings, and treatment arrangements - that is, its *external* validity - is seen by traditional canons as a weakness in the approach. To counter challenges, the researcher can refer back to the original theoretical framework to show how data collection and analysis will be guided by concepts and models. By doing so, the researcher states the theoretical parameters of the research. Then those

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who make policy or design research studies within those same parameters can determine whether or not the cases described can be generalized for new research policy and transferred to other settings, while the reader or user of specific research can see how research ties into a body of theory (Lincoln, 1985).

Lincoln & Guba note that one additional strategic choice can enhance a study's generalizability: triangulating multiple sources of data. Triangulation is the act of bringing more than one source of data to bear on a single point. Derived from navigation science, the concept has been fruitfully applied to social science inquiry (Denzin, 1978) (Jick, 1979) (Rossman, 1994) (Rossman, 1985). Data from different sources can be used to corroborate, elaborate, or illuminate the research in question (Rossman, 1985). Designing a study in which multiple cases, multiple informants, or more than one data gathering method are used can greatly strengthen the study's usefulness for other settings.

The third construct discussed by Lincoln & Guba is *dependability,* in which the researcher attempts to account for changing conditions in the phenomenon chosen for study as well as changes in the design created by increasingly refined understanding of the setting. This represents a set of assumptions very different from those shaping the concept of reliability. Positivist notions of reliability assume an unchanging universe where inquiry could, quite logically, be replicated. This assumption of an unchanging social world is in direct contrast to the qualitative/interpretive assumption that the social world is always being constructed, and the concept of replication is itself problematic (Lincoln, 1985).

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The final construct, *confirmability,* captures the traditional concept of objectivity. Lincoln and Guba stress the need to ask whether the findings of the study could be confirmed by another. By doing so, they remove evaluation from some inherent characteristic of the researcher (objectivity) and place it squarely on the data themselves. Thus the qualitative criterion is: Do the data help confirm the general findings and lead to the implications? This is the appropriate qualitative criterion (Lincoln, 1985).

According to Marshall (Marshall, 1985a) qualitative research does not pretend to be replicable. The researcher purposefully avoids controlling the research conditions and concentrates on recording the complexity of situational contexts and interrelations as they occur. The researcher's goal of discovering this complexity by altering research strategies within a flexible research design, moreover, cannot be replicated by future researchers, nor should it be attempted.

Marshall says that qualitative researchers can respond to the traditional social science concern for replicability by taking the following steps. First, they can assert that qualitative studies by their nature (and, really, all research) cannot be replicated because the real world changes. Second, by keeping thorough notes and a journal or log that records each design decision and the rationale behind it, researchers allow others to inspect their procedures, protocols, and decisions. Finally, by keeping all collected data in well organized, retrievable form, researchers can make them available easily if the findings are challenged or if another researcher wants to reanalyze the data (Marshall, 1985b).

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CHAPTER IV

RESULTS AND ANALYSIS

INTRODUCTION

This dissertation used multiple qualitative research methods to identify patterns of attack used by terrorists against urban targets in the United States. It began by creating an inventory of domestic terrorist attacks against the urban built environment over the past twenty years. Through careful analysis of each of the domestic terrorist attacks against the urban built environment, both successful and unsuccessful, shared patterns of attack were analyzed and vulnerabilities identified.

These shared patterns of attack and vulnerabilities identified in the case analysis formed the basis for the next part of the study. Using the trends identified through the cases, a review of the current literature on domestic terrorism preparedness was conducted. This review was very broad, and included not only the specific thirty cases that were the subject of this study, but a macro-level review of domestic preparedness given the constantly changing domestic and political environment. This macro-review was also necessary to provide a basis for understanding the threats posed by a domestic terrorist attack from those avenues not evident in the cases: i.e. other terrorist groups that may now pose a threat but were not represented in the thirty cases studies, or the very significant threat posed by Weapons of Mass Destruction – weapons greatly feared by those charged with preparing our cities for domestic terrorist attack, but not used against urban targets to date.

The product of the case studies and review of the literature on domestic terrorism preparedness was an understanding of what had previously happened and

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what was currently being considered as means to mitigate domestic terrorist attacks against the urban built environment. This provided a basis for developing the broad questions for the interviews. Expert testimony was gathered through interviews with experts in terrorism, design, and emergency management. An explanatory letter was mailed to the participants to describe the purpose and extent of involvement in the interview process, the method of selection, and to secure the participant's agreement to participate. Follow-up telephone contact was made.

The interviews aided in identifying weaknesses in the current urban environment, discussed cutting-edge plans to mitigate domestic terrorist attacks on the urban built environment, provided a deeper understanding of the problems faced in preparing urban areas for terrorist attacks, and refined the initial suggestions for reducing the severity of terrorist attack developed previously through the case study of incidents and literature review.

FINDINGS

General Trends In American Terrorism

Law enforcement experts theorize that there are three types of terrorist organizations active in the United States; ethnic separatist and émigré groups, left-wing radical organizations, and right-wing racist, anti-authority survivalist-type groups (Hoffman, 1986). The threat posed by these domestic terrorist groups is not negligible.

Terrorist acts steadily increased in America during the early part of the 1980s. The increase in terrorism on American soil during the early 1980s was the primary

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catalyst for the escalation of the FBI's counter-terrorism program to a Priority 1 program in late 1982. Whether or not these changes had a major impact on future levels of American terrorism is hard to assess. The deterrent effect of most law enforcement initiatives is extremely difficult to measure empirically. In this instance, however, strong circumstantial evidence exists that the hardened governmental attitude had a profound impact on the level of American terrorism for the remainder of the decade.

The number of terrorist incidents dropped approximately forty percent in 1983 from that of the previous year. Although the number of terrorist victims killed during 1983 reached an all-time high, decreases in subsequent years suggest that increased FBI expenditures on counter-terrorism and the expansion of domestic security investigations begun that year had a substantial adverse effect on terrorism in this country. In a three-year period, the number of acts of terrorism fell from a record fifty-one in 1982 to only seven in 1985 (FBI Terrorist Research and Analytical Center, 1985).

Although leftist terrorists on the East Coast, right-wing affiliates of the Christian Identity Movement, and Puerto Rican extremists all suffered major blows during 1984 and 1985, by 1986 several of the organizations had regrouped and embarked on a renewed campaign of terror. Twenty-five acts of terrorism were committed during 1986, most of which were carried out by Puerto Rican nationalists. Neo-Nazis carried out five bombings in the Coeur d'Alene, Idaho area. The most violent and successful of the terrorists during 1986 were Jewish extremists. Although only committing two of the twenty-five incidents, they were responsible for seventeen

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of the nineteen injuries that occurred that year from terrorist bombings and assassination attempts (FBI Terrorist Research and Analytical Center, 1987).

By 1987, federal indictments began to have a major effect on the leadership and organizational management of domestic terrorist groups in America. The leaders of right-wing terrorist groups were either in prison or awaiting trial. The Aryan Nations, the CSA, the White Patriot party, and the Order were all in states of disarray because of FBI operations and federal indictments. Similarly, members of the major leftist terrorist groups, the UFF and M19CO, were awaiting trials in Boston and in Washington, DC. Even the previously immune leaders of the Macheteros in Puerto Rico found themselves under federal indictment in Hartford (FBI Terrorist Research and Analytical Center, 1988).

With terrorist groups attempting to reorganize and recruit to replace lost personnel, acts of terrorism waned during the late 1980s. The number of incidents dropped from twenty-five in 1986 to only nine in 1987 and eventually to a decade low of four in 1989. Had it not been for the emergence of the environmental terrorists during the closing years of the decade, terrorism in America would have been virtually non-existent during the late 1980s. The number of persons killed or injured because of terrorism also reflects this trend. The last three years of the decade witnessed no injuries or deaths due to terrorist bombs or assassins (FBI Terrorist Research and Analytical Center, 1990). Although the number of terrorist incidents increased to seven in 1990, that was the fourth consecutive year in which America experienced no deaths or injuries due to terrorism (FBI Terrorist Research and Analytical Center, 1991).

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In the 1990s, domestic terrorist attacks claimed more American lives than they did in any other decade. The Gulf War, continued forays into Iraq, right-wing extremists, Muslim fundamentalists, and anti-abortion activists all contributed to significant loss of life and property. Weapons of Mass Destruction were, for the first time, a genuine concern as a possible terrorist tool. Legislation was introduced to provide funding for domestic terrorism awareness and first-responder training, and initial steps were and are being taken to prepare for domestic terrorist attacks. Table 2 on the following page presents a list of the terrorist attacks against the urban built environment chosen for this study. The attacks listed are consistent with the selection criteria for domestic terrorist attacks against the urban built environment outlined in Chapter III. A more detailed description of each of these attacks is provided in Appendix A.

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TABLE 2.
INCIDENTS OF TERRORIST ATTACKS AGAINST THE DOMESTIC URBAN BUILT ENVIRONMENT DURING THE PAST TWENTY YEARS

	DATE	PLACE	INFRASTRUCTURE	METHOD	PERPETRATOR
1	March, 1999	Asheville, North Carolina	Building – Women's clinic that performed abortions	Bomb	Anti-abortionists
2	July, 1997 (a)	New York City, New York	Subway	Bombs	Muslim extremists
3	July, 1996	Atlanta, Georgia	Park	Pipe bomb	Unknown
4	April, 1995	Oklahoma City, Oklahoma	Building	Car bomb	Right-wing anarchists
5	June, 1993	New York City, New York	Building, tunnels	Bomb	Muslim extremists
6	February, 1993	New York City, New York	Building	Van bomb	Muslim extremists
7	July, 1990	Houston, Texas	Chemical storage tanks	Bombs	Muslim extremists
8	June, 1990	Miami, Florida	Building	Bomb	Cuban extremists
9	February, 1989	Berkeley, California	Building	Fire bomb	Muslim extremists
10	May, 1988	Miami, Florida	Building	Pipe bomb	Cuban extremists
11	April, 1988 (a)	New York City, New York	New York City subway system	Bombs	Japanese Red Army
12	May, 1987	New York City, New York	Building	Fire bomb, pipe bomb, tear gas	Jewish Defense League
13	October, 1986	New York City, New York	Building	Fire bomb	Jewish Defense League
15	September, 1986	Coeur d' Arlene, Idaho	Buildings	Bombs	White supremacists
15	June, 1985	Houston, Texas	Building (mosque)	Pipe bombs	Anti-Muslim faction
16	December, 1983	East Meadow, New York	Building	Bombs	United Freedom Front
17	July, 1983	Portland, Oregon	Building	Bomb	Anti-Rajneesh faction
18	January, 1983 (t)	Abbeville & Delcambre, Louisiana	City water supply	Poisoning by cyanide	Unknown
19	December, 1982	New York City, New York	Buildings	Bombs	FALN – Puerto Rican nationalists
20	December, 1982	Westchester County, New York	Building	Bomb	United Freedom Fighters/United Freedom Federation
21	December, 1982	Elmont, New York	Building	Bomb	United Freedom Fighters/ United Freedom Federation
22	September, 1982	New York City, New York	Building	Bomb	FALN – Puerto Rican nationalists
23	July, 1982	New York City, New York	Building	Pipe bomb	Croatian Freedom Fighters
24	July, 1982	New York City, New York	Building	Pipe Bomb	Croatian Freedom Fighters
25	March, 1982	New York City, New York	Buildings	Bombs	FALN – Puerto Rican nationalists
26	February, 1982	New York City, New York	Buildings	Bombs	FALN – Puerto Rican nationalists
27	February, 1982	New York City, New York	Building	Bomb	FALN – Puerto Rican nationalists
28	February, 1982	New York City, New York	Building	Bomb	FALN – Puerto Rican nationalists
29	February, 1982	New York City, New York	Building	Bomb	FALN – Puerto Rican nationalists
30	February, 1982	Rio Piedras, Puerto Rico	Building	Bombs	Puerto Rican nationalists

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General Conclusions About Trends

According to the data developed for this study in the case analyses, four distinct patterns of American terrorism and counter-terrorism emerged during the 1980s and 1990s. First, the period began with terrorism at an all-time high, followed by intense federal initiatives to combat the problem. Second, by the mid-1980s, as successful federal prosecutions decimated terrorist organizations in the United States, some groups tried to rebound from the devastation of arrests and indictments by staging retaliatory strikes. These efforts generally were short-lived and represented short-term increases in the decade's statistics. Third, the decade closed on an ominous note with the arrival of environmental terrorism. Finally, during the 1990s right wing and international terrorist groups made a spectacular resurgence, most visible in the Kansas City and World Trade Center bombings.

Unlike many types of crimes, terrorism occurs rather infrequently and is committed by relatively few persons. Terrorist organizations typically are not as large or as well entrenched in legitimate business activities as most organized crime groups. Consequently, the effect of intense federal intervention efforts is felt more critically by terrorist groups than by traditional organized crime elements. Federal criminal investigations into some organized crime groups occasionally net the leaders of these organizations incidental to law enforcement efforts. Unfortunately, many of these underworld organized crime groups are so large that their leaders are quickly replaced by aspiring, younger protégés. The organizational structure of the group remains intact despite the loss of its leadership, and the group's criminal enterprises continue unabated. Terrorist groups generally are not so fortunate. The arrests and indictments

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of the leaders of relatively few terrorist organizations can have a dramatic impact on terrorism statistics.

In Puerto Rico, the rather large infrastructure and support groups of extreme nationalist groups account for the ability of Puerto Rican terrorist groups to continue operations. On the other hand, levels of terrorism in the western United States remained high due to changes in the types of groups that operated in that area.

Who Were The Terrorists?

The answer to this question has changed significantly over the 20-year period that spans the cases used in this study. The research showed that there are dramatically fewer international terrorist incidents than in the mid-eighties. Many of the groups that targeted America's interests, friends, and allies have disappeared. The Soviet bloc, which once provided support to terrorist groups, no longer exists. Countries that once excused terrorism now condemn it. This changed international attitude has led to 12 United Nations conventions targeting terrorist activity and, more importantly, growing, practical international cooperation.

Threats From Abroad

Although most of the world's countries are firmer in opposing terrorism, some still support terrorists or use terrorism as an element of state policy. Iran is the clearest case. The Revolutionary Guard Corps and the Ministry of Intelligence and Security carry out terrorist activities and give direction and support to other terrorists. The regimes of Syria, Sudan, and Afghanistan provide funding, refuge, training bases, and

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weapons to terrorists. Libya continues to provide support to some Palestinian terrorist groups and to harass expatriate dissidents, and North Korea may still provide weapons to terrorists. Cuba provides safe haven to a number of terrorists. Other states allow terrorist groups to operate on their soil or provide support which, while failing short of state sponsorship, nonetheless gives terrorists important assistance.

Increased Lethality

The data showed that terrorist attacks have become more lethal during the period included by the cases meeting the criteria for this study. The bombings of the World Trade Center and the Murrah Building in Oklahoma were the most visible. One of the respondents pointed out that:

> Most terrorist organizations active in the 1970s and 1980s had clear political objectives. They tried to calibrate their attacks to produce just enough bloodshed to get attention for their cause, but not so much as to alienate public support. Groups like the Irish Republican Army and the Palestine Liberation Organization often sought specific political concessions, yet this has changed over the past ten years.

The more recent cases studied for this dissertation showed that a growing percentage of terrorist attacks were designed to kill as many people as possible. In the 1990s a terrorist incident was almost 20 percent more likely to result in death or injury than an incident two decades ago (calculated from casualty figures obtained from case analysis data used in this study). The World Trade Center bombing in New York killed six and wounded about 1,000, but the terrorists' goal was to topple the

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twin towers, killing tens of thousands of people (Mickolus, 1993). The thwarted attacks against New York City's infrastructure in 1993-- which included plans to bomb the Lincoln and Holland tunnels-- also were intended to cause mass casualties (Mickolus, 1993).

Domestic Terrorist Groups

Analysis of the cases used in this study showed that, unlike many international terrorist groups, the groups operating from a domestic base in the United States function more on emotional issues than on deeply entrenched political ideologies. Said one of the participants in this study,

> Members of radical international groups often were born and raised in a society that supports their view of the United States, or some other outside entity, as an evil force. By contrast, members of domestic radical groups usually were loners whose beliefs garner little support from mainstream American society.

In these cases, such emotional variables as fear, anger, or hatred motivate group membership and methods of operation. The emotional responses of domestic groups appear to be significantly less entrenched and thus more transient than the ideological beliefs of their overseas counterparts. Still, their destructive nature remains strong.

National/Geographic Affiliation

Analysis of the data used for this study showed that almost two-thirds of the terrorists implicated in domestic attacks against the urban built environment were

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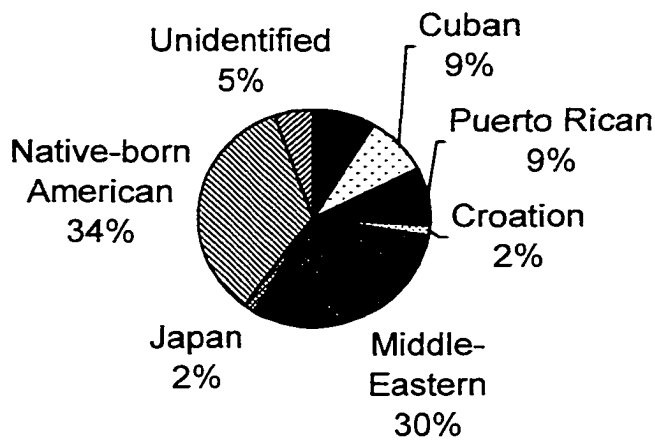
native-born Americans. Of these, slightly less than one-third were Puerto Rican, and two held dual citizenship and strong ties to Israel. The next largest group, those of Middle Eastern residency, accounted for one-sixth of all domestic terrorist attacks. Examination of all attacks showed residency in only a handful of countries/areas. These were the United States (to include Puerto Rico), the Middle East/Africa (Egypt/Sudan/Libya/Jordan/ Lebanon/Iraq/Iran/Pakistan), Cuba, Japan, and Croatia. Figure 3, below, provides a depiction of terrorist residence or regional affiliation.

Figure 3. National/Geographic Affiliation



No clear conclusions can be drawn about national/geographic affiliation and the domestic urban terrorist for several reasons common to clandestine operations. Investigations of terrorist cells have shown a confusing pattern of linkages to countries. For instance, terrorists who are American residents may be recruited by an Egyptian-based group, trained in Sudan, and funded by Afghans who are in turn

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funded by Saudis (this seems to have been the case with terrorists involved in attacks and attempted attacks in New York City, and continues to be a common pattern, particularly with Usama Bin Laden's group). Another reason is the commonality of multiple passports and long periods of residency in several countries. For instance, several extremist Jewish groups' members hold dual American/Israeli citizenship, and frequently live for long periods in different countries.

Cause Identification of the Domestic Terrorists

The cases analyzed for this study showed that there three major divisions in the "causes" that domestic urban terrorists ascribed to. These are either political causes, ethno-religious causes, or non-specific left-wing terrorism. Although there is some degree of overlap, for example, Puerto Rican terrorist actions may be considered either political or ethnic – in this study they have been considered ethnic because these Puerto Rican groups believe that their ethnicity is the root cause for their failure to gain independence from the U.S., the division is generally clear. Political causes involved either Cuban or Croatian liberation, or anarchistic causes. Ethno-religious causes included Jewish militant responses to perceived anti-Semitism; Jewish actions against Russian targets in the U.S.; Puerto Rican independence; attacking the decadent Western influence and culture; anti-Muslim reactions; killing those who performed abortions; and Rajneesh and anti-Rajneesh reactions.

The third grouping, non-specific left wing terrorism, consists of terrorist acts committed by groups espousing broad left wing ideologies such as "freedom for the

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workers" reminiscent of the groups operating worldwide in the 1960s and 70s (Japanese Red Army, United Freedom Front).

The Ideology of Terrorists: Attacks from Throughout the Political Spectrum

Detailed analysis of the thirty terrorist attacks against the domestic urban built environment over the past twenty years showed that the terrorists had widely varying political orientations. Some were right-wing religious zealots that included anti-abortionists or anarchists, four were by left-wing extremists, five attacks were by Muslim extremists, two attacks were by persons unknown, two were by Cuban extremist groups, two were by Jewish extremist groups, one was by white supremacists, one was by an anti-Muslim group, one was by an anti-Rajneesh faction, eight attacks were by Puerto Rican extremists and two were by Croatian extremists.

World events have overcome many of the political issues that provided the impetus for the domestic terrorist attacks. Yet new political issues present significant probabilities for new attacks against American cities. For example, in at least one of the attacks by Jewish extremist groups, the target was a building that was holding a reception for a Soviet dance troupe. In the case of the terrorist attacks by the Puerto Rican extremists, the incidents by this group ceased after all of its members were incarcerated (although all members were released last year by order of then President Clinton). A general conclusion that will be drawn here is that it is not very useful to implement strategies for mitigating terrorist attacks against the domestic urban built environment based on terrorist group identity or ideology, whose causes are often brought about, made volatile, and extinguished in a relatively short period.

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Personal Characteristics Of Domestic Terrorists

Age: Older than in Previous Studies

Previous research provided an often inaccurate demography of the terrorist (see Chapter II, Theories About Terrorist Identity: Extremists Right and Left). Virtually all studies of the personal traits of terrorists conclude (or assume) that the average terrorist is young, usually between twenty to twenty-five years old. (Russell, 1977) (Rubenstein, 1987) (National Governor's Association). A National Governors Association publication listed the average age of domestic terrorists as twenty (National Governor's Association). A review of the characteristics of those persons involved in the cases that were the subject of this study reveals, however, that the average age at indictment was considerably older -- thirty-five. While some of the crimes for which these persons were indicted took place when the individuals were much younger, the vast majority of offenses occurred during the year or two before indictment. The data used in this study showed the average age of the American terrorist would place him at no younger than thirty-two or thirty-three, again considerably older than previous estimates of all terrorists.

Prior studies included not only those involved in terrorism itself but also the remaining members of extremist groups. It may be that older, more experienced members are more likely to be involved in the actual terrorist incidents committed by a particular group. Another possible explanation, at least among leftist extremists in America, is that many of the leftist terrorists indicted in the last 20 years have been involved in terrorism for many years. Indeed, the data shows that many of the leftist

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extremists finally apprehended in the last 20 years had been involved with the "revolution" for a decade or more.

Terrorists from the Political Right are Significantly Older

According to data analyzed for this study, the ages of left- and right-wing terrorists differed significantly. The average age of right-wing terrorists involved in the incidents under study was thirty-nine, higher than the average age either of domestic left-wing group members or of international terrorists. Over one-third of the right-wing terrorists were over forty. In contrast, less than 20 percent of the leftist terrorists were over forty. Much of this difference is found in the leadership of the Christian Identity Movement. Four of those acquitted at the national trial of white supremacists in 1988 were over sixty years old. Aryan Nations leader Richard Butler, Order member Artie McBrearty, KKK leader Robert Miles, and CSA member William Wade were over sixty years old, while the most active of the white supremacists, Richard Scutari, was only thirty-nine at the 1988 trial. Members of the UFF were all under forty at their indictment in 1986.

Terrorists from the Left were also older than portrayed in previous studies. Levasseur, leader of the UFF, was thirty-nine at his indictment in 1986; Marilyn Buck of Weather Underground and M19CO fame was forty at her indictment in 1987. Even examination of the Puerto Rican separatist groups, the FALN and the Macheteros, as well as members of the El Rukns, the NAFF, and other leftists indicted for terrorist activities reveals a membership averaging in their thirties. Fifty percent of the leftist

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extremists indicted for terrorist-related activities during the last 20 years were between thirty-one and forty years old.

Gender

While terrorism remains a predominantly male phenomenon, the proportion of females involved in the cases that were the subject of this study was far greater than in traditional crime. Approximately 5 percent of America's prison population are females (Bureau of Justice Statistics, 1998) while slightly over 12 percent of the persons indicted for terrorist-related activities for the cases under study were females (calculated from case analysis data used in this study). If international terrorists are excluded, the percentage is even greater. Of 131 persons indicted for domestic terrorism, twenty (15 percent) were females (calculated from case analysis data used in this study).

According to the data, substantial differences exist between leftist and rightist groups regarding female involvement. It has been suggested that the role of women in terroristic violence in America is directly related to the ideological foundations of the groups to which they belong (Georges-Abeyie, 1987) (Holland, 1989). Of fifty-six leftist extremists indicted, slightly over one-fourth (27 percent) were females.

Extremists of the Left have a long history of advocating egalitarianism. Some groups like M19CO are predominantly female: Marilyn Jean Buck, Susan Lisa Rosenberg, Laura Whitehorn, Linda Sue Evans, and Elizabeth Duke all have played major roles in the activities of that group. Similarly, almost half of the members of the UFF and the NAFF were females. Female participation within Puerto Rican separatist

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groups was substantially lower, just over 10 percent, but is still higher than levels of female participation within rightist groups.

Among the right-wing terrorist groups that were the subject of this study, females presented an interesting dilemma. Although many right-wing extremists moved their wives and children to remote survivalist camps, it did not appear that these women became involved in actual terrorist or criminal acts with nearly the same frequency as those among leftist groups. Only five of the seventy-five (7%) right-wing extremists indicted for terrorist-related activities were females. In almost all of these cases, the women were married to active members of violent elements of the extreme right (calculated from case analysis data used in this study). Only two played major roles in terroristic violence: Margaret Jean Craig performed the surveillance on Allen Berg prior to his assassination, and Deborah Dorr, along with her husband, was a leader of the Order 11.

Ethnicity: Color on the Left, White to the Right

According to one of the participants, "members of minority groups are more likely than whites of English heritage to believe that they have been exploited by American expansionism and colonialism." The case studies used in this research also suggested that this belief permeates the violent left in America. Consequently, these groups have been able to attract a large following of minority group members. According to the data developed for this study from the case analyses, nearly three-fourths (71 percent) of the leftists indicted for terrorist-related activities were minorities. The NAFF and the El Rukns are all-black groups; the Macheteros and

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FALN are overwhelmingly comprised of white Hispanics; even the violent members of the M19CO, the UFF, and the Provisional Party of Communists are racially mixed.

In contrast, the data showed that violent extremists of the Right, with their religiously based beliefs in the superiority of the Aryan race, are virtually all white. Of seventy-five members of the extreme right indicted for terrorist-related activities, only two claimed to be of other than Aryan extraction. William Wade and his son, Ivan, both affiliated with the CSA and the SPC, listed their ethnic background at their 1987 trial as American Indian. The Wades claimed to be descendants of the Wade clan of tribal Indians who came into the Oklahoma territory in the 1800s. Consistent with the beliefs of SPC members, they maintained that the federal court at Fort Smith had no jurisdiction over their activities. With an abiding hatred for blacks and Jews and a disdain for federal policies allowing the immigration of Mexicans, Vietnamese, and other Asians, the extremists of the far Right leave little room for minority participation in their activities.

Education and Occupation: Not in Keeping with Previous Typographies of the "Typical" Terrorist

Previous research, discussed in Chapter II, often painted an inaccurate picture of the terrorist. For instance, the National Governor's Association study of terrorism concluded that terrorists are university educated, middle or upper class, and professionally trained (National Governor's Association). It described the characteristics of the American terrorist as: "an average age of 20; male and female; single or separated; middle or upper class; urbanites; university graduates; Marxist

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and anarchist in ideology; recruited at universities; and (composed of) students, lawyers, doctors, government employees, sociologists, and psychologists" (National Governor's Association). Russell and Becker described terrorists as being generally from middle or upper income families whose parents were predominantly professional or white-collar workers (Russell, 1977)(Becker, 1977).

The data gathered for this study showed, however, that while leftist terrorists in America closely resemble this description, violent extremists of the Right are significantly different. Although over half of the leftists indicted during the 1980s for terrorist activities were college or university graduates, only 12 percent of the right-wing terrorists held college degrees. A third of the violent extremists of the Right had not graduated from high school.

These educational differences resulted in significant differences in the occupations and incomes of the leftist and rightist group members. Violent leftist groups were more likely to have members who were physicians, attorneys, teachers, and even government workers. For example, the eighteen members of the Macheteros indicted in 1986 for the 1983 robbery of the Wells Fargo depot in West Hartford, Connecticut included Jorge Farinacci Garcia, Roberto Maldonero Rivera, and Paul Weinberg - all attorneys. Most of the remaining indictees in this case have university degrees in political science, sociology, and anthropology and are employed as teachers, occupational therapists, and independent artisans.

The cases involving members of M19CO and the NAFF reveal similar educational and occupational backgrounds. M19CO member Alan Berkman is trained as a physician, while his associate, Susan Lisa Rosenberg, is the daughter of a

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prominent physician. NAFF leader Coltrane Chimurenga, previously known as Randolph Simms, pursued his doctorate at Harvard University, while other members of the group, most of whom have college degrees, were employed in government service.

By contrast, violent extremists associated with the Christian Identity Movement are much less likely to be college educated. Although some of the leaders of the various groups are well educated, many cadre members lack even minimal educational and job skills. The better educated members of these groups have evolved, of course, as leaders of the extreme right - Richard Butler, head of the Aryan Nations, is an engineer as is Wilhelm Schmitt of the SPC.

The generally lower educational and job skills of the extreme right required group members to rely more heavily on petty theft and robbery to finance their operations. In fact, many of the members of these groups were drawn to these organizations by the lure of a place to stay and a modest monthly salary in exchange for work at the compounds.

Summary of Who the Terrorists Are

This study found that one major threat to American urban areas comes from terrorists who may be from one of a handful of largely, but not exclusively, Middle Eastern countries that provide state support to those organizations who espouse terrorism. Yet, in contrast to previous theories about the demography of terrorists, it was found that terrorism in the United States during the last two decades was not overwhelmingly leftist. While persons advocating Marxist revolution have done their

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share of terrorism in America, a substantial number of those involved in terroristic violence in this country during the past decade have been members of or associated with right-wing groups.

However, the terrorist groups that were active in the United States during the past two decades closely fit the descriptions provided in the theoretical groupings of Flemming, Stohl and Wilkerson previously described in Chapter II (Flemming, 1988)-(Wilkinson, 1987). The data used in this study showed that left- and right-wing extremists involved in terrorism in America, for example, differ significantly in certain characteristics and traits. Yet the similarities within the categories are sufficient to allow generalizations to be made about groups falling within one or the other categories. Unlike the concerns raised by Flemming and Stohl, these categories are unlikely to result in different observers assigning groups to inappropriate categories; in other words, they are generally reliable. The characteristics used to distinguish various terrorist groups are mutually exclusive and of functional utility for predicting terrorist activities. The contrasting ideological traits of left- and right-wing groups in America produce interesting demographic distinctions between the two categories.

According to the data used in this study, with the exception of the single-issue terrorist (e.g., animal rights activists), Americans indicted for terrorism or terrorist related activities fall readily into one of these two categories. The right-wing groups are easiest to label since most are tied together by the Christian identity Movement. The Aryan Nations; Arizona Patriots; CSA; various factions of the Ku Klux Klan; the Order and Order II; SPC; and the White Patriot Party fit this category. However,

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Flemming notes that simply labeling the remaining groups as leftist presents some problems. The El Rukns, Macheteros, FALN, M19CO, UFF, New African Freedom Front (also known as the New African Freedom Fighters or NAFF), and the Provisional Party of Communists are different from each other in many ways. For example, one might think that the El Rukns street gang would have little in common with Puerto Rican independence groups like the FALN and the Macheteros. Yet on a number of major identifying characteristics all of these groups bear striking resemblances. In particular, the data used in this study show left-wing terrorists in America are bound together by at least five major similarities: 1) their ideology and beliefs about human nature; 2) their views on economics and the distribution of wealth; 3) their bases of operations; 4) their tactical approach; and 5) the targets they select.

The data gathered in this study shows terrorists that threaten America tend to be older than previously thought by scholars, with those from the right being somewhat older than terrorists from left wing organizations. Women play an important role in terrorist organizations that threaten the urban built environment.

Recent terrorist attacks have shown that domestic attacks are much more lethal than those in the past, often with terrorists trying to kill as many Americans as possible. There is no one, clear political ideology of terrorists who pose a threat to American urban infrastructure. Table 3, below, compares domestic terrorists who have attacked urban infrastructure by ideology. All data is obtained from the population fitting the criteria for this study.

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TABLE 3.
DEMOGRAPHIC CHARACTERISTICS OF THE STUDY POPULATION OF TERRORISTS BY POLITICAL ORIENTATION/IDEOLOGY
1980-2000

Variable	Left-wing Terrorist Groups	Religiously-oriented Terrorist Groups	Right-wing Terrorist Groups
Age	Average: 34	Average: 33	Average: 39
Gender	73% male 27% female	92% male 8% female (female presence in anti-abortionists and anti-Rajneesh only)	93% male 7% female
Ethnicity	71% non-white 29% white	60% non-white/Middle Eastern 40% white (white presence in anti-abortionists, anti-Rajneesh and Jewish groups only)	100% white
Sponsorship	0% direct foreign government 20% indirect foreign (Japanese Red Army, Red Brigade, Croatian Liberation) 20% non-foreign (Black, Puerto Rican)	15% direct foreign government (Libya, Yemen, Sudan, PLO) 65% indirect foreign (Usama bin Laden, Hamas, Hezbollah) 20% unknown	0% direct foreign government 0% indirect foreign 10% unknown 90% non-foreign (KKK, Aryan Nation, etc.)
Education	60% university	50% university	12% university
Occupation	Professional (lawyers, doctors, government employees, sociologists, psychologists)	White collar (government workers, clergy, etc.)	Blue collar, non-professional trades (electrician, plumber, farmer, etc) or unskilled.
National/ Geographic affiliation	50% Puerto Rican 5% Croatian 5% Japanese 40% native-born American (Black extremists)	60% Middle-Eastern 20% native-born American (anti-abortionists, anti-Rajneesh) 20% American, but with "other" origin (Jewish extremist)	90% native-born American 10% Cuban

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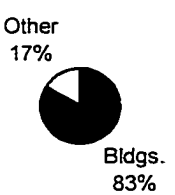
What Did The Terrorists Attack?

According to the data, the targets in the urban built environment chosen by terrorists for attack generally were buildings. Out of the thirty incidents that fit the criteria for this study, twenty-five targets were buildings. Other targets were subways (two incidents), a public park, a chemical plant, and a municipal water supply (Chart 2, below). Although one would conclude that buildings are the most likely target, it is important to consider the displacement effects of target hardening discussed in Chapter II of this study.

Chart 2. Domestic Targets



Targets generally followed broad categories based on the motives of the group or on the individual planning the attack. Domestic groups, including right-wing, issue-oriented, radical organizations and separatists, often chose targets for a specific purpose. Targets fell into two broad categories, some that overlap, depending on the motives of those planning the attack.

Symbolic or public message targets represent the first, the most common, and by far the largest, category. These were prominent landmarks, electrical utilities, pipelines, state and local government buildings, universities, certain federal government buildings, and businesses and industries involved in such areas as chemical production, animal research, forest or wood products, and refineries. One

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expert interviewed for this study described these types of structures as "signature" structures.

The second category included government-owned or -operated facilities. These consisted of tunnels, computer facilities, bridges and overpasses, maritime facilities (e.g., locks and harbors), and law enforcement buildings and support structures. These findings are consistent with Bowman's theories about what targets terrorists may choose to attack, discussed in Chapter II in the section "Theories About What the Terrorists May Attack: Targets."

The Potential of Defensible Space and Crime Prevention Through Environmental Design (CPTED)

The theories of Oscar Newman discussed in Chapter II suggest that designing for street crime and crimes of opportunity is going to reduce the opportunity for acts of terrorism. Newman's ideas were supported by both the experts interviewed for this study, as well as the current terrorism literature. CPTED must be part of the redesign process of courthouses, office buildings, and corporate America. CPTED represents a planning process that reduces the architectural vulnerability.

One of the participants interviewed for this study stressed

> security standards are needed for a minimum standard of care, just as fire disasters have created a uniform standard for fire protection. Protecting people, information, and property must be a high priority for all buildings. *The goals for designing to protect against terrorism are different than designing to resist crime but the process is the same...* (italics mine)

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After the World Trade Center was bombed in 1993, the principles of defensible space design were put into place there. In addition to concrete planters parking is no longer open to everyone. Tenant parking is tightly controlled and includes a hydraulic barrier - a latter-day drawbridge - lowered by a guard only after proper credentials are shown, and capable of stopping a truck at 50 miles an hour.

Even before the bombing of the World Trade Center, commercial parking in the country was being reviewed to prevent the 1,400 violent crimes that occur daily. The new garages favor fewer columns, larger spans, and high ceilings. They have flat floors, instead of sloping, blind ones and glass elevators to observe occupants and high lighting brightened further by painted ceilings.

Much of the movement toward safeguarding public spaces centers around rethinking them with a CPTED paradigm. Compare the Washington Metro, wide open for surveillance, to the New York City subway, closed-in and dim. The premise is that design can help reduce terrorism. Unlike high-tech security systems, successful design minimizes the opportunity for predatory crimes like burglary, robbery, rape, and murder, as well as terrorism, through more natural methods of surveillance and controlled access and design that fosters a sense of ownership in a given area.

According to the experts interviewed for this study, in high-risk security situations more sophisticated tools are needed. Ronald J. Massa, an engineer who is president of Lorron Corporation in Burlington, Mass., has developed BombCad, a software program designed to help architects and engineers determine whether a building will collapse from a bomb. The program takes analytical three-dimensional

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drawings of a building and simulates a bomb's effect, providing detailed estimates of injury and accidents. One interviewed expert advocates 10- to 20-foot "stand-off areas," or buffer zones around buildings and well-policed traffic "choke points," like the barricaded checkpoints in London's financial district.

One participant in this study with responsibility for assessing the vulnerabilities of buildings to terrorist attack pointed out that "the number-one source of property damage and injury in a bombing is falling and flying glass from the immediate building as well as from those nearby." A CPTED approach would suggest that a good tool for mitigating the effects of glass injury would be to increase in the use of laminated windows, in which soft plastic is bonded to a two-piece sandwich of glass to prevent shattering.

Liability Litigation Threatens the Creation of More Defensible Space

One of the participants interviewed for this study pointed out that

> The creation of basic minimum security standards (for buildings) is needed. The federal government has just recently established a minimum standard of care for federal buildings, but not even minimum standards apply to other buildings. Unfortunately, in the private sector,
> the threat of premises liability litigation has driven the major organizations for hotels and motels, shopping centers, retail association, and builder associations to try and block all efforts of minimum standards....

A legal and physical benchmark would put all of corporate America on notice to make their buildings safe against terrorism, not just the remote occurrence of fire.

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Insurance companies are strongly supporting standards that they could measure a business against and reduce their losses.

When and Where Did The Terrorists Attack Their Urban Targets?

Most terrorist attacks against the domestic urban built environment took place in mid-morning or mid-evening, although there were incidents across the whole spectrum of the clock. General predictions of the most likely time for a domestic terrorist attack cannot be made.

The most common area of the country for domestic terrorist attacks against the urban built environment is New York City. Although attacks against the urban built environment took place throughout a wide range of places around the country, almost two-thirds of the attacks were on targets in New York City or its immediate surroundings. Several factors could contribute to New York's high incident count. One may be its status as a "World City," with the plethora of media channels that can immediately broadcast associated terrorist platforms to the world. Another factor may also be related to New York's "World City" status – the constant filtering in and out of policymakers and international events on the world stage – all making an attractive venue for terrorist actions.

The selection of major, urban centers is consistent with current theory and leftist doctrine, particularly as described by Marighella in his classic work, *Mini-manual of the Urban Guerilla.* Here, Marighella describes the city as the ideal location for terrorist operations, and advocates an urban location for two reasons. Theoretically, it provided the opportunity to strike at the very seat of capitalism;

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tactically, it offered the anonymity of the crowd as a safe haven for its revolutionary members.

Why Did The Terrorists Attack?

The trend toward higher casualties, discussed earlier in this chapter, reflects, in part, the changing motivation of today's terrorists. Analysis of the cases used in this study showed that religiously motivated terrorist groups, such as Usama bin Ladin's group, al-Qaida, which is believed to have bombed the U.S. Embassies in Africa, represent a growing trend toward hatred of the United States. Other terrorist groups are driven by visions of a post-apocalyptic future or by ethnic hatred. Such groups may lack a concrete political goal other than to punish their enemies by killing as many of them as possible, seemingly without concern about alienating sympathizers. Increasingly, attacks are less likely to be followed by claims of responsibility or lists of political demands.

The data suggests that the shift in terrorist motives has contributed to a change in the way some terrorist groups are structured. Because groups based on ideological or religious motives may lack a specific political or nationalistic agenda, they have less need for a hierarchical structure. Instead, they can rely on loose affiliations with like-minded groups from a variety of countries to support their common cause against the United States.

Al-Qaida, a terrorist organization involved in several of the cases used in this study, is the best-known transnational terrorist organization. In addition to pursuing its own terrorist campaign, it calls on numerous militant groups that share some of its

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ideological beliefs to support its violent campaign against the United States. But neither al-Qaida's extremist politico-religious beliefs nor its leader, Usama bin Ladin, is unique. As one of the interviewed participants pointed out,

> ...if al-Qaida and Usama bin Ladin were to disappear tomorrow, the United States would still face potential terrorist threats from a growing number of groups opposed to perceived American world domination...

Moreover, new terrorist threats can suddenly emerge from isolated conspiracies or obscure cults with no previous history of violence.

Intelligence will continue to be an important first line of defense against the domestic terrorist. Coupled with the close ties to the local pulse fostered by a community policing approach to law enforcement, the evidence suggests the potential utility of monitoring trends and indicators. One of the interviewed experts pointed out that,

> the more loosely affiliated, transnational terrorist networks are difficult to predict, track, and penetrate. They rely on a variety of sources for funding and logistical support, including self-financing criminal activities such as kidnapping, narcotics, and petty crimes. Their networks of support include both front organizations and legitimate business and nongovernment organizations. They use the Internet as an effective communications channel.

How Did The Terrorists Attack Their Urban Targets?

Of the thirty domestic terrorist attacks against urban infrastructure that met the criteria for this study, twenty six used conventional explosives, three used fire bombs, and one was an attempt to poison an urban water supply. It was evident from the

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cases that guns and conventional explosives have so far remained the weapons of choice for most terrorists. Such weapons cause many casualties and are relatively easy to acquire and use. Yet the potential for the use of chemical, biological, or nuclear (Weapons of Mass Destruction) materials remains an ominous possibility that must be considered in plans to mitigate the effects of an attack on American cities. Several of the experts interviewed for this study noted that, while it is extremely difficult to predict the likelihood of a Weapons of Mass Destruction attack, today's terrorists "are seeking the ability to use such agents in order to cause mass casualties." This is consistent with Finding One, which noted that terrorist attacks are becoming more deadly.

Weapons of Mass Destruction give a non-state sponsored terrorist group significant technical challenges. Participants in the interviews noted that, while lethal chemicals are easy to come by, getting large quantities and weaponizing them for mass casualties is difficult, and only nation states have succeeded in doing so. Biological agents can be acquired in nature or from medical supply houses, but important aspects of handling and dispersion are daunting. To date, only nation states have demonstrated the capability to build radiological and nuclear weapons.

The 1995 release of a chemical agent in the Tokyo subway by the apocalyptic Aum Shinrikyo group demonstrated the difficulties that terrorists face in attempting to use Weapons of Mass Destruction to produce mass casualties. The group used scores of highly skilled technicians and spent tens of millions of dollars developing a chemical attack that killed fewer people than conventional explosives could have. The same group failed totally in a separate attempt to launch an anthrax attack in Tokyo.

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A small Weapons of Mass Destruction attack could be successful if the terrorists' goal is to challenge significantly Americans' sense of safety and confidence. Terrorists could acquire more deadly Weapons of Mass Destruction capabilities from another country. Five of the seven nations the United States identifies as state sponsors of terrorism have programs to develop Weapons of Mass Destruction.

The Gaps -- The Analysis Of Policy Initiatives Related To Domestic Terrorist Attacks Against The Urban Built Environment

Federal

According to both the current literature on domestic preparedness, as well as the comments of several experts interviewed for this study, the primary deterrent and investigative unit for matters associated with terrorist attacks has been federal law enforcement. A recurring comment from the interviews relating to law enforcement approaches was that "criminal acts of terrorism occur locally, but are generally investigated federally." Because of this trend, most contemporary local law enforcement officers confronted with a terrorist act would probably be unable to differentiate it from a traditional crime without assistance.

As one interviewed participant pointed out,

> there is a risk that, in preventing or responding to a catastrophic terrorist attack, federal officials may hesitate or act improperly because they do not fully understand their legal authority or because there are gaps in that authority....

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This comment is supported by the Government Accounting Office (GAO) in its report on Opportunities to Improve Domestic Preparedness Program Focus and Efficiency, which noted that federal agencies' individual efforts to enhance consequence management of possible incidents involving Weapons of Mass Destruction terrorism are not guided by an overarching strategy for achieving a defined end state (General Accounting Office, 1998).

The GAO noted that local officials in most of the cities visited for their study raised the issue that the many Weapons of Mass Destruction training, equipment, and consequence management programs are evidence of a fragmented and possibly wasteful federal approach toward combating terrorism. This sentiment was echoed by several of the experts interviewed. The GAO noted that cities pointed to similar federal agency training and equipment programs, such as those offered by the Department of Justice and FEMA and the new initiative to give the National Guard a WMD response role, as examples of the unfocused federal approach to combating terrorism (General Accounting Office, 1998).

State and Local

Although the FBI assumes the lead federal role in the investigation and prevention of domestic terrorism, every act of terrorism occurring within the United States remains local in nature. Such acts, and the threat thereof, fall within the purview of state and local law enforcement and present significant challenges, far removed from the daily concerns, priorities, and operational considerations of most police administrators.

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Both the interviewed experts and the Government Accounting Office emphasized that FBI activities cannot succeed without cooperation and assistance from local law enforcement agencies (General Accounting Office, 1998). Particularly in light of the proven effectiveness of a Community Policing approach, local police officers and deputy sheriffs, along with troopers and state investigators, have the ability to sense the discontent among terrorist movements, monitor the advocacy of extreme causes, respond to hate crimes, and serve as the foundation for an effective assessment of threatening activities within their communities. As one of the interviewed participants pointed out,

> ...in all probability, state or local law enforcement officers will respond first to a terrorist threat or incident.....however, state and local administrators should remember that the FBI's unique role in the nation's counter terrorism efforts makes it a critical component in any terrorism-related investigation....

Several of the interviewed experts noted that activity by right-wing extremist groups has remained difficult to assess from the data available because of the cell-type structure and other clandestine tactics many groups have adopted. Problems have appeared to increase since the Oklahoma City bombing. Klanwatch--a project of the nonprofit Southern Poverty Law Center that attempts to curb Klan and racist violence through litigation, education, and monitoring--reported that "[t]here were 858 groups operating in the United States in 1996, a 6 percent increase over the 809 groups noted in 1994 and 1995" (Southern Poverty Law Center, 1997). Although the interviewed experts acknowledged the difficulty when determining the level of threat, a concern for future activity remains. Said one of the participants,

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> The potential for increased violence, including the possibility of biological and chemical attacks, really worries me. We need to prepare and plan for the possibility of an incident occurring in any jurisdiction, regardless of location or size.

State and Local Intelligence

According to the data, complicated and legally challenging intelligence issues surround the deterrence of domestic terrorism. Many terrorist groups rely on the constitutionally protected rights of advocacy and assembly. Therefore, determining the curiosity seekers, followers, and those who may advocate violence requires an intelligence assessment of known and observed activities. A Community Policing approach to law enforcement may maximize the potential for timely, accurate intelligence concerning terrorism in a domestic, urban environment.

One interviewed expert said "critical ingredients to success include coordinated planning, intelligence sharing, and a unified, informed response to terrorist threats among federal, state and local agencies." The prevention and response to terrorist acts require unified efforts.

All levels of law enforcement must implement effective antiterrorism efforts in combating this threat to ensure the safety of all American citizens and their communities. Yet the data suggests that state and local law enforcement agencies are not sharing a great deal of useful intelligence gathered at the federal level.

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A Need To Review And Modify Current Statutes That Target Terrorism

There are, for the states, conceptual problems in reaching a legally acceptable definition of terrorism, as none of the statutes have enacted into law statutes that actually deal explicitly with terrorism. Most statutes are modeled after the American Law Institute's exemplar called "terroristic threatening." Enacted into legislation with the promise of "doing something about terrorism," these statutes do little more than criminalize verbal threats (Smith, 1988). If severity of sanction can be used as a rough gauge of deterrent value, these statutes have had little preventive effect. Relegated to misdemeanor or minor felony status, these statutes have been used only once or twice during the past decade to prosecute crimes that might be labeled "terroristic" (Smith, 1988). If anything, they open the door for governmental overreaction, enabling local officials to label selected offenders as terrorists.

The problem in criminalizing terrorism, according to several interviewed experts, lies in translating academic definitions into legally permissible definitions of terrorism. To adequately study the phenomenon of terrorism, most academicians add a number of qualifying characteristics to their definitions. For example, Jordan Paust argues that any definition of terrorism must consider the outcome, violence used, motivation, and goals of the terrorist to define adequately the concept (Paust, 1977). Likewise, Grant Wardlaw notes, "for a definition of terrorism to be universally accepted it must transcend behavioral description to include individual motivation, social milieu, and political purpose" (Wardlaw, 1982). Unfortunately, these salient features conflict with efforts to create legal definitions of terrorism.

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According to Paust, efforts to transform academic definitions of terror into legal definitions are doomed under constitutional scrutiny. He says that the law must go beyond the goals of empirical study, and decisions must be made regarding the social acceptability of an act, subsequently rendering empirical definitions unworkable. Consequently, motive or political purpose no longer become useful variables in legislating statutes in a system of justice where motive is not normally an essential element of an offense. Finding a universally accepted definition of terrorism has not met with much success in United States courts (Paust, 1977).

The conceptual difficulties are magnified when one attempts to write legislation that makes an act criminal because it was intended to invoke political change or influence an audience beyond the immediate victims, two widely accepted aspects of an academic definition of terrorism. One of the interviewed participants noted, "the issue is really one of requiring proof of motive as an element required in criminal liability."

Typically, proof that the act occurred (actus reus) and that the particular act was accompanied by the required intent (mens rea) is sufficient for criminal liability (Wardlaw, 1982). Normally, motive relates only to why a person might commit a given act to achieve a desired result. For example, A murders B to obtain money from B's wallet. A's intent was to kill, and it must be established in court to convict on a murder charge. A's motive was to steal, but it does not have be established in court as an essential element of the offense except for use as circumstantial evidence in establishing intent. Most academic definitions of terrorism, however, include as an

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element of the crime the motive of the perpetrator, i.e., to invoke political or social change.

The review of the current literature on terrorism preparedness showed that only one state, California, has attempted to criminalize terrorism explicitly. Subsequently challenged because of its attempt to criminalize motive, a California Supreme Court decision, People v. Mirmirani, held that the phrase "to achieve social or political goals" was unconstitutionally vague (People v. Mirmirani).

California's attempt to make terrorism a criminal act represents the only effort to retain a definition of terrorism similar to that used in academe and generally believed by the American public to constitute terrorism. Although it may be doomed by its purist approach, the statute reflects the enormous conceptual difficulty faced in specifically criminalizing acts of terrorism.

Lack Of Effective Coordination And Communication

As with any form of disaster planning, planning for a terrorist attack against the urban built environment presents a complex balancing act between the risk of the incident, the potential for casualties and the tremendous costs involved in attempting to mitigate such an incident. As a result of both the expert interviews and the review of the terrorism-related literature, it became evident that there is a wide range of "potential expense" vs. "likelihood of terrorist attacks by various methods" available to the terrorist. That balance can best be illustrated by Figure 2 below:

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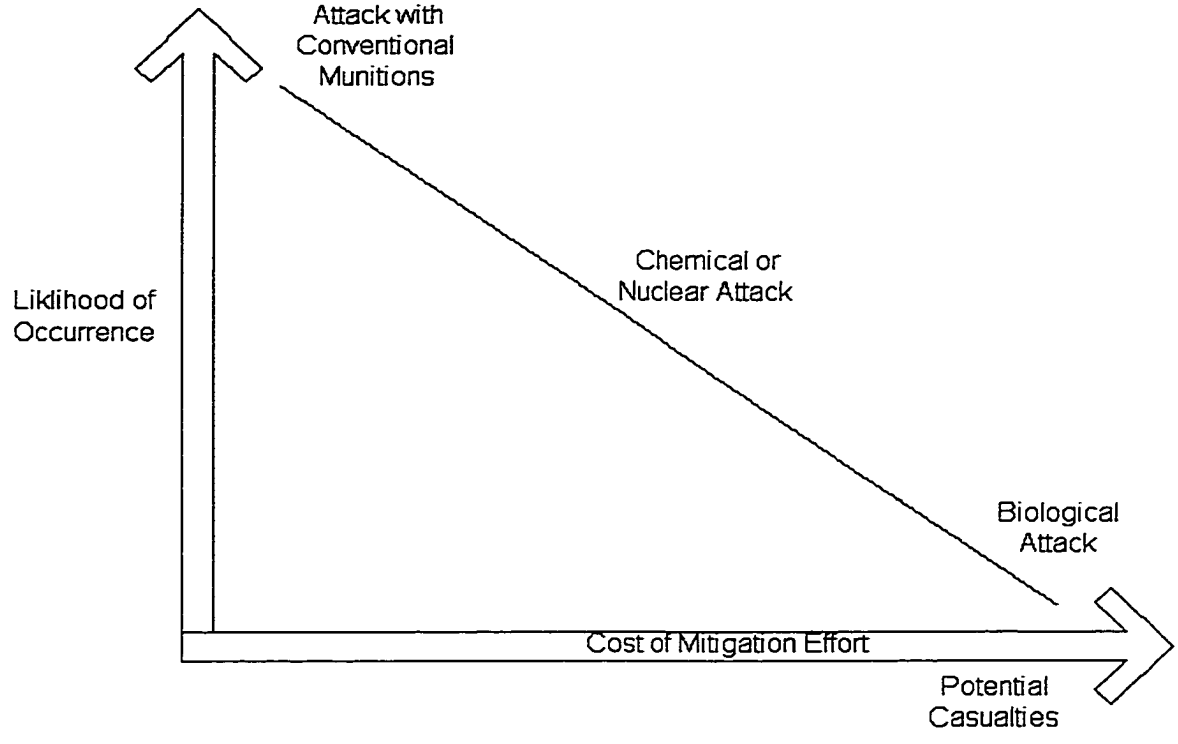
Figure 2. Risk Analysis of Types of Terrorist Attacks Against the Urban Built Environment



Both the knowledgeable persons interviewed and several government-initiated reports confirmed that policy-makers are now realizing that a proper response to terrorism requires effective coordination and open communication. Unfortunately, it may still be lacking in some instances. "The working relationships among key agencies at all levels of government are limited," said one of the interviewed participants. "In many places they're nonexistent." A study sponsored by the National Institute of Justice (NIJ) confirmed that state and local law enforcement agencies view the threat of terrorism as real, but their response to the threat varies widely according to the size and resources of the department and the nature of the threat in any given community.

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Several knowledgeable persons interviewed pointed out that, in the past, major cities developed preventive and preparation programs, often in cooperation with the FBI and its joint terrorism task forces, whereas smaller cities and counties usually operated on their own. This was corroborated by the NIJ report, which noted that antiterrorism resources varied according to the existing threat potential. Some smaller jurisdictions developed regional alliances to address specific extremist groups and organizations operating within locales. However, the majority of jurisdictions only recently realized the threat presented by extremist individuals and groups and now assess the threat that such groups may pose to their respective communities and to related operational planning and readiness issues.

Improvement in Intergovernmental Coordination and Relations is Needed

As one of the participants noted, "the federal government cannot prepare for Weapons of Mass Destruction incidents on its own." The experts generally agreed that improvements are needed in intergovernmental relations between federal, state and local governments. For example, federal agencies developed some of their assistance programs without coordinating them with existing state and local emergency management structures. In addition, the multitude of federal assistance programs has led to confusion on the part of state and local officials. One promising step to improve coordination and reduce confusion has been the creation of the National Domestic Preparedness Office within the Department of Justice to provide "one stop shopping" to state and local officials in need of assistance. This office has recently prepared a draft plan on how it will provide assistance, but the experts

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interviewed for this study stressed that much work has yet to be done to promote true intergovernmental cooperation.

One participant stressed that an important intergovernmental issue requiring immediate resolution is "the matter of command and control at the site of a terrorist incident." Roles of the federal government versus the state and local governments need to be further clarified to prevent confusion.

The Urban Built Environment is Vulnerable to Conventional Attack

According to *The Sentinel* (Vol 1, No. 3, Third Quarter 1993) a publication of the Industrial Risk Insurers, explosion has the highest average dollar loss of all hazardous events. Therefore, another cost factor entering today's construction and building operation economy is blast mitigation costs. Military installations for years have been designed to resist conventional weapons or blast attacks, with the single focus toward sustaining the structure for the purpose of maintaining the mission. Noted one participant,

> for buildings in American cities, the single most important design consideration is to construct buildings to save lives in the event of a terrorist attack. There should be absolutely no concern for saving the structure other than to save the people.

One of the unintended consequences of designing for defensible space to mitigate terrorism may be that people do not want to work in fortress-like structures. Designing commercial buildings as military installations is very impractical, as ordinary people do not want to work in bunker-like buildings. Commercial buildings serve a very different purpose and therefore must be designed to a different standard.

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Accepting that fact, the experts noted that commercial buildings should be designed to sustain a certain amount of attack, meaning they are designed to allow for limited localized damage-not total failure-to permit rescue teams to evacuate the victims. The goals of building designers should be 1) to design safer buildings that will not fail when attacked and 2) to help rescue professionals gain entrance to a damaged building to tend to the survivors.

Planning collaboration, well *before* construction begins, is essential. As noted by one interviewed expert, "when considering protection for a building, the building owners and architects must work with structural engineers and blast consultants to determine which threats they are trying to protect against." For bombings, the terrorist threats range from the large truck bomb to the mid-size car bomb to the small package or letter bomb. For these assaults, the source can originate either external or internal to the structure. No matter what size the bomb, there will always be some localized damage and some unavoidable deaths. However, by limiting the localized failure, catastrophic structural failure can be prevented. Optimally, noted the interview participant, "blast mitigation provisions for a new building should be addressed in the early stages of the design. However. existing buildings can be upgraded to behave better when attacked."

As was pointed out in the case study of the World Trade Center bombing, one bomb disabled the primary utility feeds and their backup systems. However, accidental or terroristic, these events not only disrupted the operations of the facility but also impaired the rescue operations.

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Rescue Operations Are Affected By Urban Design

"Protection for a building, which comes in active and passive forms, will impact the damage sustained by the building and the rescue efforts of the emergency workers," said one study participant. Several methods that enhance the building's structural performance will directly benefit the emergency response team. As the building cannot be designed to be bombproof, the key is to limit the acceptable damage to a confined area.

Acceptable damage is a relative term, with the spectrum of damage ranging from a few broken windows to regional slab failure to confined structural frame failure. In any case, the ultimate goal is to prevent widespread structural failure or progressive collapse. The damage at the World Trade Center was extensive but somewhat localized, relative to the massive twin structures. Unfortunately, the damage to the Alfred P. Murrah Federal Building in Oklahoma City, which was very extensive, could have been limited had the design included provisions to mitigate progressive collapse.

The Urban Built Environment Is Most Vulnerable To Biological Attack

One of the bio-terrorism experts interviewed for this study pointed out that, "in the past, an attack with a biological agent was considered very unlikely; however, now it seems entirely possible." The experts believe that it is no longer a matter of "if" but "when" such an attack will occur. They pointed to the accessibility of information on how to prepare biologic weapons and to activities by groups such as

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Aum Shinrykyo, which, in addition to releasing nerve gas in Tokyo's subway, experimented with botulism and anthrax.

Massive Impact on an Unprepared Metropolitan Health System

> An attack with an agent such as smallpox poses a threat to large populations because of the potential for person-to-person transmission, enabling spread to other cities and states. Such a disease would quickly culminate in a nationwide emergency. International involvement would be sure to follow. Control of such an epidemic would require the coordinated effort of the entire public health community. – *study participant*

Several of the participants noted that the Centers for Disease Control (CDC) has significant experience in responding to explosion and chemical related terrorism events and emergencies. Chemicals are plentiful and many of the world's worst disasters have involved the release of industrial compounds. However, the experts noted, special risks are attendant with biological terrorism. For example, when people are exposed to a pathogen like plague or smallpox, they may not know that they have been exposed, and they may not feel sick for some time. This delay between exposure and onset of illness, or the incubation period, is characteristic of infectious diseases. The incubation period may range from several hours to a few weeks, depending on the exposure and pathogen. During this period, patients may continue to travel, visit family and friends, or attend public meetings at a time when they may be highly contagious. Consequently, a disease may be well established in the population before the first cases appear ill and require medical attention.

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Numbers of Casualties Would Overwhelm Metropolitan Public Health Systems

> American cities must be prepared for a potential spectrum of domestic bio-terrorism that ranges from hoaxes and use of nonmass casualty devices and agents by individuals and small groups to state-sponsored terrorism that employs classic biological warfare agents and can produce mass casualties. – *Interviewed expert*

The agents of anthrax, plague, brucellosis, smallpox, viral encephalidites, and viral hemorrhagic fevers were cited by the participants as those of particular concern: they are relatively easy and inexpensive to produce, cause death or disabling disease, and can be aerosolized and distributed over large geographic areas. If released under ideal environmental circumstances, these agents can infect hundreds of thousands of persons and cause many deaths. Such scenarios would present serious challenges for patient management and for prophylaxis of exposed persons; environmental contamination could provide a continuing threat to the population (especially those exposed at the beginning of the crisis) and generate panic in the community.

The interviewed experts stressed that bioterrorist attacks could be covert or announced and could be caused by virtually any pathogenic microorganism. In one of the cases examined for this dissertation, the Rajneeshee religious cult in Oregon provided an appropriate example. The cult planned to infect residents with Salmonella on election day to influence the results of county elections. To practice for the attack, they contaminated salad bars at 10 restaurants with S. Typhimurium on several occasions before the election. A community wide outbreak of salmonellosis resulted; at least 751 cases were documented in a county that typically reports fewer than five cases per year.

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In the Rajneeshee case, although bioterrorism was considered a possibility when the outbreak was being investigated by public health officials, it was considered unlikely. The source of the outbreak became known only when the FBI investigated the cult for other criminal violations. A vial of S. Typhimurium identical to the outbreak strain was found in a clinical laboratory on the cult's compound, and members of the cult subsequently admitted to contaminating the salad bars and putting Salmonella into a city water supply tank. This incident, among other recent events, underscores the importance of improving preparedness at all levels.

Biological Agents are Extremely Difficult to Detect

> A bioterrorist attack may be difficult to distinguish from a naturally occurring infectious disease outbreak. Investigators must first examine the epidemiology of an outbreak to identify its source, mode of transmission, and persons at risk – *Interviewed bio-terrorism expert*

Certain clues may indicate whether an outbreak is the result of purposeful release of microorganisms. Naturally occurring diseases are endemic to certain areas and involve traditional cycles of transmission; some diseases occur seasonally, and sentinel cases are not uncommon. In contrast, a disease outbreak due to bioterrorism could occur in a nonendemic-disease area, at any time of year, without warning, and depending on the agent and mode of transmission, thousands of cases might occur abruptly.

Biological weapons have an unmatched destructive potential, noted the interviewed experts. Pound for pound, biological agents are the world's most lethal substances. The lethality of biological agents makes it unnecessary for terrorists to

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maintain large stockpiles. Some biological agents are self-replicating, which sets them apart from chemical and nuclear weapons. Increasingly sophisticated genetic engineering techniques also raise the haunting possibility of terrorists exploiting antibiotic and vaccine-resistant bacteria, as well as biological agents altered to facilitate aerosol dissemination.

One interviewed expert noted that the technology for dispersing biological agents is becoming more sophisticated. Analysts often have downplayed the potential for bioterrorist strikes to inflict mass casualties, considering the difficulties associated with disseminating biological agents. Although aerosol dissemination presents technical challenges, they are not insuperable. Biological agents could be disseminated as an aerosol cloud and infect a large area with potentially lethal infective doses.

According to the Department of Defense's 1997 report on proliferation (Office of the Secretary of Defense, 1997), in 1990 Iraq attempted to modify spray tanks capable of delivering 2,000 liters of anthrax via remotely piloted aircraft. In Japan, the Shinrikyo cult bought a Russian helicopter and two remotely piloted vehicles capable of disseminating biological agents. Spurred by market pressures, technology for dispersing biological agents, such as that used by farmers to spray insecticide, is certain to improve. One interviewed expert stressed, "It would be a serious mistake to think terrorist groups would not seek to exploit such enhancements."

According to the experts interviewed, the lag time between infection and the appearance of symptoms generally is longer for biological agents than with chemical exposures. The incubation period will vary, depending on the biological agent. For the

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plague, the incubation period is two to three days; for anthrax, one to five days. Terrorists seeking to cover their tracks will find this lag time appealing; so might states seeking plausible denial or attempting so-called false flag operations, in which one power wrongly implicates another. Clearly, the gap between infection and the appearance of symptoms will complicate efforts to pursue bioterrorists. Law enforcement officials, in fact, took more than a year to ascertain that the 1984 salmonella outbreak in Oregon resulted from intentional contamination.

Bioterrorist Weapons Are Easy and Cheap to Produce

The interviewed experts stressed that lethal biological agents can be produced easily and cheaply. Analysis of one of the cases used in this study showed that many biological agents suitable for terrorist strikes can be cultivated easily. For example, the Patriot's Council, the Minnesota-based militia group that schemed in 1992 to assassinate a deputy U.S. marshal and a sheriff, reportedly manufactured enough ricin toxin from a book recipe to kill 125 people. Detailed techniques for extracting ricin from castor beans are available in numerous publications. The cost of procuring lethal biological agents is also relatively low. One of the interviewed participants estimated that "a significant biological arsenal could be cultivated in a 15-foot square room with $10,000 worth of equipment."

As many as ten countries possess offensive biological weapons programs, including the People's Republic of China, Iran, Iraq, Libya, North Korea, Russia, and Syria. The existence of these programs greatly increases the danger of bioterrorism. Countries seeking to sponsor bio-terrorist acts always have the option of sharing their

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expertise with extremist groups. For their part, terrorists groups interested in bio-terrorism may attempt to lure disgruntled scientists to support their causes.

The interviewed experts emphasized that biological agents are easier to produce clandestinely than are either chemical or nuclear weapons. Said one knowledgeable person,

> Biological research can be used for peaceful or malevolent purposes. The equipment required for the production of biological agents for either purpose is generally the same, which raises the so-called dual-use problem. The dual-use problem also makes it easy for countries to conceal their biological weapons programs. Even small terrorist groups could develop lethal biological agents, or genetically altered agents, clandestinely.

Urban Areas Are Ideal Terrorist Targets

The global transportation links usually found in close proximity to urban areas facilitate the potential for biological terrorist strikes to inflict mass casualties. In 1918 and 1919, a globe-girdling strain of influenza killed 22 million people, including 500,000 Americans. The advent of rapid transportation links has made the world even more vulnerable to the rapid spread of contagious diseases. Thanks to the reach and rapidity of modern jet travel, a person carrying the Ebola virus, for example, could infect hundreds or thousands of people across several continents in a matter of hours. To be sure, the contagion potential of biological agents would not appeal to terrorists intent on narrowly focused attacks. But for a nihilistic or apocalyptic group aiming to cause mass casualties, this potential would be very attractive.

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Urbanization provides terrorists with a wide array of lucrative targets. In densely populated areas, even a partially successful biological attack would have a devastating impact. The potential to generate mass panic is greatest in city environments. The emergence of global, real-time media coverage increases the likelihood that a major biological incident will induce panic. One of the experts interviewed for this study noted that a major biological attack on U.S. soil would unleash an avalanche of media attention. Grossly inaccurate or sensational media coverage of even a limited bioterrorist incident, including a well-planned hoax, could induce widespread panic and confusion. In a world already awash with low-level violence, bio-terrorists seeking to gain attention for their cause may find this potential for pandemonium particularly appealing.

Anthrax And Smallpox Pose The Most Serious Civilian Threat To Urban Areas

> The most serious threats from a bio-terrorist attack come from those agents that have the greatest availability, ease of production, that are lethal or incapacitating, have stability in storage, have high infectivity/toxicity, and are stable/deliverable in aerosol.
> – *Interviewed bioterrorist expert*

Terrorist criteria for a biological agent are that the agent is pathogenic for humans, plants or animals; causes the onset of severe disease or disability; is effective at low dose rates; has a high rate of disease following infection; is highly infectious but not contagious and can be weaponized in a variety of munitions or aerosol generation equipment. The intent of the terrorists are to kill large numbers, overwhelm resources, and cause massive societal disruption.

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The interviewed experts stressed that the highest threat is posed from those biological agents that are dispersed in aerosol, are highly lethal, that lack treatment or vaccine, and that are communicable. According to the interviewed experts, two candidates emerge from the long threat list: anthrax and smallpox. Both have well demonstrated historical devastation potential, both are highly lethal agents, both have devastating psychological impact, are easy to produce, and can be aerosolized.

Organizational Issues And Lines Of Communication Are Unclear

Should an attack against an American city take place, consequence management responsibility would be that of the Federal Emergency Management Agency (FEMA). FEMA is responsible for ensuring that the Federal Response Plan is adequate to respond to the consequences of terrorism directed against large populations in the United States, including terrorism involving Weapons of Mass Destruction.

The Federal Response Plan is a generic template designed to coordinate the delivery of federal assistance--personnel, technical expertise, and equipment--in the event of natural disaster or federal emergency. Although the general lines of responsibility appear reasonably clear, the federal government's plan to cope with the threat of bioterrorism suffers from several weaknesses. Noted one interviewed expert,

> The reactive nature of the federal government's approach has helped spawn an "alphabet soup" of counter-terrorism programs. The sheer number of actors involved has created immense coordination problems in the unwieldy counter terrorism architecture, which includes more than 40 different federal agencies, bureaus, and offices.

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In theory, the U.S. National Security Council is supposed to coordinate disparate elements of the counter terrorism effort by managing various working groups. The reality, according to the data, is very different. A government bioterrorist simulation conducted in March 1998 revealed serious interagency coordination problems. According to former CIA director James Woolsey, who recently served as the co-chair of a classified study on terrorism and Weapons of Mass Destruction, "The system is not well organized at all."

According to the experts interviewed for this study, the federal government has failed to develop a public education program to explain the dangers posed by bioterrorism. This shortcoming is alarming, noted the experts, especially because the specter of bio-terrorism has attracted considerable attention. It has become a frequent topic of newspaper stories and magazine articles, many of which express serious doubts about the government's ability to deter bioterrorist attacks, let alone manage the horrific consequences. The absence of a modulated public education campaign increases the likelihood of mass panic in the aftermath of such a strike.

Too Much Reliance On The Military

According to the interviewed experts, the military's ability to assist state and local officials in coping with bioterrorism on U.S. soil has lagged. To help remedy these shortcomings, Congress passed the 1996 Defense Against Weapons of Mass Destruction Act sponsored by Senators Sam Nunn (D-GA), Richard Lugar (R-IN), and Pete Domenici (R-NM). This act directed the Department of Defense, in conjunction with other federal agencies, to manage a training and equipment program

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in 120 cities over a five-year period. The law was designed to nurture, at the local level, the expertise to cope with the consequences of major terrorist strikes involving Weapons of Mass Destruction. As of April 1998, the program had reached roughly 25 percent of the designated cities. The interviewed experts noted that the program has experienced "growing pains," particularly with respect to allocation and funding of equipment.

In March 1998, the Department of Defense announced plans to give the National Guard a greater domestic role in responding to terrorist strikes involving Weapons of Mass Destruction. The Pentagon's fiscal year 1999 budget request included money to field ten 22-member Rapid Assessment and Initial Detection (RAID) teams to respond to chemical or biological attacks.

The interviewed experts were in agreement that, although the creation of RAID teams is important, they should not be considered the "cornerstone" of U.S. policy. Instead, it was constantly stressed by several experts that the cornerstones should be 1) the training and equipping of the "first responders," the local police and fire officials who will arrive at the scene hours, perhaps even days, before federal or state assets can be deployed in force, and 2) the strengthening participation of public health providers (no priority should be inferred for these two items). The first few hours are critical in responding to chemical and biological attacks; this time represents a narrow window in which local officials can manage the casualties from the attack and reduce the risk of mass panic.

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The Public Health System Should Have More Resources And Play A Larger Role

In addition to the Department of Defense, the Centers for Disease Control and Prevention has a vital role in the consequence management of biological attacks. Unfortunately, the U.S. public health system lacks the resources to handle such a contingency. Indeed, the system has problems even with the resurgence of infectious diseases such as tuberculosis. A recent White House-backed interagency working group on infectious diseases found that at least "29 previously unknown diseases have appeared since 1973, and 20 well-known ones have reemerged, often in new drug-resistant or deadlier forms."

These findings raise serious questions about the ability of the U.S. public health system to cope with major biological terrorist attacks. Dr. Donald Henderson, dean emeritus of the Johns Hopkins School of Public Health, argued that "the United States is ill-prepared to confront a terrorist attack using biological weapons, and health officials need more money to prepare against such attacks." In 1972, for example, the United States ceased giving routine smallpox vaccinations. Dr. Henderson, who led the global effort to eradicate smallpox, believes the United States should increase its store of smallpox vaccine by 20 million doses.

According to the interviewed experts, other public health system issues germane to bioterrorism require urgent attention beyond the vaccine deficiencies. As late as 1995, U.S. laws and regulations provided few barriers to prevent an individual from legally procuring biological agents. The 1996 Anti-Terrorism and Effective Death Penalty Act made it a crime to threaten the use of biological weapons and established tighter regulations concerning the transfer of biological agents. As Senator

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Jon Kyl (R-AZ) emphasized in recent hearings before the Senate Judiciary Committee, although the CDC published the regulations required by the act, it "failed to provide the funds needed to implement and enforce safeguards designed to prevent the diversion of lethal agents into the hands of terrorists."

It was stressed by several interviewed experts that the overall structure of the public health system is incapable of managing the consequences of a major bioterrorist strike. An interviewed participant with public health responsibilities stressed that,

> ...the U.S. emergency system overall is geared to respond to small numbers of people injured primarily due to trauma, including transportation accidents, medical emergencies such as heart attacks, and localized cases of violence. The responses to these types of emergencies are not as relevant to injury caused by chemical and biological attack.

According to the interviewed experts, public health agencies at the municipal, county, state and federal levels will be central participants in efforts to recognize and respond to bioterrorist attacks. Public health response activities will be especially essential to shaping the scope and outcome of a bioterrorist attack. Containment of transmissible disease outbreaks is a formidable undertaking. The mobility of urban populations, the global availability of high-speed transportation networks, and limitations on public health's legal authorities, are factors that impact on epidemic management.

The experts that were interviewed for this study noted that, while it is possible that electronically based surveillance systems will be helpful in detecting an attack; it is certain that such systems will be essential tools in managing an epidemic. Thus, the

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ability of local and state health departments to analyze and monitor the epidemiological situation is a key component of any national response system. Epidemiologic analysis of initial victims may be critical in determining where the attack occurred, who is at risk, and who requires prophylactic treatment.

A key component of efforts to limit the number who become ill will include the identification of contacts requiring vaccination, antibiotics or quarantine. Epidemiologic tracking of the epidemic will be necessary to determine if response efforts are succeeding, where resources should be invested, and whether additional attacks have occurred. Governments' ability to describe accurately the course of disease outbreaks has a great impact on public credibility and on citizens' willingness to follow the recommendations of public health authorities.

Several interviewed experts stated that, unfortunately, the public health infrastructure in the U.S. has been neglected for decades. This was corroborated by Institute of Medicine, that wrote, in 1988, "public health in the United States has been taken for granted" and that "our current capabilities for effective public health actions are inadequate" (Institute of Medicine, The Future of Public Health, National Academy Press, Washington, D.C., 1988). The experts interviewed for this study felt that the situation has only gotten worse. City and state health agencies remain seriously under-funded and understaffed, a situation that presents a real danger in our nation's potential to manage effectively an epidemic among the civilian population.

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Hospitals In American Cites Are Not Prepared To Respond To A Terrorist Attack

Should a terrorist attack on US civilians occur, hospitals would be frontline institutions for dealing with the response, regardless of the type or scale of the attack. As a knowledgeable person emphasized,

> the current hospital system is not well prepared to deal with a mass disaster. Economic pressures have reduced staff and the number of available hospital beds. Intensive care and isolation beds are particularly scarce. Drugs and equipment are purchased on an "as needed" basis, which has resulted in reduced stockpiles available for immediate use.

Another knowledgeable person noted that hospitals have been largely missing from bioterrorism response planning to date. Efforts to include hospitals in exercises sponsored by the Domestic Preparedness programs have not been successful in engaging hospital leaders, who are preoccupied with the changing and financially competitive terrain of modern health care. Most hospitals are not in a position to accept unfunded mandates, and are unlikely to respond to bioterrorism response plans unless the nation establishes a thoughtful menu of incentives and programs that motivate and enable them to do so.

Summary

While the United States has the greatest intelligence system in the world, the country does not have a national antiterrorist emergency unit, organizational chain of command, or the capability to respond directly to a domestic terrorist attack. With

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regard to terrorist countermeasures, we do not have a capability for the equivalent of a 911 call in response to a domestic terrorist incident.

A national response team capability does exist through the Bureau of Alcohol, Tobacco, and Firearms (ATF) and the Federal Emergency Management Agency (FEMA), but both these agencies respond to incidents after the fact, when the damage has already been done. The ATF has developed a program to help federal, state, and local investigators meet the challenges they face at explosives crime scenes. This program involves specialized teams that can respond within twenty-four hours to any scene of a major explosion or fire. This specialized response capability is the only one of its kind offered by a federal law enforcement agency.

FEMA has the responsibility of dealing with the consequences of domestic terrorism. However, FEMA is ill-equipped and is not experienced in rapid and effective response to infrastructure attacks, including responding to the destruction of the urban built environment to include key portions of the power grid, water supplies, and other logistical networks.

Another problem is the lack of national security standards in this field. The Department of Transportation has not developed detailed guidance explaining how transit and port authorities could best meet security requirements, for example. Neither do industry volunteer guidelines exist. Without detailed guidance and standards, an effective response to attacks cannot be assured.

Explosives detection capabilities are a concern as well. Current explosives detection methods are ineffective to cope with the terrorist threat of today, as they

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lack the range, throughput, and technical specificity to perform in the real-time operational environment necessary for transportation and infrastructure operations.

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CHAPTER V.

CONCLUSIONS AND RECOMMENDATIONS

This study was designed for the prime purpose of determining strategies that could mitigate the impact of terrorist attacks on urban areas -- attacks using either conventional and/or weapons of mass destruction. While exploring these strategies, careful attention has been directed to possible unintended effects of these strategies. In addition, a thorough examination of the gaps in existing terrorist/crime mitigation strategies was conducted – especially in light of emerging threats from "weapons of mass destruction" i.e. biological, chemical, and nuclear weapons.

Specific areas of inquiry included a focus on what types of terrorist attacks had taken place already, who the terrorists were, what they attacked, when they attacked, where they attacked, why they attacked, and how they attacked. Based on this initial step, an assessment of the weaknesses and vulnerabilities in the preparedness of the urban built environment of American cities was made. The outcome of this initial assessment is a series of suggestions as to what should be done differently, and how involved agencies at federal, state, regional and local levels can play more effective roles in ensuring readiness against terrorist attacks. Based on the information developed in Chapter IV, several conclusions and recommendations are presented in this chapter.

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CONCLUSIONS AND RECOMMENDATIONS

The Overall Planning Process Does Not Sufficiently Involve Agencies at the State and Local Level

According to both the GAO (United States General Accounting Office, 1997) and the experts interviewed for this study, adequate planning is generally coordinated across federal agencies, but state and local agencies are often left out of the process or have minimal involvement. This is particularly true for smaller metropolitan areas.

One solution to this problem would be the creation of a domestic terrorism planning process at the state and local level. By creating a domestic terrorism planning process at the state and local level, administrators can respond better to a terrorist incident and also help to identify and prevent an incident from occurring. First, law enforcement officers must recognize a domestic terrorism threat. Next, as with other important law enforcement challenges, agencies should develop a state of readiness to prevent, deter, and interdict terrorist attacks. Planning, an essential step, should include identifying potential threats and those areas that may be vulnerable to attack, maintaining an inventory of relevant agency resources, and creating interagency agreements. Such agreements should include information exchange, planning oversight, a survey of available resources, and formal involvement in an incident command structure. Agencies also should engage in contingency planning to prepare for "what if" scenarios by exploring the various alternatives for attack in a particular jurisdiction. An effective planning effort also includes an enhanced ability for multi-agency response.

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The Public Health System is Not Prepared to Meet the Threat Of Domestic Terrorism, Particularly Bioterrorism

Unlike an explosion or a tornado, in a biological event, it is unlikely that a single localized place or cluster of people will be identified for traditional first responder activity. In every one of the cases used in this study that resulted in an actual attack, local personnel were the first on scene. These people were either local law enforcement, firefighters or paramedics. The next group involved were other health professionals such as hospital personnel. In the only actual biological attack used in this study, the Rajneesh case, the victims of the biological attack started showing up at the local hospital within days after the attack. This strongly suggests that in future attacks, the initial responders to such disasters, especially a biological attack, will most likely include county and city health officers, hospital staff, members of the outpatient medical community, and a wide range of response personnel in the public health system.

An increased investment in the Public Health system would be an important step toward meeting the threat of domestic terrorism, and bioterrorism in particular. Protection against terrorism requires investment in the public health system. This point was stressed repeatedly by the interviewed experts, and is underscored in a report commissioned by the Department of Health and Human Services Office of Emergency Preparedness (OEP) and recently released by the Institute of Medicine and the National Research Council, Chemical and Biological Terrorism: Research and Development to Improve Civilian Medical Response, which stresses the need for

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long-term public health improvements in surveillance and epidemiology infrastructure.

Increased vigilance and preparedness for unexplained illnesses are an essential part of the public health effort to protect the American people against bioterrorism. Toward this end, the Centers for Disease Control (CDC), working in collaboration with State and local health departments, many other public health agencies, and other Federal agencies, should begin an effort to upgrade public health capabilities locally and nationally to respond to biological and chemical terrorism. Specifically, the CDC, in partnership with state and local governments, should focus upon detection of unusual events – i.e. public health surveillance. Because the initial detection of bioterrorism will most likely occur at the local level after a period when patients have incubated the disease, it is essential to educate and train members of the medical community – both public and private – who may be the first to examine and treat the victims. State and Federal epidemiologists must be trained to consider unusual or rare threat agents when a suspicious outbreak occurs and must be prepared to address questions related to their transmission, treatment, and prevention. It is also necessary to upgrade the surveillance systems of State and local health departments, which will be relied upon to identify unusual patterns of disease occurrence and to locate any additional cases of illness as the disease spreads throughout the community and beyond.

The CDC should also promote the development of new disease surveillance networks which will better link critical health care facilities and components of the emergency medical system to public health agencies. CDC should also pilot and

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evaluate new surveillance systems to improve the nation's ability to detect low incidences of unexplained illnesses or track critical health resource utilization.

In the response to an outbreak caused by an act of bioterrorism, the most likely scenario will be that CDC – as well as DOD and security agencies – will be alerted to the event only after State or local health officers, medical practitioners, or other workers in the health sector have identified and validated a cluster of cases that are highly unusual and potentially unexplained. For this reason, it is imperative that State and local health departments have sufficient resources to conduct disease outbreak investigations. CDC should provide State and large metropolitan health departments with tools, training, and financial resources for local outbreak investigations, and help develop rapid public health response capacity at the State and local levels. Additionally, in the event of a suspected or an actual attack, CDC should be prepared to assist in identifying threat agents and their modes of transmission, in instituting control measures, and in providing consultation on medical management.

Strengthening communication among clinicians, emergency rooms, infection control practitioners, hospitals, pharmaceutical companies, and public health personnel is of paramount importance. In the event of an intentional release of a chemical or biological agent, rapid and secure communications will be especially crucial to ensure a prompt and coordinated public health and medical response. Further, in the event of such an attack, the CDC will need to ensure that the public is provided with accurate and timely information. An act of terrorism is likely to cause widespread panic, and on-going communication of accurate and up-to-date information will help calm public fears and limit collateral effects of the attack.

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CDC should work to ensure that all levels of the public health community – Federal, State, and local – are prepared to work in coordination with the medical and emergency response communities to address the public health consequences of biological and chemical terrorism. The CDC must work to assure that first responders are better prepared against biological and chemical exposures. CDC has significant experience in the areas of detector technology, personal protective equipment, including protective clothing and respirators, and the necessary training to work in hazardous environments. The challenge is to expand these capacities to better protect first responders from the perils of biological and chemical terrorism.

Strategies to create protocols for immunizing at-risk populations, isolate large numbers of exposed individuals; assess methods of safeguarding food and water from deliberate contamination; and explore ways to improve linkages between animal and human disease surveillance networks should be developed since threat agents that affect both humans and animals may first be detected in animals.

Collaboration between public health departments and the medical community is also critical to bioterrorism response. The gulf between medicine and public health is well documented and significant. Communication between hospitals and state health agencies is extremely limited, according to both the literature and the interviewed experts. For example, few state health agencies have the ability to determine how many intensive care unit beds in the state are occupied at any given time, and few physicians know how to contact government health agencies were they to suspect a case of smallpox or anthrax. Re-establishing the linkages between

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medical practitioners and hospitals and public health agencies will be extremely important (and is likely to yield dividends beyond bioterrorism response).

It is likely that many physicians will be reluctant to devote time or resources in preparing to treat diseases with low probabilities of occurrence. Physicians must be educated about the potentially calamitous consequences of bioterrorism, and the critical role that astute clinicians could play in recognizing such attacks. It is essential that at least a core of practitioners in selected medical specialties - such as emergency medicine, infectious disease, internal medicine, hospital epidemiology, etc.- are aware of the basic clinical manifestations and management of diseases caused by biological weapons.

Effective response to a bioterrorist attack that results in hundreds or thousands of patients will require extensive coordination and cooperation among dozens of hospitals and Health Maintenance Organizations in a city or region. The protocols and infrastructure for implementing such collaboration should be examined, especially in view of the autonomous and financially competitive nature of health care organizations.

First Responders Lack Sufficient Training

Maintaining effective disease surveillance is an essential first step in preparedness and is important in helping law enforcement officials to react swiftly. Preparations must include plans for rapid identification and characterization of agents involved and for emergency distribution of large quantities of medical supplies, especially antibiotics and vaccines. Coordination and communication links also need

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to be strengthened to minimize response time, especially at first when exposed but asymptomatic persons may still be treated prophylactically. Also, when response time is shortened, the possibility of apprehending perpetrators increases. Education and training in bioterrorism and its potential consequences must become national priorities.

Increased emphasis on training and equipping "first responders" according to the specific needs of individual locales would be one solution to this problem. No matter how well-trained or quickly mobilized they are, federal response teams never will match the responsiveness of local officials because of time and distance. Therefore, Congressional efforts to train and equip first responders must remain a top priority. This assistance must be tailored specifically to address local circumstances, because clearly, the requirements for New York City are not the same as for Wichita, Kansas. Cities each have a very broad range of varying infrastructure that may serve as potential terrorist targets. For instance, subways, bridges, skyscrapers, tunnels, water supplies, power plants, and signature sites such as the St. Louis Arch, the Seattle Space Needle, Lincoln Center, each present city-unique problems for first-responders. Federal and state officials will be successful to the extent they sustain working partnerships with local officials.

American Cities Need an Early Warning System

Several knowledgeable persons stressed the importance of having an early warning system established to inform citizens of terrorist attacks. Said one knowledgeable person,

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> if I can identify the symptoms of anthrax in a timely manner, say within twelve hours, I can give you a shot and you will live. If it's been over twelve hours since you've contracted the disease, you're dead. And, we can't bury you....your body must be burned.

It is therefore important that a system which could provide early warning of terrorist attacks be developed and implemented. Reliance solely on the intelligence capability of law enforcement may not provide sufficient warning. Unlike a chemical agent attack, which would cause an almost immediate reaction, a biological attack would not cause a reaction until after an incubation period. Noted one of the interviewed experts, "Generally it takes 24, 36, 48 hours before (victims) would start showing what oftentimes are nondescript, flu-like symptoms which then progress to whatever symptoms the specific agent would normally cause."

According to several knowledgeable people, the best defense comes from using a combination of immunization and physical protective measures. They pointed to the anthrax vaccine as a key countermeasure against a biological warfare attack. When vaccines are not available as a biological countermeasure, the answer according to one interviewed expert, is "rapid detection, warning, and reporting."

Technology currently exists to deploy sensors capable of providing early warning of biological attacks in major U.S. cities. The Defense Department is developing and fielding smaller, lighter, and simpler biological detectors. One of these is the Biological Integrated Detection System, or BIDS. After detecting what appears to be an unnatural agent, the systems first provide a warning, then determine specifically what the biological agent is. In summer 1998, the Department of Defense deployed a system of biological agent detectors (called the "Portal Shield") at select

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U.S. military bases in South Korea and the Middle East. This system, originally deployed in the Persian Gulf region, is about two-thirds the size of a typical office desk. It's fully modular, self-contained and can detect eight different agents.

"The beauty of this device is that it's a network sensor," noted one respondent. "Depending on the geography, as many as 18 sensors may be arrayed around a port or an airfield." The sensors talk to one another, he said, so you're not relying on just one of them sounding an alarm. Using sensor arrays, the false positive rate very quickly gets down to zero. In Bahrain, U.S. forces have run more than 3,000 tests during round-the-clock monitoring by the Portal Shield deployed there. The false positive rate was less than one half of 1 percent. U.S. citizens living in major metropolitan areas should be afforded a comparable measure of warning.

Current Criminal Laws Are Not Adequate for Addressing Terrorism

Any response to a threat of domestic terrorism should include assessing and separating lawful, constitutionally protected rhetoric from criminal threats. To accomplish this difficult and sensitive task, state and local agencies should initiate a formal process of threat assessment. The vast majority of individuals who hold extremist beliefs pose no real threat to law enforcement or society. Most remain content with espousing inflammatory rhetoric and attending meetings, rallies, and exhibitions to reinforce their beliefs. Distinguishing between the individuals and groups who advocate extreme views and those who advocate harm becomes the challenge that law enforcement agencies must address effectively.

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A Citizen Watch Approach Should be Implemented

To strengthen the ability of law enforcement to monitor those who may engage in bioterrorism, the equivalent of Megan's Law for individuals convicted of violating state and federal laws regarding the possession of biological agents should be implemented. Megan's Law was developed to alert local communities of the presence of convicted child molesters. Because national security concerns sometimes outweigh an individual's right to privacy, the same principle should be applied to individuals who violate laws and traffic in biological agents. Such a law would require local law enforcement officials to be notified of the presence of persons convicted of such federal and state related crimes.

Developing a Community Focus Remains Appropriate for Deterring Terrorism

One of the most promising tools for assisting law enforcement with detecting the presence of potential terrorist activity is the Community Policing philosophy. This approach includes the presence of law enforcement personnel at the neighborhood level. The police officer's primary duty is, or course, to control crime. However, the most important thing an officer needs to carry out that mandate is information. The rapport engendered by having the same officer in the same geographic area every day facilitates a two-way information flow, where the officer receives input on community priorities in exchange for which the residents provide vital information. The officer becomes a "member" of the community. The officer can be the catalyst in the formation of block clubs and associations so that people can be the "eyes and ears" of their neighborhoods.

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Law enforcement personnel can attend public meetings to monitor and assess the threat potential or seriousness of the proposed actions. Still, administrators should exercise caution to avoid opening investigations based on beliefs alone. If, however, those beliefs encourage or elicit others to commit violence to accomplish extremist objectives, then a legitimate law enforcement interest exists. Oversight should focus on criminal actions, not mere advocacy or impassioned pleas for legitimate action to correct perceived wrongs. An unintended consequence may be some perceived diminishment of First Amendment rights to free speech with regard to the separation of constitutionally protected speech and terroristic speech. It will be important to carefully distinguish between passionate, inflammatory speech and criminal speech.

The Public Should be Made More Aware of the Threat Posed by Domestic Terrorism

At a press conference in November 1997, Secretary Cohen held aloft a five-pound bag of sugar to dramatize how little anthrax would be needed to inflict mass casualties in a city like Washington, D.C. The Secretary's actions may serve to dramatize national security threats, but should not be confused with a sustained campaign to heighten awareness about the danger of terrorism. Such a campaign would explain, in a sustained and carefully modulated fashion, U.S. counter terrorism policy as well as the nature of the terrorist threat. This could be achieved through a variety of different media, including public service announcements on television and radio. Although some analysts might find this approach alarmist, a carefully modulated educational campaign could serve, in fact, as an important confidence-building measure and reduce the possibility of mass panic. To address public

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education issues related to the threat of terrorism, a sustained campaign to educate the public on the threat of terrorism should be conducted. However, an unintended consequence of a sustained campaign to educate the public on the threat of terrorism may be the potential to cause some degree of panic if not carefully implemented.

Crime Prevention Through Environmental Design Remains Applicable, and Design Training is Essential for Protection Against Terrorism

Structural Approaches

Crime Prevention Through Environmental Design (CPTED) emphasizes problem seeking before moving into problem solving. The theory is consistent - the process of assessment is the same for assessing threats from terrorism as for more traditional crime. CPTED starts with the threat and vulnerability analysis to determine the weakness and potential for terrorist attack against some part of the urban built environment. The process and challenges of a CPTED approach to mitigation of terrorism are the same for designing to deter terrorism as for other crimes – only the level of the threat is changed. CPTED and Defensible Space planning are a planning process, as compared to fortressing or target hardening. When designing against crime or terrorism, the security consultant must resist the rush for quick answers.

What the CPTED process does is ask the questions about 1) access control; 2) natural surveillance; 3) territorial reinforcement; 4) maintenance ; and 5) management strategies. The CPTED process provides the direction to solve the challenges of

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terrorism with organizational (people), mechanical (technology and hardware), and natural design (architecture and circulation flow) methods.

In response to the increased threat of domestic terrorism against the urban built environment, military engineers and architects should work with civilian building professionals to adapt to commercial use some of the technologies and designs developed to protect military buildings from bomb blasts. One military approach that is applicable to civilian buildings is increasing the strength of a structure's lower levels to make it more bomb resistant -- an approach that also would improve its ability to withstand natural forces such as hurricanes, tornadoes, and earthquakes. Commercial building designers should have access to selected technical manuals, computer programs, and other materials developed by the military for use in evaluating the risk of terrorist attack and the effects of bomb blasts, and for mitigating blast damage and deterring future bomb threats. In many cases, however, research will be needed to adapt these resources for civilian use. For example, the military uses special computer programs for predicting the force of a bomb blast and how a building's structure will respond to that blast. But it is not clear how readily these programs can be used to model blast effects on civilian buildings, which typically are lighter in construction but more complex than military structures.

Several modes of protection were suggested by the data for commercial use. These include buffer zones or controlled-access areas around buildings, thus avoiding situations like that in Oklahoma City, where the building sat next to a public road. A "keep-out zone" ensures a minimum guaranteed distance between the explosion and the target structure. This keep-out zone is achieved by placing at the site perimeter

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planters, fountains, and other barriers that cannot be compromised by ramming with a vehicle. While this is the most effective measure to lessen the effect of a terrorist attack, it also can work against rescue teams since the barriers could deter access to the rescue and firefighting vehicles. In most urban settings, the typical setback distance from the street to the building facade is 10 to 25 feet, which does not pose any access problems for emergency vehicles. However, when designing prestigious buildings, including landmark office towers, hospitals, and museums, the setback is often increased to create a grand public space. These setbacks could create keepout distances of more than 100 feet with barriers to guarantee protection but which also could limit emergency vehicle access. Details that may provide operational barriers or fences should be included in the design to allow emergency access. If plaza or monumental stairs were used, some secondary access must be incorporated to similarly allow entry.

Engineering Approaches

Building professionals also should look at ways to increase the blast resistance of a building's subsystems -- lighting, plumbing, communications, and ventilation. These non-structural elements have been largely overlooked in blast mitigation designs, but they can be crucial to the survival of a building's occupants. Such analysis also should be done for some existing buildings, such as those determined to be at particular risk from terrorist attack and those already scheduled for renovation. For a planned new building, incorporating reasonable blast hardening would add

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around 5 percent to construction costs, but both the costs and benefits of such measures should be considered on a case-by-case basis.

A research program that examines critical structural and non-structural components of civilian buildings is needed. The program would include testing and developing more blast-resistant interior partitions, such as metal stud and drywall partitions that could be bonded together to reduce fragmentation from an explosion. Research also is needed on the blast resistance of common materials and equipment used in lighting, plumbing, communications, and ventilation systems.

In addition to making buildings safer, efforts should be made to improve preparations for rescue and recovery operations in case of an attack. This emergency planning should include ensuring rapid availability of building plans and structural drawings to rescuers, as well ensuring their ready access to computer-based modeling and other methods for assessing the extent of blast damage to the building.

Buildings' operational control areas and utility feeds should be protected from direct attack to lessen the negative effects of a blast. Therefore, it is important to design operational redundancies to survive all kinds of attack. Simple structural modifications include designing redundancies into the structure to carry additional loads imposed after a bomb attack. These provisions include properly designing beams, girders, and columns to carry damaged slabs or columns. In the Oklahoma City Bombing, the beam floor system used did not have any redundancy or backup support system for slab or beam failure. By properly designing and detailing the building's structural elements, the slab may fail locally, but the entire floor will not collapse. Similarly, columns should be designed to carry additional loads such that if

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one column is severely damaged to the point where it cannot properly function, the load will be distributed to the neighboring columns.

These changes all attempt to enhance the structure's response to the severe dynamic loading by adding strength to resist the blast, ability to absorb the energy, and redundancy to reduce the chance of progressive collapse. Many of these steps incorporate some of the recommendations made for the Department of State-Office of Foreign Buildings Operations after the attacks on American embassies. It remains today the only design guideline approved for government design or construction.

The last major structural consideration includes the construction of the exterior facade. Second only to the impact the standoff distance has on the effects of the blast, the facade remains the occupant's last form of true protection. Not only does the building's skin protect the occupants from the weather, but it also limits the amount of blast that can actually enter the workspace. The facade is built of two elements-the structural skin or wall section and the window or glazing. By constructing the exterior wall of a more durable material such as reinforced cast-in-place concrete instead of block walls or curtain walls, at least for the lower floors, the building will be able to resist or curtail certain blast loads, resulting in significantly less bodily injury and building damage. In addition, a properly designed concrete wall will aid in preventing progressive collapse, as the wall will assist in carrying the load of a damaged column.

While most blast engineers would like to eliminate windows, they remain an essential element in building design. Windows, unfortunately, are the weak link in the facade design, as they typically will fail before any other element. The two keys to

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protecting the workspace are attempting to prevent the windows from failing and then ensuring that the windows fail properly if overloaded.

Standard annealed glass used in window sections for both homes and office buildings behaves quite poorly in blast loading and failure. Not only is the peak allowable pressure less than two psi, but this type of glazing breaks into sharp shards. It is these "knives and daggers" that cause most of the injuries so vividly seen in the news clips.

Several other types of glazing are available for building design, including thermally tempered glazing (TTG) and polycarbonate glazing, also known as bullet-resistant glass. TTG is commonly used in special areas where glass breakage and bodily injury are likely to occur; the most common examples are the side and rear windows of automobiles. This glazing, which can be designed for loads up to 30 and 40 psi, breaks into rocksalt pieces and would cause significantly fewer injuries to people occupying the building under attack. The polycarbonate glazing also performs quite well under blast loading but does not experience the same failure mode as the TTG. Instead of breaking into small pieces, it remains a single unit as it dislodges from its support frame.

The most common use of polycarbonate glazing is the front windshield of an automobile. When damaged, it develops spider web cracks but does not break into small shards. The downside of this mode of failure is that the glass unit can become a large flying object, causing additional injury and damage. Other window treatments include adding a Mylar film to the glass, which will reduce the shards but can discolor and be easily vandalized, reducing its effectiveness. Furthermore, the failure

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mechanism is similar to the bulletproof glass, which creates large flying obstacles. Blast curtains, which collect the glass fragments, also can be used but reduce the light and view that the windows are trying to provide in the first place.

While these glazing window solutions appear to function quite well, some drawbacks in these high-performance glazing systems include cost and high maintenance. Not only are the windows themselves very costly, but to fail properly, their support and attachment systems must be properly designed, which further increases the cost. Even though a great number of human injuries are related to flying glass shards, it is not the only significant source of injury, though usually a more visible one. The other visible cause of injury is falling debris.

One of the less visible causes of human injuries is blast pressure, which can rupture the ear drum, collapse the lung, or even crush the skull as a result of the blast wave's getting into the workspace. These injuries, which begin at pressures near 15 pounds per square inch (psi), can be reduced if the level of blast pressures entering the space is curtailed. The amount of blast that enters the space is directly proportional to the amount of openings on the facade of a structure.

With the cost for installing these windows reaching several million dollars, the protective design money would be better spent keeping the structure standing rather than keeping the windows in place. This is because the anticipated blast pressures from a car or truck bomb far exceed the allowable pressures any window system can resist. As a point of reference, the blast pressures felt on the facade in the Oklahoma City Bombing were on the order of 4,000 psi-100 times higher than the design pressures described above.

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The biggest structural engineering lesson learned from the Oklahoma City Bombing was that the building's response to the dynamic loading of a terrorist bomb must be improved. The single most important improvement would be to mitigate catastrophic failure or progressive collapse by incorporating some structural redundancy. This measure alone, regardless of glazing or facade improvements or maximizing the standoff distance will significantly reduce the number of fatalities. When more than 80 percent of the deaths are caused by the structure's falling on top of occupants who otherwise would have survived the blast, construction money would be most prudently spent to properly design, reinforce, and detail the building to improve its response to explosions. While the localized damaged zone will not be in pristine condition, it will remain safe enough to facilitate the rescue of potential victims.

Additional benefits for strengthening buildings, especially key signature structures, would be a resistance to destruction caused by a wide variety of naturally occurring phenomenon. These include hurricane, tornado and earthquake events. On the other hand, a potential unintended consequence might be a reduction in personal freedom due to the limits imposed by access control, metal detectors and other restrictions.

Yet another unintended consequence created by the use of "keep-out" barriers may be to impede access of emergency vehicles to crisis sites. This consequence may be overcome, however, by carefully considering limited access areas throughout the protected site.

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There is a Need for More and Improved Consequence Management Training, Coordination, and Clarification of Responsibilities

"Consequence management" describes ways and means to alleviate the short- and long-term physical, socio-economic, and psychological effects of a terrorist attack. It describes the coordination of international, national, regional, and local assets to deal with the effects of such an attack. The term includes preparatory work in response to a WMD threat--against the Super Bowl, for example--that would include site surveys; assessment of the ability of local hospitals to treat or decontaminate victims, and the size, condition, and locations of local stocks of various antidotes. Preparation could include determining the locations, size, and availability of other national antidote stocks as well as international stocks available to support planning for surge capacity.

More and improved consequence management training, better coordination, and clarification of responsibilities is needed. This should become the foundation on which to develop a certification process for all levels of response. Such a process will enable the nation to begin standardizing its response to the consequences of Weapons of Mass Destruction. Without a certification process, disparate approaches will inevitably inhibit communication and coordination. Therefore, consequence management and training should receive additional emphasis.

Seminars and conferences should be conducted with far more frequency than at the present time. If only to define the scope of the problem and to establish an awareness of just how many types of organizations and people are involved, conferences may offer a significant national return for a relatively small investment.

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All national assets are generally not going to be able to respond to an incident within 6 to 12 hours. In that case, local responders will have to carry the burden of the immediate response. And while there is a good plan for federal agencies to educate and train metropolitan police, fire, health, and other emergency providers, the operational role of the "feds" interacting with the affected state remains largely ill-defined. Participants in any aspect of consequence management must be selected with great care. With so many organizations and agencies involved in consequence management, unity of command is probably impossible.

Responsibility And Authority is Fragmented

In terms of agency responsibility for mitigating the effects of terrorist attacks against the domestic urban built environment, authority is fragmented. Agencies and levels of government protect their own facilities and guard their own prerogatives. Physical obstructions, security guards, and other security measures are largely controlled by individual agencies. Local governments assume responsibility for local security, except when there is a compelling reason for state or national assistance or intervention as in the cases of the Los Angeles Olympics, the New Orleans World's Fair, and nuclear power facilities. In the latter case, the Nuclear Regulatory Commission is the responsible agency for on-site security and the Federal Emergency Management Agency Is responsible for off-site concerns such as responding to nuclear accidents (terrorist or otherwise) that create danger for the surrounding populace. Therefore, lines of authority and responsibility must be clarified and carefully delineated.

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IMPLICATIONS FOR THEORY

This dissertation began by examining several passive approaches to mitigating criminal acts as suggested in the theories of defensible space originally proposed by Jane Jacobs, Oscar Newman, Lewis Mumford and Harold Lasswell. Posing somewhat different strategies, they all agree that physical forms of urban space affect security.

The Passive Mitigation Theories of "Natural" Police Powers

These early theorists contended that "natural" police power is significantly superior to the more artificial, state-imposed police power. Their theories were largely based on the view of a social community which "looks out for its own," and of a physical structure which encourages such community and allows for widespread community surveillance. Yet even Oscar Newman noted that the effectiveness of natural police power was limited, and that there was room for alternative approaches to ensure safety and security. He argued that, in contemporary urban America, a situation cannot be envisioned in which state police presence is not required (Newman, 1972). He points out that the effectiveness of this community-based surrogate for actual police power depends greatly on how well-equipped the communities are to prevent crime.

The present study has moved well beyond an examination of the traditional defense of urban space, and has expanded the concept of urban defense to include emergency preparedness operations involving a very broad range of law enforcement, emergency disaster response, public health response and the intergovernmental

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matrix. The evidence suggests that with their emphasis on such concepts as neighborhood cohesion and sense of community, Jane Jacobs and Oscar Newman provide a sound basis for defending against terrorism. While these theories were proposed at a time well before recent acts of domestic terrorism, their contention, that one can design defensible space to maximize safety, would appear to have utility for planning mitigation strategies. The potential to structure the environment so as to ensure safety, serves as a useful reservoir of ideas to defend against terrorist attacks.

Active Mitigation Theories on "Designing-in" Safety and Security

More recent theorists, such as Jeffery (CPTED), Clarke (Opportunity Blocking and Situational Crime Prevention) and Crowe (Target Hardening), build on the work of earlier defensible space pioneers by suggesting that proactive changes could be made to urban spaces that would "design-in" safety. They suggest that once a community has defined and analyzed its vulnerabilities, it is time to begin planning for change. This approach continues to serve as the basis for mitigating terrorist attacks. Selecting the strategies and tactics to be implemented at a likely target site involves the same careful analysis needed to understand any crime problem. Some of the specific strategies suggested by CPTED included target hardening, which were improvements that make unauthorized access more difficult. Installing strong doors, locks, and window screens, reinforced glass, and alarms were several other approaches suggested by CPTED to reduce the chance that terrorists will gain access to the structure.

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Still other strategies suggested by CPTED include access control, which can be achieved by keeping doors and gates locked and interior common spaces fenced off from public access. Establishing visitor check-in booths and guard houses, reducing the number of entrances and exits, and issuing pass cards can help management maintain control of a site. Emergency stairwells can be restored to their intended purpose by equipping them with alarm-connected panic bars and removing exterior door handles.

The findings in this study suggests that a CPTED approach is one of the most effective approachs for mitigating the consequences of terrorist attacks against the urban built environment. The theory CPTED can be successfully applied to making a difference in preventing acts of terrorism. CPTED emphasizes problem seeking before rushing into problem solving through a careful threat and vulnerability analysis to determine the weakness and potential for attack. Attack from criminal behavior or attack from terrorist activity only reflect a change in the level and types of threats.

CPTED and Defensible Space planning provide a very useful planning process for mitigating the consequences of terrorist attacks. What the CPTED process does is direct attention to such considerations as 1) access control; 2) natural surveillance; 3) territorial reinforcement; 4) maintenance ; and 5) management strategies that can a) increase the effort to commit crime or terrorism; b) increase the risks associated with crime or terrorism; c) reduce the rewards associated with crime or terrorism; and d) remove the excuses why people do not comply with the rules and conduct inappropriate behavior. The CPTED process provides the direction to solve the

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challenges of crime and terrorism with organizational (people), mechanical (technology and hardware), and natural design (architecture and circulation flow) methods.

A More Systematic Approach to CPTED is Necessary

While CPTED is one of the most promising approaches for mitigating the consequences of terrorist attacks, the literature shows that CPTED has generally been practiced without the benefit of a systematic process or assessment as dictated in the scientific method. Most practitioners are in law enforcement and have gained their CPTED expertise by attending one or several trainings. The police officer CPTED practitioner is seldom given the time, resources, or expertise to conduct pre and post evaluations of crime hot spots requiring improvements. The solution has been to conduct a "quick and dirty" study of a vulnerable area. Thus, the practitioner develops recommendations without the benefit of gathering all of the relevant information, without the benefit of power or authority to implement recommendations, without the power to make design or management decisions that perpetuate the problems, nor without the ability or resources to evaluate or measure the success or failure of the recommendations. Each new site calls for reinventing the process again without a standard code or protocol.

The CPTED practitioner must address divergent facets of architecture, operational/ management practices, governmental bureaucracy, and vested interests together in a collaborative process. Each new situation requires creative problem solving. However, there are no minimum standards of what the process should be or

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the criteria for evaluation. With the exception of several cities with CPTED codes/ordinances/resolutions, there are virtually no common guidelines for the practitioners to follow other than their own experience or resources. CPTED can make a difference in preventing acts of terrorism. CPTED emphasizes problem seeking before rushing into problem solving. Security standards are needed for both minimum and uniform standards of evaluation for CPTED, just as fire disasters have created a uniform standard for fire protection. Protecting people, information, and property must be a high priority for the urban built environment. Government buildings, signature infrastructure, bridges, tunnels, stadiums, transportation hubs, water facilities and other building types such as schools, public housing, convenience stores, residential housing, and retail and commercial buildings must be included in CPTED planning. Even family planning clinics are subject to the terrorist activity of pro-life groups. The goals for designing to protect against terrorism are different than designing to resist crime, but the process is the same: CPTED.

Situational Crime Prevention Provides an Approach to Mitigation

Situational Crime Prevention theory, based on the assumption that if one knows the type of place and the type of vulnerability, one should be able to recommend a specific tactic that can prevent crimes of this type and this place. Such an approach is advocated by both situational crime prevention theory (Clarke, 1992) and problem-oriented policing theory (Goldstein, 1990). At minimum, these complementary strategies are also a promising approach to mitigating the consequences of a terrorist attack. Rather than looking for a generic solution to a

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specific vulnerability at a particular place, one could undertake a thorough examination of the situation and then craft a unique set of interventions to address this problem.

Rational Choice Theory

Rational-choice theory in criminology, has developed out of the utilitarian concept that one chooses that which will provide the most reward and will result in the least pain (Clarke and Cornish, 1986). Ancillary approaches to defending space continued to build on earlier theoretical foundations through the convergence of three elements. These generally include (1) a motivated offender, (2) a target, and (3) some degree of vulnerability. Along this vein, this study expanded upon Rational Offender theory, applying it to terrorist attacks, and suggesting studying the ways or "routines" of potential terrorists and how they intersect with the "routines" of targets.

Routine Activity Theory

Concentration of crime at places is predicted by routine activity theory (Cohen and Felson 1979; Felson 1994) and offender search theory (Brantingham and Brantingham 1981). Some of the original evidence for clustering of crime at places was found in Boston (Pierce, Spaar and Briggs 1986) and Minneapolis (Sherman, Gartin and Buerger 1989). Additional evidence for crime concentration at places has been found for specific types of crime. Routine Activity Theory can help identify areas vulnerable to terrorist attacks.

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More Research is Needed on the Effects of Displacement Theory

Crime Displacement Theory contends that an intervention (e.g. a change in street lighting) does not deter the criminal or offender but merely displaces the crime to the daytime, a nearby area, a different target, or type of crime. This theory suggests some degree of rationality on the part of the terrorist, and so is integrally tied to the terrorist's making of a rational choice. Yet theoretical explorations based on the rational choice perspective discussed above (Cornish and Clark 1986) find no basis for believing offenders always completely displace if they cannot attack their ideal targets (Cornish and Clark 1987; Barr and Pease 1990; Eck 1993; Barnes 1995; Bouloukos and Farrell 1997). Reviews of empirical studies examining place-focused prevention, police enforcement, and other preventive tactics in the United States, Canada, Great Britain, continental Europe, and Australia, find that there is often no displacement, but when displacement occurs it does not overwhelm other gains from blocking crime opportunities (Cornish and Clark 1987; Barr and Pease 1990; Eck 1993; Hesseling 1995). In these studies, there is no evidence to suggest that these interventions increase opportunities for crime by displacing it. Researchers who have looked for empirical evidence of displacement have found little evidence of that displacement. Concern about displacement appears to be based more on pessimism than empirical fact. Therefore, theories on displacement effects seem to hold very little promise for mitigating the impact of terrorist attacks at this time, absent more thorough research into its effects.

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The Theory of a "Garrison State" May Provide an Accurate Picture of Future Trends

Harold Lasswell's concept of the "garrison state," which were developed in the 1930s, may provide an accurate description of the future of urban areas. Lasswell initially offered the garrison state construct in 1937 in response to the Sino-Japanese War. He reasoned that technological changes within the military would alter the relationship between the military institutions and the civilian societies of which they were a part. This conjecture was consistent with his general perspective that technological change is always accompanied by social dislocations and that these dislocations were responsible for psychological tensions that threaten the rationality of political processes (Lasswell, 1941).

The crucial technological development that prompted Lasswell's reflections and resulted in the garrison state construct was the introduction of air power to military efforts. He perceived that military air power would make civilians vulnerable to attack in addition to military installations and personnel. In essence, he argued that the development of military air power generated a democratization of risk. The garrison state construct became a widely embraced theory of civil-military relationships. Many intellectuals subscribed to it, as did representatives of the mass media.

The evolvement of Lasswell's garrison state remains a possible consequence of the wide use of terrorism. This is consistent with his general perspective that technological change is always accompanied by social dislocations, and that these dislocations were responsible for psychological tensions that threaten the political

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process. Lasswell specifically addressed the idea of increased risk for civilians , noting the development and ascent of "specialists on violence" to positions of political power. In essence, then, Lasswell conceived of the garrison state as the eventual result of the increase centrality in society of the specialists on violence.

The thesis offered by Lasswell almost seventy years ago provides insight into the current state of terrorist activities. Today, the lethal technology that Lasswell identified to frame his argument, namely airpower, has been replaced by tools of terrorism as an extension of politico/military power. As noted earlier, terrorism is officially sanctioned by several countries that are recognized by the United States as state sponsors of terrorism. Terrorist methods continue to generate the democratization of risk identified by Lasswell. The potential for terrorist attacks supports Lasswell's construct of the garrison state by calling for broadly applied exclusionary physical barriers among society or segments of society (Lasswell, 1941). The myriad surveillance, detection, intelligence and physical strategies currently used or planned for implementation show that public spaces in American cities will indeed be closer to fortresses than at any previous time. Those strategies that make terrorist acts more difficult, more costly and/or less rewarding for terrorists appear to present the most likely probability for successfully mitigation.

Based on reviews of government documents and interviews with knowledgable informants, this study builds upon the already existing theories of defending against traditional crime to include a very broad approach to mitigate the impact of terrorist attack on the urban built environment. These strategies include not only specific target hardening to meet the special demands posed by terrorist

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bombings, but also includes strategies to plan for defending against terrorist acts involving Weapons of Mass Destruction.

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APPENDIX A.
INVENTORY OF TERRORIST INCIDENTS MEETING THE OPERATIONAL REQUIREMENTS FOR THIS STUDY, PREVIOUS 20 YEARS

	DATE	INCIDENT	INFRASTRUCTURE	METHOD	PERPERTRATOR
1	March, 1999	A bomb planted outside an abortion clinic in Asheville, N.C. exploded causing no injuries and little damage because it detonated only partially. The clinic received no advance warning of the bomb. Police initially said two bombs had been planted at the Femcare clinic, but the FBI determined that a second device found in the vicinity was actually a piece of the exploded bomb. The bomb was placed outside the Femcare clinic, next to a wall near where the waiting room is located. It went off at about a half-hour before the clinic was to open at 8 a.m. Homes and businesses near the building were evacuated and police cordoned off the road around the Orange Street clinic in a neighborhood several blocks from downtown Asheville. FBI and Asheville bomb teams disarmed what was left of the bomb. Investigators would not elaborate on the bomb's makeup. Femcare was one of several clinics nationwide that received packages said to contain the potentially deadly bacterium anthrax. Nothing was found inside the packages sent to the clinics.	Building – Women's clinic that performed abortions	Bomb	Anti-abortionists

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2	July, 1997 (a)	Two Palestinians and a Pakistani are arrested on a tipoff to New York City police and are found to have suicide bombs and a note indicating they intend a terrorist attack in the city's subways. Ghazi Ibrahim Abu Mezer, a Palestinian, entered the United States (in Washington state) illegally from Canada three times and was apprehended and returned to Canada. He entered Canada as a student, but requested and received political asylum. After his last U.S. entry the Canadians would not take him back because he had committed crimes in Canada. He applied for asylum, and a judge ordered a hearing for 1998 and released him. Abu Mezer said that he had been accused by the Israeli government of belonging to Hamas, a terrorist organization a claim denied by his family in Israel. On June 23, at a hearing on his asylum application, he withdrew it, and the judge gave him 60 days to depart the country. Lafi Khalil, the second terrorism suspect entered the country on a tourist visa and stayed on illegally.	Subway	Bombs	Muslim extremists

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3	July, 1996	During the Summer Olympic Games, less than two weeks after the TWA Flight 800 disaster, a pipe bomb exploded at Centennial Olympic Park in Atlanta, Georgia, killing two people and injuring more than one hundred others. The FBI said that the pipe bomb looked "homemade" with "nails and screws attached." They suspected domestic terrorists, and members of local militia groups were questioned without any results. The Olympic flag flew at half-mast and Olympic athletes and spectators became tense and worried. Lines to attend Olympic events became even longer than before; spectators were submitted to more thorough scrutiny as they passed through metal detectors and had their bags inspected. During the Games, Atlanta had been under surveillance by more than 30,000 law enforcement officials, and the Olympic Committee and the city had spent over $300 million on security efforts. Yet even these measures were not able to prevent the bombing in Centennial Olympic Park. The Committee had been proud of the organization and location of the Games. They had spent years planning for the Games and there were no major problems up to that point. The attack dampened their spirits. But it was a temporary setback and the Games continued to a successful conclusion. The FBI named a suspect: Richard Jewell, a security guard who had spotted the bomb. His name was leaked to the press as the primary suspect and the story appeared in newspapers around the world. Much to the embarrassment of the FBI, however, they were unable to come up with any proof or physical evidence linking Jewell to the bombing. The investigations of the FBI and local authorities have not produced any other suspects. Recently, a $500,000 reward was offered for information leading to the arrest and conviction of those responsible. While the response has been encouraging, there has been no breakthrough to date. This terrorist attack remains unsolved.	Park	Pipe bomb	TBD

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4	April, 1995	A bomb in a 1993 Ford truck exploded at 9:02 a.m. at the nine-story Alfred P. Murrah Federal Building at Fifth and Hudson Streets in Oklahoma City, Oklahoma, killing 169--including 19 children--and injuring over 500. Among the dead were 15 children who were in the America's Kids day which was destroyed when the second story of the building collapsed. Two people were found dead in a neighboring building that had been damaged. People heard the blast from 50 miles away. At least 75 buildings were condemned and at least 312 damaged. Ten buildings collapsed. Damage estimates ranged from $750 million to $1 billion. Approximately 250 children lost one or both of their parents in the blast. The bomb likely contained at least 4800 pounds of explosives including fuel oil and ammonium nitrate, a fertilizer ingredient. Federal employees in the building worked for the Social Security Administration; the Departments of Health and Human Services, Labor, Agriculture, Veterans Affairs, Defense, Housing and Urban Development; the Secret Service; the Drug Enforcement Agency; the General Services Administration; the United States Customs Service; the Bureau of Alcohol, Tobacco and Firearms; and the General Accounting Office. Federal facilities around the country were evacuated when several hoax bomb threats were received. April 21 the United States Department of Justice reported the arrest James McVeigh, 27, a member of the right-wing Michigan Militia, which views the United States government as the enemy of the common man. McVeigh was angry with the federal raid on the Branch Davidian compound in as, two years earlier, in which scores died. Eight minutes after the bomb went off, McVeigh was picked up in a 1977 Mercury Marquis 20 miles from the bombing site on a traffic offense; federal authorities did not know until later that he was in custody. Police found residues of ammonium nitrate and high explosives inside the car.	Building	Car bomb	Right-wing anarchists

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5	June, 1993	Eight militant Muslim fundamentalists are arrested in New York for plotting to blow up the United Nations headquarters, tunnels under the Hudson River and a federal office building. The arrestees were from Sudan, Egypt, the Israeli West Bank and Gaza, Jordan and Pakistan.	Building, tunnels	Bomb	Muslim extremists
6	February, 1993	A bomb exploded in the World Trade Center in New York City. The World Trade Center is the second tallest building in the world, where more than 100,000 people work and visit every day. The bomb exploded in the parking structure underneath the building, damaging the infrastructure and subway tunnels. Smoke reached the top of the 110-story building in minutes. Six people were killed; more than 1,000 were injured. The FBI joined the Joint Terrorist Task Force in the investigation, which eventually brought 22 Islamic fundamentalist conspirators to trial. The trial revealed extensive plans to use terrorism to wreak havoc in the United States, including targeting government facilities.	Building	Van bomb	Muslim extremists
7	July, 1990	An explosion ripped through the Arco chemical factory near Houston, Texas, killing 17 people. On July 13, the previously unknown Islamic Liberation Front phoned Agence France-Presse in Amman and claimed it had exploded a factory in Texas that supplies chemical weapons to the American Army. The caller did not specify the date or location of the attack, but threatened that the groups would "strike at any target in the United States,"saying that his group was capable of choosing the "venue and the date."	Chemical storage tanks	Bombs	Muslim extremists

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8	June, 1990	A bomb went off outside the Cuban Museum of Art and Culture in Miami's "Little Havana" section at 1am, causing $20,000 to two paintings and a sculpture included among the works of 15 Marielista artists. The blast also left a hole in the sidewalk. No injuries were reported. The museum was exhibiting a celebration of the 10th anniversary of the Mariel boatlift. The same museum was bombed in May 1988. The FBI called the bombing an act of terrorism tied to political differences within the Cuban exile community. The FBI was investigating 16 other homemade bombs which had exploded or were discovered in Dade County since May 1987. No arrests had been made in any of the cases	Building	Bomb	Cuban extremists
9	February, 1989	Two Berkeley, California, bookstores that had sold all of their copies of Salman Rushdie's The Satanic Verses were firebombed. Cody's Books and a Waldenbooks were damaged when bottles filled with flammable liquid were thrown through their windows.	Building	Fire bomb	Muslim extremists
10	May, 1988	A pipe-bomb damaged the Cuban Museum of Art and Culture in Miami's Little Havana district. The museum has been the focus of tension among Cuban exiles regarding whether to initiate dialogue with the Castro retime.	Building	Pipe bomb	Cuban extremists

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1 1	April, 1988 (a)	Hackensack police arrested Yu Kikumura, 35, a suspected Japanese Red Army member, at 7 a.m. at the Vince Lombardi rest station in Ridgefield off the New Jersey Turnpike with 3 powerful homemade bombs. State police officer Robert Cieplensky noticed empty gunpowder boxes on the back seat of Kikumura's 1980 Mazda when the officer signaled him to pull over. Police found three sophisticated and powerful 18-inch antipersonnel bombs in fire extinguisher canisters, a complete detonating system and additional materials and bomb-making tools (including rifle powder, six gunpowder containers, a plastic funnel, wire cutters, pliers, tubes of glue, and a hacksaw). An FBI bomb expert said the bombs could have "destroyed the car and a substantial part of a normal dwelling." Magistrate Ronald J. Hedges had him held without bail for possession of the bombs and entering the US at Kennedy International Airport on March 8 with a fraudulent 3-month visa obtained in Paris on February 23 by using a stolen Japanese passport. He faced charges that carry penalties of up to 90 years in prison and $260,000 in fines. He was remanded to federal custody at the Metropolitan Correctional Center in Manhattan. Public defender Thomas Higgins was assigned to defend him. At the time of his arrest, Kikumura was carrying a card for a Swiss bank account and an account statement from a West German bank, written in German. He also had $3600 in $100 bills, $49 in lower denominations, an Air France airline ticket, international airline schedules, and maps of Florida, Massachusetts, Tennessee, New York City and the New York subway system. The New York City map contained pinholes of several locations that may have been targets for the bombs.	New York City subway system	Bombs	Japanese Red Army

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12	May, 1987	The Federal Bureau of Investigation arrested Victor Vancier (Chiam Ben Yosef), 30, leader of the Jewish Defense League; Jay Cohen, 23; and Sharon Katz, 44, all of New York City, for a series of fire bombings, a pipe bombing, and a tear gas attack at a Soviet dance troupe's opening in Lincoln Center in which 20 people were injured. No one was hurt in the other incidents.	Building	Fire bomb, pipe bomb, tear gas	Jewish Defense League
13	October, 1986	A fire bomb exploded outside Lincoln Center's Avery Fisher concert hall in New York City where the Moscow state Orchestra was to perform in its first appearance in New York since 1979. The bomb caused minor damage but no injuries. Three plastic canisters containing a flammable liquid were found at the hall entrance. A caller to a news agency said, "There will be no Soviet Nazi performance until three million Soviet Jews are freed. Never again," which may indicate that the bombing was a work of the Jewish Defense League. On Aug. 13, 1987, Victor Vancier, 30, Murray Young, 59, and Jay Cohen, 24, pleaded guilty to charges of racketeering and bombings aimed at Soviet citizens including the Lincoln center bombing.	Building	Fire bomb	Jewish Defense League
14	September, 1986	Three bombs exploded at 9 a.m. at the federal building, a Jax restaurant, and a luggage store in Coeur d'Arlene, Idaho. A fourth bomb was diffused atop the Armed Forces recruiting center. On October 3rd Aryan Nations church members David Dorr and Edward and Olive Hawley were arrested for counterfeiting and conspiracy.	Buildings	Bombs	White supremacists
15	June, 1985	In Houston, Texas, two homemade pipe bombs exploded at the Daar Us Salaam Mosque causing $50,000 damage. Authorities viewed the attack as a protest against the holding of U.S. hostages on Trans World Airlines flight 847 in Lebanon.	Building (mosque)	Pipe bombs	Anti-Muslim faction

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16	December, 1983	In a phone call, the United Freedom Front warned a Navy recruitment office in East Meadow, New York, of bombs hidden in attaché cases. After clearing the building, police covered the two attaché cases, which had been affixed to the east and west staircases, with blast-absorbing blankets. Minutes later the bombs exploded, causing heavy damage to the stairwells. The terrorist group's communiqué criticized United States intervention in South and Central America.	Building	Bombs	United Freedom Front
17	July, 1983	Three explosions at Hotel Rajneesh in downtown Portland, Oregon, injured two, including the suspected terrorist. Stephen P. Paster, who was charged with first-degree arson, was seriously injured with burns to his hands, arms, face, and torso. A policeman suffered minor injuries from smoke inhalation. The incident was related to growing hostility against guru Bhagwan Shree Rajneesh and his followers who had purchased large landholdings in Oregon.	Building	Bomb	Anti-Rajneesh faction
18	January, 1983 (t)	Officials in Abbeville and Delcambre, Louisiana flushed the public water systems after receiving threats that cyanide had been dumped into the water. More than 13,000 homes were without water. Water had been cut off in the southern Louisiana town of St. Gabriel the previous week for similar reasons. Chlorine was added to the water to neutralize any cyanide.	City water supply	Poisoning by cyanide	Unknown
19	December, 1982	The Fuerzas Armadas Liberation Nacional (FALN) set off four bombs in Manhattan that injured three people, including one whose leg was amputated. One blast at 9:25 pm damaged the Brooklyn Federal courthouse; the other blasts occurred in lower Manhattan. A fifth bomb, made of four sticks of dynamite, a blasting cap, a nine-volt battery, and a pocket watch, was deactivated in lower Manhattan.	Buildings	Bombs	FALN – Puerto Rican nationalists

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20	December, 1982	A powerful bomb exploded at 7:40 pm at a Westchester County, New York, International Business Machines office in Harrison, causing no injuries. The bomb went off four hours after a bomb had exploded at a South African transport office on Long Island (see next case). International Business Machines has extensive operations in South Africa. The IBM office, one of 27 facilities in the country, was a sales and service branch where 500 persons usually work. Only about 30 – all of whom were evacuated – were in the building when a telephoned warning was received a few minutes before the blast from the United Freedom Fighters/United Freedom Federation.	Building	Bomb	United Freedom Fighters/United Freedom Federation
21	December, 1982	A bomb exploded at 3:00 pm after one hundred people were evacuated from an Elmont, New York, building that housed the South African Railways Procurement office. No injuries were reported. An anonymous phone caller had sent a warning from the United Freedom Fighters/United Freedom Federation.	Building	Bomb	United Freedom Fighters/ United Freedom Federation
22	September , 1982	The Federal Bureau of Investigation reported that 12:40 am. an improvised explosive device exploded at Bankers Trust, 280 Park Avenue, New York City. The explosion caused extensive damage to Bankers Trust and some glass damage to the building across the street triggered at 300 Park Avenue. No injuries were reported. The FALN claimed responsibility.	Building	Bomb	FALN – Puerto Rican nationalists
23	July, 1982	At 5:45 p.m. a pipe bomb exploded at a travel office in New York. The offices and for nearby cars were damaged. The Federal Bureau of Investigation believed the Croatian Freedom Fighters were responsible. The Bureau said the Croatian Freedom Fighters are a generic name used by the Croatian National Resistance, an international anti-Yugoslav organization committed to the establishment of Croatia. The name is used claim responsibility for terrorist attacks.	Building	Pipe bomb	Croatian Freedom Fighters

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24	July, 1982	At 8:30 a.m. the bomb squad of the New York police department discovered a pipe bomb scheduled to detonate at 9:20 a.m. in front of the Yugoslav Airlines office in New York City. Police diffused the bomb, believed by the Federal Bureau of Investigation to have been placed by the Croatian Freedom Fighters.	Building	Pipe Bomb	Croatian Freedom Fighters
25	March, 1982	Puerto Armed Forces of National Liberation (FALN) bombed the New York and American Stock Exchanges, the New York headquarters of Merrill Lynch, and Chase Manhattan Bank at midnight, causing extensive damage but no injuries. The blasts came on the 28th anniversary of the Puerto Rican nationalist attack on the House of Representatives in which five congressmen were wounded by gunfire. Since 1974, the FALN has claimed credit for one hundred twenty bombings in New York City, Washington, D.C., and Chicago.	Buildings	Bombs	FALN – Puerto Rican nationalists
26	February, 1982	The Federal Bureau of Investigation reported that a bomb exploded at the New York Stock Exchange, 18 Broad Street, New York City. An improvised explosive device was placed next to a glass door on the north side of the building causing extensive damage to a metal security door, glass doors and windows, and two windows in adjacent buildings. Parts of a timing device were recovered. The Associated Press in New York City received a call from a male with a Spanish accent who stated that a communiqué from the Puerto Rican Armed Forces of National Liberation (FALN) had been left in a telephone booth at 91st and Riverside Drive claiming FALN responsibility for these incidents. No injuries were reported.	Buildings	Bombs	FALN – Puerto Rican nationalists

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27	February, 1982	The Federal Bureau of Investigation reported that a bomb exploded at the Chase Manhattan Bank, 1 Chase Manhattan Plaza, New York City. The device was placed between a pillar and a window on Nassau Street, causing extensive glass damage to the Plaza entrance level at the mezzanine level. A witness observed gray smoke and the strong order of cordite but did not see the perpetrator. No injuries were reported. The Puerto Rican Armed Forces of National Liberation (FALN) was believed responsible.	Building	Bomb	FALN – Puerto Rican nationalists
28	February, 1982	The Federal Bureau of Investigation reported that a bomb exploded at the Merrill Lynch Office, 1 Liberty Plaza, New York City. An improvised device had been placed at the Cortland Street entrance. Extensive damage was caused to glass in the building. No physical evidence was recovered. No injuries were reported. The Puerto Rican Armed Forces of National Liberation (FALN) was believed responsible.	Building	Bomb	FALN – Puerto Rican nationalists
29	February, 1982	The Federal Bureau of Investigation reported a bomb exploded at the American Stock Exchange at 86 Trinity Place, New York City. An improvised explosive device was placed on a window sill causing damage to windows on the street level. No witnesses were reported and no evidence was recovered. There were no injuries. The FBI believed to the Puerto Rican Armed Forces of National Liberation (FALN) was responsible.	Building	Bomb	FALN – Puerto Rican nationalists

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30	February, 1982	According to Federal Bureau of Investigation, at approximately 10:45 p.m., two sophisticated bombs exploded at the administration building, of the University of Puerto Rico. Rio Piedras, Puerto Rico. The two devices consisted of a propane tank, a 5 by 2 inch pipe bomb, external packages of high explosives, a clock timing mechanism, and an electric blasting. The communiqué claiming credit for this incident reportedly urged students to form semi-clandestine groups to fight against American imperialism. No injuries were reported. The FBI believed the Antonia Martinez student commandos responsible. The FBI indicated that the group is composed of anti-United States university students and is named for Antonia Martinez, a student at the University of Puerto Rico who was killed during a you UPR riot on March 4th, 1970, while standing on the porch of a boarding house near the campus. Martinez, 19, was struck in the head by a bullet. Among radical students she is considered to be a martyr.	Building	Bombs	Puerto Rican nationalists

(a) – attempt
(t) – credible threat

Summary:

Targets: 25 buildings, 2 subway, 1 park, 1 chemical plant, 1 water supply
Method: 26 conventional explosives, 3 fire bombs, 1 poison

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APPENDIX B
INTERVIEW FORMAT AND QUESTIONS GUIDE

Explain Purpose

'This interview is part of a larger study to identify and prioritize strategies to mitigate the impact of terrorist attacks against urban infrastructure."

Obtain Consent

"As we discussed, the interview will be taped to help me to tabulate the highlights of the many conversations in the most accurate way. Is that still agreeable to you?"

Introduction

"There are several broad questions that I'd like to ask of you. As someone who has responsibility for dealing with the possibility of terrorist attacks, there are several important questions I'd like to ask you."

Questions (based on literature review and review of attacks against urban infrastructure meeting criteria for this study over the past twenty years)

1. What do you consider the most likely urban target(s) for terrorist attack?
2. Why?
3. Why do you think it/they are they vulnerable?
4. Which terrorist group(s) do you consider the most likely to launch a domestic attack? Right/left, foreign/domestic, specific?
5. What do you consider the most likely method(s) of terrorist attack against an urban target? (conventional/nuclear/biological/chemical)
6. Given the broad range of weapons, including weapons of mass destruction, that may be employed by terrorists, what ways of protecting urban targets do you consider most promising? Least promising?
7. What should we be doing differently to protect urban targets?

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8. Who should be primarily responsible for ensuring our cities are prepared for a terrorist attack?
9. How can involved agencies play a more effective role?
10. What do you consider to be the downside or unintended impacts of enhancing the protection of urban areas against terrorist attack?
11. What might be some unintended outcomes that must be considered in strengthening the preparation of urban infrastructure for terrorist attacks?

Debrief

"'Thank you so much for both your time and expertise. You have provided valuable information that should be of great assistance in this study. Your efforts in this interview are part of the larger study and, as discussed earlier, a final report will be available in the Summer of 2001. I'd be happy to send you a summary."

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