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Terrorist innovations in weapons of mass effect: preconditions, causes, and predictive indicators

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The mission of the Defense Threat Reduction Agency (DTRA) is to safeguard America and its allies from weapons of mass destruction (chemical, biological, radiological, nuclear, and high explosives) by providing capabilities to reduce, eliminate, and counter the threat, and mitigate its effects.

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For further information on this project, or on ASCO's broader research program, please contact:

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EXECUTIVE SUMMARY

Innovation is a constant feature of terrorism, yet little is known about how terrorists innovate, the factors that drive them to innovate, and the indicators that could help predict their trajectory toward innovation. On August 5-6, 2010, experts gathered for a workshop sponsored by the Defense Threat Reduction Agency, Advanced Systems and Concepts Office (DTRA-ASCO), to discuss the *preconditions*, *causes*, and *predictive indicators* associated with terrorist innovation in weapons of mass effect (WMEs).[1] They presented their research findings on seven historical and contemporary cases of terrorist innovation, ranging from airplane hijackings by the Popular Front for the Liberation of Palestine (PFLP) to the current threat emanating from Al-Qaeda's mass casualty attacks. These case studies generated a number of generalizations about what motivates innovation, how terrorists come to innovate, and whether it is possible to anticipate innovations in WME terrorism.

The experts assessed three categories of terrorist innovation: ***tactical*, *strategic*, and *organizational*,** with emphasis placed on the first two. Tactical innovation usually involves inventing or adopting new techniques or technologies to achieve unchanging objectives. Strategic innovation entails formulating new objectives, which necessitate the adoption of new operations, targets, or technologies to advance those objectives. Organizational innovation involves new ways of structuring the terrorist group or inventive methods of drawing recruits.

Preconditions and Causes

Preconditions refer to the context in which innovation took place. This includes political, technological, or security developments which made innovation by terrorist groups more or less likely. For example, experts agreed that larger and/or wealthier terrorist organizations would find it easier to innovate. Causes are those internal and external drivers that directly precipitate innovation or accelerate its progress.

The expert consensus was that ***terrorist innovation is often a product of a gradual, incremental synthesis of earlier innovations***, rather than a dramatic leap in terrorist tactics and technologies.

- The PFLP airplane hijackings beginning in 1968 involved a synthesis of two innovations that appeared much earlier: non-political airplane hijackings in Latin America and the strategy of internationalizing a local conflict.
- *Euskadi Ta Askatasuna's* (ETA, Basque Homeland and Freedom) 1973 assassination of Luis Carrero Blanco, the Spanish Prime Minister, by planting explosives in a tunnel beneath his travel route was inspired in part by an earlier ETA prison breakout involving the digging of a tunnel.
- Al-Qaeda's September 11, 2001 attacks, which were the ultimate manifestation of WME terrorism, merged two prior terrorist innovations: airline hijackings and suicide bombings.

The participants also agreed that ***terrorist innovation is usually motivated by problem solving intended to overcome constraints in the security environment, or limitations in the political one***. Terrorists seek new technologies, targets, or opportunities in order to circumvent security measures,

[1] The Homeland Security Advisory Council defines WMEs as "weapons capable of inflicting grave destruction, psychological and/or economic damage."

revitalize support for their cause, pursue a new strategy to remedy failed ones, or simply escalate a conflict because lower levels of violence are assessed to be ineffective.

- The PFLP airplane hijackings were in large measure a response to the failure of Arab states to defeat Israel on the battlefield, requiring a new strategy to mobilize Arab masses and international support for the Palestinian cause.
- Aum Shinrikyo's drive to acquire its deadly capacity for chemical attacks began after the failure of its leader to gain acceptance through the electoral process.
- Al-Qaeda's organizational innovation of recruiting and training "homegrown" terrorists for an attack in London was driven by its inability to send its own militants abroad in the post-September 11 security environment.

There was widespread agreement among the participants that ***leadership is central to innovation***. In nearly all the cases of WME innovation discussed at the workshop, leaders played a key role in demanding, funding, and justifying deadly innovation. The experts were not in agreement on what types of leadership styles are propitious for innovation.

- Experts pointed to the PFLP, Al-Qaeda, Aum Shinrikyo, and Irish Republican Army IRA case studies as evidence that "centralization of leadership and decentralization of execution" is a necessary condition for innovation.
- Case studies highlighted the role of "charismatic entrepreneurs" (PFLP, Independent Islamist cell London bombings) or "maniacal entrepreneurs" (Aum Shrinrikyo, Oklahoma City, IRA) with an irrational desire to inflict mass casualties or create a mass psychological impact.
- The critical leadership variable is openness to new ideas and willingness to experiment and learn through trial and error, regardless of how centralized or decentralized the organization.

The discussion among ***experts highlighted the important role of ideology or "toxic grievances" in inspiring and legitimating WME attacks***, especially the ones that concern mass destruction and mass casualties among civilians. Groups with grandiose worldviews, millenarian ideologies, or deep feelings of humiliation are less likely to impede the use of mass casualty terrorism than those with clearly defined objectives.

- Aum Shinrikyo was a cult inspired by a "cosmically scientific belief system" that viewed killing as a vehicle to elevate its victims to a "higher spiritual plane."
- Timothy McVeigh was a product of a long and festering "warfare ideology" that framed the U.S. government as encroaching on the basic liberties and freedoms of its citizens.
- Al-Qaeda's "martyrdom complex" was aided by clerical support that justified suicide attacks in defense of Islam and permitted the targeting of Western civilians to reciprocate the killing of Muslims by Western governments.

The experts did not give too much weight to explanations for innovation centered on state sponsorship, safe havens, or competitive outbidding between terrorist groups. These factors inspired or facilitated innovation in some cases, but they do not appear to be necessary or sufficient for recurring patterns of WME innovation.

Predictive Indicators

Predictive indicators refer to the observable steps and preparatory behaviors leading to the innovative terrorist attack and that could have revealed the terrorists' intent had they been investigated thoroughly.

The experts were pessimistic about our ability to pick up on predictive indicators that could help flag or foil terrorist innovation. In five of the seven cases, experts argued that intelligence and/or law enforcement work could have provided warnings of an impending WME attack, but the significance of these potential warnings are only apparent with hindsight. Moreover, the evolutionary nature of innovation, which is marked by gradual learning and adaptation, and the seemingly endless possibilities of combining older innovations in new ways, makes it difficult to pinpoint the trajectory of specific innovations.

Furthermore, predictive indicators are not universal; any potential list of indicators must be confined to the specific innovation sought after by the terrorists. This finding suggests that ***security specialists may have to proceed on a case-by-case basis when seeking to anticipate and foil deadly innovations***.

Specific threats made in terrorist leaders' statements are one predictive indicator of innovation commonly found in the cases analyzed in this workshop. Another salient indicator is prior attempts by the terrorist group to deploy innovative tactics.

- Al-Qaeda repeatedly threatened to strike the U.S. homeland and undertook several mass casualty operations against American targets abroad prior to September 11.
- Aum Shinrikyo undertook extensive research in chemical and biological agents, and conducted some attacks using chemicals prior to their major Tokyo subway operation in 1995.

Earlier failures in terrorist innovation should not be taken lightly because they could serve as indicators of future intent as well as opportunities for the terrorists to experiment and learn through trial and error. Underestimating the terrorist adversary and the failure of the authorities to investigate with due diligence its prior activities often precedes successful WME attacks.

Considerations for Future Research

Experts agreed that the study of terrorist innovation is a burgeoning field that requires much more scholarly attention and analytical rigor. They recommended several strategies to help advance our understanding of the topic:

- Investigate past cases of failed terrorist innovations or ones that were not widely adopted by other groups. This type of research could reveal ***barriers to innovation and diffusion***, which can be helpful in shaping security countermeasures against the innovation and diffusion of WME terrorism.
- Investigate terrorist campaigns alongside individual incidents, because the former could reveal patterns of subtle innovation and adaptation that single episodes cannot uncover. This research would be particularly useful for understanding organizational innovation, which was not covered in depth in this workshop.

- Investigate WME terrorism in cases that do not pertain to Western societies. Some of the most spectacular acts of terrorism in the 20th and 21st centuries have taken place in the developing world. These case studies could reveal patterns of terrorists exploiting opportunities associated with underdevelopment, corruption, weak state enforcement capabilities, or protracted civil and regional conflicts.

SECTION 1: BACKGROUND AND OBJECTIVES

This project explored the *preconditions*, *causes*, and *predictive indicators* associated with terrorist innovation. Preconditions refer to the context in which innovation took place. This includes political, technological, or security developments which made innovation by terrorist groups more or less likely. For example, experts agreed that larger and/or wealthier terrorist organizations would find it easier to innovate. Causes are those internal and external drivers that directly precipitate innovation or accelerate its progress. Predictive indicators refer to the observable steps and preparatory behaviors leading to the innovative terrorist attack and that could have revealed the terrorists' intent had they been investigated thoroughly.

Our aim was to assess how terrorists come to adopt new patterns of tactical, strategic, and organizational behavior in order to help counterterrorism specialists anticipate emergent advances in the use of weapons of mass effect (WME). We measured WMEs by their *lethality* (at least 1,000 fatalities); *destructiveness* (devastation in at least one square mile in urban settings or 10 square miles in rural areas); *disruptive impact* (damage to at least one critical facility, significant interruptions in services, or at least 10 billion dollars in economic losses); or/and *adverse psychological intensity* on mass publics.[1] We invited 15 experts to conduct research on historical case studies of WME terrorism, and present insights from theories of innovation in terrorism studies as well as across disciplines.[2] These specialists gathered on August 5-6, 2010 for a workshop organized by the Center for Contemporary Conflict, Naval Postgraduate School and sponsored by the Defense Threat Reduction Agency Advanced Systems and Concepts Office, in Monterey, California.

Research Objective and Approach

The experts assessed three categories of terrorist innovation: ***tactical*, *strategic*, and *organizational*.** Tactical innovation usually involves inventing or adopting new techniques or technologies to achieve unchanging objectives. Strategic innovation entails formulating new objectives, which necessitate the adoption of new operations, targets, or technologies to advance those objectives. Organizational innovation involves new ways of structuring the terrorist group or inventive methods of drawing recruits.

An innovation in terrorism may involve more than one of these categories. For example, experts pointed out that the PFLP hijackings were a strategic innovation because the goal was to publicize the plight of Palestinians. But it was also a tactical innovation that exploited vulnerabilities in airline security, and an organizational one because the PFLP used foreign terrorists such as German and Japanese nationals to conduct its operations.

The specialists analyzed in great detail seven cases of terrorist innovations with mass destructive, economic, or/and psychological effects:

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[1] William C. Yengst, "Part 5: Next Generation Weapons of Mass Effects," in Lewis A. Dunn, Jennifer Perry et.al., *Next Generation Weapons of Mass Destruction and Weapons of Mass Effect Terrorism*, DTRA/ASCO Report 2008-001, January 2008.

[2] Selected analyses are found in the appendices of this report.

Date(s)	Type of Innovation	Perpetrator	Researcher
1968-70	Airplane Hijackings	PFLP	Yoram Schweitzer Glenn Robinson
1973	Murder of Prime Minister Luis Carrero Blanco	ETA	Rogelio Alonso Jose Antonio Olmeda
1984	Attempted murder of Prime Minister Margaret Thatcher	IRA	Richard English William Matchett
1995	Tokyo Sarin attack	Aum Shinrikyo	Adam Dolnik
1995	Oklahoma City bombing	Timothy McVeigh	Stuart Wright Mark Hamm
2001	September 11th attacks	Al-Qaeda	Peter Bergen Assaf Moghadam
2005	London subway bombings	Al-Qaeda linked cell	Steve Hewitt

For each case (with one exception), two experts explored independently a set of questions to facilitate comparative analysis of patterns across cases:

- What factors internal and external to the terrorist organization motivated innovation? What were the incentives to innovate?
- What were the leadership and organizational requirements for innovation? Did top leaders within the organization drive innovation or did aspiring terrorist entrepreneurs outside of the leadership hierarchy drive it? Did the structure of the organization shape in any way the pace of innovation or receptivity to it?
- When and in what context did innovation occur in the evolutionary cycle of the terrorist group? Were there any particular accelerants of innovation such as technological change, social or/and political contexts, ideological shifts, state sponsorship, or/and security countermeasures?
- Was the catalyst for innovation more a result of pressures internal or external to the terrorist organization?
- Looking back, would it have been possible for counterterrorism specialists to observe and connect together the developments that made innovation possible? What indicators would have enabled security specialists to anticipate the trajectory of innovation?
- Looking forward, what does your case tell us about how innovation in terrorism takes place and how might it inform future efforts to forecast emergent advances in terrorist methods of attack, especially the use of WME?

This workshop structure provided an opportunity for competitive analyses and encouraged informed dialogue across cases.

The choice of cases was driven by a number of considerations. First and foremost, we wanted to break out of the current focus on radical Islamist movements. The current threat emanating from violent Islamist extremists has produced a near myopic concentration on the dynamics of this movement. Given our interest in developing broader models of innovation, we think there are many lessons to be drawn from earlier waves of terrorism. An equally relevant consideration is variation on cases. We selected cases that provided us with a variety of attack types: two individual

assassinations of heads of governments, three major bombings, a path-breaking attack (the 1968-1970 hijackings) which launched a frenzy of contagion, one WMD attack, the first suicide attack in Europe, and the ultimate mass effect attack (9/11). In addition, this selection also provides us with a spread across different decades, starting in 1968.

Some of the cases represent innovation by established hierarchical organizations like the IRA, ETA, PFLP, and Aum Shinrikyo; others by networked organizations and groups like Al-Qaeda and the London bombers. One case, the Oklahoma City bombing, is typically described as a lone-wolf attack, though two of the workshop's participants cast doubt on this assumption. Some cases involved complex coordination and operational planning (PFLP hijackings and the September 11 attacks) while others did not require high levels of complexity (London and Oklahoma City bombings). These cases also span several regions, time periods, and ideological motivations, thus allowing us to understand how socio-political, technological, and normative environments can shape the dynamics of innovation.

SECTION 2: THEORETICAL APPROACHES TO TERRORIST INNOVATION

Participants and Objectives

In the first panel, Dr. Martha Crenshaw, Stanford University, and Dr. Gary Ackerman, University of Maryland, presented their analytical approaches to the puzzle of terrorist innovation to help define the central concepts of this workshop and provide a framework for discussing the case studies that made up the empirical foundations of this project. Dr. Adam Dolnik, University of Wollongong, served as a discussant and summarized his own findings on terrorist innovations. Dr. Mohammed Hafez, Naval Postgraduate School, moderated the session.

Discussion and Findings

Dr. Crenshaw questioned the conventional wisdom that terrorist innovations are rare. This misperception stems from three faulty—and even dangerous—assumptions:

- Evolutionary adaptation and synthesis of earlier technologies and methods are not innovations.
- Terrorist innovation is inherently escalatory or destructive.
- Innovation necessarily entails the widespread diffusion of new technologies or techniques across terrorist organizations.

Crenshaw argued that most terrorist innovations involve incremental learning and adaptation of earlier repertoires of violence; innovations can take place in the realm of strategies, organizational forms, and target sets, without necessarily escalating the level of violence; and innovations are truly inventive even when others do not emulate them (the 9/11 attacks are a case in point).

To understand innovation, we must delineate between strategic, tactical, and organizational innovations. *Strategic innovation* involves significant points of novelty in the historical development of terrorist campaigns, shifts that change the fundamental pattern of terrorist challenges to political authority and, thus, serve as "game changers." *Tactical innovation*, which occurs more frequently than strategic ones, entails a change in methods or operations – typically the introduction of new weapons, techniques, or target sets. *Organizational innovation* requires a change in group structures and patterns of recruitment. These types of innovations are often reflected in a group's decision to abandon hierarchical organizations in favor of cellular groups or loosely structured networks.

There are many reasons to innovate, argued Crenshaw, but most often "problem solving" rather than advantage seeking drives the process to learn, adapt, and invent. Security countermeasures are perhaps the most obvious example of challenges that need to be solved by terrorists, but problems also include the terrorists' inability to meet their objectives with extant methods. Innovation can also be driven by new opportunities, such as the emergence of new technologies, accessibility to new targets, or availability of new recruits.

The leader is central to innovation, argued Crenshaw. She conceptualized leadership in two ways:

- Hierarchical leadership demanding and funding innovation

- Entrepreneurial leadership of an individual seeking to advance in the terrorist organization (or just seeking an opportunity to implement his ingenious idea)

Dr. Ackerman introduced the concept of innovation as it is studied outside of the terrorism field. He agreed with Crenshaw that little has been done to understand terrorist innovation and, therefore, specialists have to seek definitions, concepts, and theories from other disciplines, including military strategy, business, social movements, sociology, and cognitive psychology. As one would expect, there is little agreement across these disciplines on what constitutes innovation and what drives it forward. The analytical challenge is compounded by the problem that concepts developed and defined in other fields may not be transferable to terrorism analysis because terrorists and their organizations are distinctive social actors that are not always driven by a single, clearly defined preference, say, the profit motive.

Similar to Crenshaw, Ackerman acknowledged that innovation could be incremental and the result of trial and error, as opposed to a revolutionary breakthrough. Moreover, he agreed that innovation is rarely produced by the "lone genius," but rather an outcome of synthesizing the old with the new. Ackerman further argued that innovation is most often a response to a challenge or a problem, not an effort pursued for its own sake.

Ackerman introduced many variables that could theoretically explain why innovation takes place in terrorism:

- Innovation occurs because the group has the ***ability and resources*** to innovate
- Groups rationally calculate in a ***cost-benefit analysis*** that innovation can be advantageous to their objectives
- Innovation is ***ideologically compatible*** with the group's identity or worldview
- Innovation occurs in groups with ***high levels of risk tolerance***
- ***Competition between terrorist entities*** can drive some to innovate
- ***New inventions can create new needs***, thus turning the old adage of "necessity being the mother of invention" on its head

Dr. Dolnik, who is the only person to have written a book on the subject of terrorist innovation, gave added credence to the evolutionary, rather than revolutionary, nature of terrorist innovation.[1] Whereas the panel felt that innovation was a rational "problem solving" endeavor, Dolnik, while not disagreeing completely, highlighted several examples of groups driven by emotive, ideological, and symbolic motives to innovate. They simply have the capability, desire, and, above all else, idiosyncratic leaders calling for spectacular and cutting edge terrorism to express their rage or symbolize their end goal.

Dolnik also stressed that one should not underestimate accidents of history—such as a person with a particular skill being recruited by a terrorist group. Ackerman agreed, stating that it is not likely that terrorists will become scientists. However, a scientist could become a terrorist. This theme of accidents of history does appear repeatedly in the case studies that follow.

[1] Adam Dolnik, *Understanding Terrorist Innovation: Technology, Tactics and Global Trends* (New York: Routledge, 2009).

SECTION 3: PFLP'S AIRPLANE HIJACKINGS, 1968-1970

In July 1968, five members of the Popular Front for the Liberation of Palestine (PFLP) hijacked an Israeli El Al airliner and diverted it to Algeria. This operation was the first of several airplane hijackings conducted by the PFLP, culminating with the climactic September 1970 operation at Dawson's field that entailed hijacking three planes, diverting them to Jordan, and blowing them up on the tarmac in the presence of international media (after releasing all the passengers).

Participants and Objectives

In this panel, Mr. Yoram Schweitzer, Institute for National Security Studies, and Dr. Glenn Robinson, Naval Postgraduate School, presented their findings on PFLP's innovation in terrorism. They analyzed this important case in terms of the preconditions and causes that made airplane hijackings PFLP's signature operation and assessed whether it was possible to predict this shift in tactic and strategy. Dr. Mohammed Hafez moderated this session.

Discussion and Findings

Schweitzer highlighted three dimensions of the PFLP's innovation:

- The group's decision to internationalize the conflict by making the global community the PFLP's primary target audience;
- the selection of aviation as the prime target, which up to this point was relatively free of political hijackings;
- The incorporation of foreign terrorists in the plot's execution, including Japanese and German nationals;

By all these measures, the PFLP engaged in strategic, tactical, and organizational innovations simultaneously. To be sure, the PFLP's innovations were not new in the sense of creating something completely unprecedented in history. Instead, both Schweitzer and Robinson agree that the PFLP synthesized older tactics in new ways, and hijacking as a "repertoire of resistance" was new in the Palestinian-Israeli conflict—and certainly new to the PFLP.

Preconditions and Causes

Both Schweitzer and Robinson agreed that the main motive of the PFLP's innovation was to bring the Palestinian problem to the international media's attention, "to force the world, at gunpoint, to take notice." The precondition for the PFLP's innovation was the humiliating defeat of Arab states in the 1967 Six Day War, which effectively put an end to the strategy of Palestinian liberation through conventional warfare. As the PFLP saw it, Palestinians had to take their fate in their own hands since they could no longer count on the Arab states. Another motivation to innovate was to create a "revolutionary atmosphere" to awaken the Palestinians' sense of nationhood and empower refugees through armed struggle.

Israeli effectiveness was not limited to defeating Arab states on the battlefield, it also succeeded in curtailing guerilla activities along its borders. This situation created a precondition for innovation by making it difficult for Palestinians to target their Israeli adversary directly and effectively.

Innovation, therefore, was a response to concrete problems that had to be overcome if the Palestinian nationalist movement wished to maintain its strategy of armed struggle.

Another precondition was the nascent nature of the airline industry, which was exploited by the PFLP for lacking rigorous security checks at that point. This suggests that targets of opportunity are an important precondition for innovative terrorism.

Both Schweitzer and Robinson saw factional competition between the PFLP and its rivals as an important precondition for innovation. There were several Palestinian organizations with competing ideologies and constituencies. A spectacular operation was necessary to elevate the PFLP above its competitors, and by including non-Palestinians in its operations the PFLP cemented its relations with international leftists and turned the organization into a transnational actor.

A common theme that emerged across cases is the role of the entrepreneurial leader, and this is exemplified by the PFLP's hijackings. The role of Wadi`a Haddad, a charismatic, creative, and ambitious operative, was crucial for innovation. It was his idea to shift from operations against Israel, which he deemed to be a "waste of time," to *international* ones that are sufficiently spectacular to capture the world's attention. The PFLP's leader, George Habash, was open to new ideas and gave Haddad the space and autonomy necessary to innovate. Haddad was eager to learn from other movements. He selected the best recruits he could find and planned the most intricate details of the operations—and he even participated in the blowing up of the airplanes in Jordan during the September 1970 operation.

Schweitzer viewed the PFLP at that juncture as a cohesive, centralized organization, which facilitated the execution of these operations. Robinson, however, saw it as an organization with a "collective leadership," in Leninist style, but he also considered this as a precondition for openness to new ideas and willingness to exercise operational autonomy.

Predictive Indicators

Schweitzer argued that anticipating the PFLP's hijackings would not have been easy and it would have required the availability of intelligence assets deep within the organization. The permissive environment was important for innovation, but nothing less than a clairvoyant security service would have predicted the PFLP's new tactic. The PFLP did escalate its rhetoric of armed struggle, as Robinson stated, but these statements were not sufficiently specific to betray its impending innovation.

Debating Consequences of Innovation

Participants debated whether the PFLP's innovation was effective in achieving its objectives. Those who measured success in terms of achieving the ultimate objective of the organization, which was the liberation of Palestine, concluded that the PFLP's innovation was a failure. Others, however, pointed out that terrorist groups have short- and mid-range objectives. In the case of the PFLP, airline hijackings were intended to internationalize the Palestinian cause and in this regard they were successful.

SECTION 4: ETA'S ASSASSINATION OF LUIS CARRERO BLANCO

On December 20, 1973, three members of *Euskadi Ta Askatasuna* (ETA, Basque Homeland and Freedom) detonated explosives in a tunnel they had dug under a Madrid street. This was the road routinely taken by the Spanish Prime Minister, Admiral Luis Carrero Blanco, on his way to work. The explosion catapulted the car nearly 50 feet up in the air, killing its intended victim instantly. This was the first major spectacular attack undertaken by ETA against a high-value target since its inception in 1958. Previously, most of its attacks were against the Spanish police and symbolic targets. This attack, therefore, constituted a major escalation for ETA. It was also the first attack the organization conducted outside of the Basque region, surprising the Spanish authorities with its audacity to strike in the heart of Madrid. Another first for the group was the use of explosives; up until that fateful attack ETA had only used guns and rifles to kill its victims.

Participants and Objectives

In this panel, Professor Rogelio Alonso, Universidad Rey Juan Carlos, and Professor José A. Olmeda, Universidad Nacional de Educación a Distancia, presented their research on the preconditions and causes of ETA's infamous assassination, explaining how it is an important instance of terrorist innovation, and shed light on why the authorities failed to anticipate it. Dr. Maria Rasmussen, Naval Postgraduate School, moderated this session.

Discussion and Findings

Following the killing of Admiral Carrero, ETA wrote its book-length description and analysis of the attack, where it claimed the killing was a strategic innovation. However, Alonso and Olmeda both emphasized that Carrero was a "target of opportunity" for ETA. The plan to kill Carrero was hatched by the military apparatus of ETA only after the organization received information about the admiral's daily church attendance on his way to work. The strategic impact of the attack was not fully considered by ETA, although the organization did anticipate major political fallout from a successful operation. Therefore, it is appropriate to conceive of this operation as a tactical innovation within ETA's broader strategy, initiated in 1968, of unleashing a revolutionary war with the Spanish government and a "rebellious mood" within the Basque region through what the organization called the "action-repression-action cycle."

Preconditions and Causes

According to Alonso, once ETA was told of Carrero's daily church routine, it planned to kidnap the Prime Minister and possibly demand the release of comrades from jail, but this proved to be unfeasible. It then considered assassinating him with a rifle, but that too proved impractical. The idea for digging a tunnel under the street came to the group after recalling a 1969 escape of 10 ETA members from a maximum-security prison; they fled by tunneling their way out over a period of three months. The ability to dig the tunnel underneath a route commonly taken by the Prime Minister was made possible by the availability of an apartment for rent adjacent to that street. The plot also succeeded because the victim did not deviate from his daily routine of going to mass, invariably using the same road. Both Alonso and Olmeda agree that having this information on the Prime Minister's movement was an essential precondition for the operation.

In fact, without this information the plot may not have been possible. The innovation in the Carrero operation occurred early in the history of ETA, before it became a fully hierarchical organization and developed a robust funding stream relying on kidnappings for ransom and racketeering, two factors leading to innovation in many of the other cases considered during the workshop.

As for causes of this innovation, both presenters highlighted the existence within ETA of a rabid nationalist ideology that combined ethno-nationalism with traditional neo-Marxism and viewed the struggle against the state as a war of national liberation. Within this ideological framework, the killing of the head of government made perfect sense. But perhaps the most important cause of innovation was the organization's need to respond to Francoist repression. The dictator routinely declared martial law in the Basque region following an attack by ETA. Franco had also put the ETA leadership on trial and had many of the leaders condemned to death. The killing in April 1973 of Eustakio Mendizábal (*Txixia*), a highly valued militant leader, bolstered ETA's commitment to the plot.

Predictive Indicators

Both Alonso and Olmeda emphasized that the attack succeeded because the terrorists exploited the routine activities of their target and because the Spanish authorities underestimated ETA as an adversary. It was not a secret that ETA was searching for an attack opportunity that would raise its stature, and Carrero himself was given an intelligence report that hinted at a possible strike against him. The inability to foil the plot was due in part to a lack of police professionalism under the Franco dictatorship. ETA had to mobilize about 30 members for this plot, who all lived in Madrid for months and made a series of operational blunders like leaving weapons in bars. Routine police action could have picked up on these movements. In addition, ETA manipulated an element of surprise. The authorities may have been overconfident because, largely due to repression and military occupation of the Basque region, ETA had never managed to mount attacks in Madrid before. Ultimately, however, luck favored ETA because so many elements of the plot were aided by chance factors that cannot be seen except in hindsight.

This case raised many questions about how to define innovation and how to conceive of chance factors in the innovative process. Innovation implies deliberate effort to invent something new—or use older technologies and techniques in original ways. Yet this case demonstrated that good fortune and bad luck were indispensible to explaining, at least in part, the origin, direction, and success of this innovative plot. These chance factors, however, are by definition not subject to systematic conceptualization and rigorous analysis.

SECTION 5: IRA'S ATTEMPTED ASSASSINATION OF MARGARET THATCHER

On October 12, 1984, a powerful explosion rocked the Grand Hotel in Brighton, England. It was intended to kill the British Prime Minister Margaret Thatcher, who survived the attack, and other leading members of her cabinet and the Conservative Party she led. A month earlier, Provisional Irish Republican Army (IRA) bomb maker Patrick Magee checked into the same hotel in anticipation of the Conservative Party's Annual Conference meeting in this venue. He placed Semtex explosives in room 629, calculating that it would be sufficiently proximate to its intended target and powerful enough to do the job. He set the timing of detonation with a long-delay timer taken from a common household item, the video recorder.

Participants and Objectives

In this panel, Professor Richard English, Queen's University, and Mr. William Matchett, a 27-year veteran of the Royal Ulster Constabulary, discussed how this IRA attack, one in a series of attempts on the lives of high-value targets, constituted a tactical innovation in terrorism. Dr. Maria Rasmussen moderated this session.

Discussion and Findings

The first impression of this operation suggests that it was not particularly innovative in tactical, strategic, or organizational terms. The IRA had made several attempts in the past to kill British Prime Ministers and other high-value targets such as the Queen of England. The IRA also made use of various explosives for spectacular strikes inside Britain prior to this operation. Indeed, this attack was in keeping with the IRA's strategy of a long war of attrition, not a dramatic departure from it. However, if one conceives of innovation more broadly, argued English, the Brighton operation was indeed innovative because it was "one more step in an ingoing IRA process of constant updating, rethinking and adapting *in pursuit of new* and ever more effective means of achieving their objectives."

- The attack used for the first time a video timer to enable for the precise detonation of explosives that could be planted far in advance of any implementation of security countermeasures. This type of detonation allowed the bombers to depart the scene (and the country) without risking detection and arrest.
- Matchett noted that the inventiveness of this attack lays in its concurrent simplicity and complexity. Simple in it combination of bomb materiel and know-how that was readily available to expert IRA bomb makers; complex in the ingenious conception of the plot, the nature of the hard target they sought after, and its prior planning, which required guessing where the Prime Minister would be at the time of detonation. The IRA lacked the one ingredient that ETA had in abundance: luck.
- A veteran counterterrorism specialist participating in the workshop, maintained that this operation was perhaps the single greatest innovation in the use of detonators up until that time and it forced security specialists to rethink how long in advance to section off areas for political events.

In line with the earlier discussion on how to conceptualize terrorist innovation, this attack entailed taking an old and tried tactic—use of explosives—and combined it with something new and original—"the most popular entertainment innovation of the 1980s, the home video recorder."

Preconditions and Causes

Both experts agreed that this operation was congruent with the IRA's ideological worldview and insurgent strategy. However, the visceral hatred of Thatcher, the IRA's nemesis during the 1981 hunger strike, made her the ultimate target. As Matchett put it, "Thatcher had overtaken [Lord Oliver] Cromwell as a figure of hate."

Another important precondition for the plot was the IRA's propensity to experiment and use explosives in new ways. Matchett made the point that the attack came 15 years after the IRA began its campaign, thus, unlike ETA, they were high in the learning curve. By 1984, the IRA had an abundance of skilled engineers and experienced bomb makers to conduct sophisticated operations. Moreover, the IRA had Libya's dictator Muamar al-Qadhafi as an ally willing to provide them with large quantities of Semtex explosives.

English argued that the most critical variable in this innovation was the enterprising Patrick Magee, an experienced bomb maker who was obsessed with killing Thatcher. He was both intelligent and deeply committed to the IRA's cause. His ability to innovate was in large measure a product of the IRA's organizational structure, which despite being highly centralized allowed for local autonomy. The theme of local autonomy at the operational level came up in the PFLP and ETA cases as well.

Predictive Indicators

As in the first two panels, the consensus among the IRA experts is that little could have been done to anticipate this sort of innovation, though both experts agreed intelligence such as that provided by IRA informers later in the decade could have helped foil the plot. In fact, English suggested that this case provided two key lessons for intelligence: 1) we should recognize that intelligence is the basis for all successful counterterrorism. Our ability to anticipate terrorist innovations is dependent on the presence of deep intelligence assets that can expose the thinking, planning, and preparation of the terrorists; and 2) we should coordinate on all fronts of counterterrorism by sharing intelligence across stakeholders.

SECTION 6: AUM SHINRIKYO'S SARIN ATTACK

On March 20, 1995, five members of the Aum Shinrikyo (Aum Supreme Truth) cult released sarin liquid gas in five Tokyo subway lines during morning rush hour. This indiscriminate attack was intended to kill thousands of people, but it only managed to kill a dozen and injure several hundred (more than five thousand people checked into a hospital, but they were among the "worried well"). This operation was the first of its kind, using a warfare agent in a terrorist attack. It was also the first time in the modern era that a cult intended mass violence against external targets; all previous mass killings were directed inward in the form of suicides.

Participants and Objectives

Dr. Adam Dolnik, Center for Transnational Crime Prevention at University of Wollongong, presented on the history of Aum Shinrikyo's experimentation with biological and chemical attacks, operations that served as a prelude to the March 1995 attack, and factors that explain this cult's innovative drive. Dr. Maria Rasmussen moderated this session.

Discussion and Findings

Workshop participants debated at length how to classify Aum. This was not a terrorist organization but a cult, though its attack was considered an act of terrorism because it targeted subway lines frequented by Japan's political elite. In addition, cult membership was ignorant of the organization's weapons program, which was the responsibility of Asahara and his inner circle. Dolnik highlighted three factors that explain the 1995 Tokyo subway bombings:

- An eccentric leader open to experimentation and innovation
- A cosmic doomsday ideology that justified mass killings
- A resource-rich organization with an uncanny ability to attract scientists

Preconditions and Causes

This attack cannot be explained without taking into account the centrality of Aum Shinrikyo's leader Shoko Asahara and his cult of personality. In 1984 he formed the cult Circle of Divine Wizards and three years later, after claiming to be inspired by divine visions, renamed it Aum Shinrikyo. The cult held Asahara to be the world's savior based on an eclectic ideology that combined aspects of "Hinduism, Christianity, Tibetan Buddhism and the prophecies of Nostradamus." The leader did not tolerate internal dissent and killed those who threatened to deflate his divine aura. Asahara justified killing in terms of elevating his victims to a "higher spiritual plane." After suffering a humiliating electoral defeat in 1989, he began procuring and experimenting with biological agents. In 1993, he began research on chemical weapons after prophesying Armageddon would occur in three years. (Aum Shinrikyo was not the only cult to have made such predictions at that time. Heaven's Gate, the Branch Davidians, and the Order of the Solar Temple also made doomsday claims predicated on the arrival of the new millennium.)

Despite being the unquestioned leader of the organization, Asahara was open to new ideas and risk taking because he was obsessed with acquiring innovative weapons. As in previous cases, this mixture of centralized leadership and openness to ideas from below is critical for innovation. The

resources of the group—approximated at $1 billion at the time—and its ability to attract scientists allowed Asahara to incentivize innovation among ambitious members. Dolnik pointed out that the Japanese authorities' hesitancy to infringe on religious activities created a permissive environment for unencumbered experimentation, which was an important precondition for innovation in this case.

Dolnik's presentation explained the drive to innovate solely by internal causes (leadership and ideology), even though the attack was prompted by the Asahara's electoral defeat and expedited by the threat of an impending police crackdown on the cult. The choice of weaponry was not driven by a rational calculation in response to a security environment or countermeasures, but rather by an irrational attachment to a type of weapon. Dolnik pointed out that none of Aum Shinrikyo's killings involved the shedding of blood, which suggests that the choice of sarin was in line with this earlier pattern of violence. Nor was this choice in response to external competition from other cults. It was the group's doomsday ideology and eccentric leader bent on fulfilling his own prophecies that drove this deadly innovation, aided by ambitious scientists within Aum's inner circle doing their best to please their beloved leader.

Predictive Indicators

Unlike the previous cases where predictive indicators were difficult to notice, vigilant security forces could have easily detected planning and preparatory behaviors prior to the Tokyo attacks.

- There were at least 20 attacks involving the use of biological and chemical agents prior to the March 1995 attack.
- The cult issued statements and even poems about the "magical" value of sarin.
- Police ignored residents' complaints about unusual odors and changes to the environment near Aum Shinrikyo's compound.
- There were anonymous letters to the police warning them about the cult's activities that were not investigated.
- Earlier killings associated with the group were left uninvestigated by the authorities.
- The cult's international research and experimentation with chemical agents could have betrayed its future intent had they been discovered.

Dolnik concluded that Aum Shinrikyo was actually a greater threat than Al-Qaeda could ever be when it comes to the use of chemical, biological, radiological, and nuclear (CBRN) terrorism for the following reasons:

- Aum Shinrikyo had more money than Al-Qaeda.
- The cult had better scientists and facilities than Al-Qaeda.
- The permissive environment Aum enjoyed, which enabled it to experiment and learn from earlier failures, is unimaginable in the case of Al-Qaeda today.

SECTION 7: THE OKLAHOMA CITY BOMBING

On April 19, 1995, Timothy McVeigh parked a Ryder truck loaded with improvised explosives in front of the Alfred P. Murrah Federal Building in Oklahoma City. He lit the fuse and at 9:02 AM the explosives detonated, killing 168 and injuring 680. This was the worst act of homegrown terrorism in the United States, and one that would be overshadowed only by the terrible 9/11 attacks. The plot, eerily enough, was inspired by *The Turner Diaries*, a work of fiction by William Pierce in which the hero sparks a revolution by destroying the FBI headquarters with a truck bomb.

Participants and Objectives

Professor Stuart Wright, Lamar University, and Professor Mark Hamm, Indiana State University, presented their research on the Oklahoma City bombing, discussed the broader movement from which McVeigh emanated, the intricate planning that went into designing the explosives, and the factors that explain the motives behind the attack. Dr. Maria Rasmussen moderated this session.

Discussion and Findings

The key innovation in the Oklahoma City bombing, argued Wright, is the ideological adaptation of the far-right movement that entailed constantly co-opting social and political issues in order to mobilize people on behalf of its conservative agenda. This subculture (the Patriot's movement; Posse Comitatus; Covenant, the Sword, and the Arm of the Lord [CSA], etc.) has its roots in post-World War II anti-communist associations, anti-civil rights groups, and the Christian identity movement. It is also intimately connected to extreme racist organizations like the Aryan Nation. Every time this movement appears to be completely marginalized by mainstream politics, it reinvents itself by exploiting new threats to its constituency: race integration, taxation, and gun control. The far-right subculture frames these issues in terms of a government increasingly encroaching on the rights of its citizens—turning America into a "police state." Mark Hamm, by contrast, viewed the innovation in Oklahoma City as a technical one involving the design of the bomb. And he gave the credit not to McVeigh but to Richard Wayne Snell, the man who conceived of the plan and the bomb but couldn't carry it out. This issue of innovation in terrorism as a process, which emerges by trial and error, was highlighted by this case and a theme of the workshop.

Preconditions and Causes

This far-right movement was revitalized in the early 1990s in response to a number of developments:

- The U.S. War on Drugs in the 1980s spurred the mobilization of paramilitary groups who viewed this war as a conspiracy to expand the state's police powers.
- The government's aggressive anti-gun laws exemplified in the banning of the importation of 43 types of military weapons, which brought a network of pro-gun advocates and right-wing militias closer together.
- The 1992 raid on the ranch of Randy Weaver and his family in Ruby Ridge, Idaho, and the siege and raid on the Branch Davidian religious cult near Waco, Texas in 1993 amplified the far-right "warfare" framing among its ardent adherents.

An extremist ideology, therefore, was an important precondition for thinking about and legitimating the targeting of the U.S. government. Timothy McVeigh was a product of a network of insurgents who wished to avenge the siege and bloody demise of the Branch Davidians. He saw himself as part of a leaderless resistance bent on awakening the masses to the state of oppression in which they live. McVeigh did not really want to evade the authorities as evidenced by having the *Turner Diaries* with him on the day of the attack, the missing license plate on the getaway car, and the words printed on his shirt in defense of political murder. He envisioned himself a martyr for a cause and, in this respect, McVeigh's egotistical search for a great historical legacy played a major role in inspiring this attack.

Both Wright and Hamm cast doubt on the official narrative that McVeigh acted with a single accomplice, Terry Nichols. His military training did not entail training in major explosives, despite his claims to the contrary. The intricate design of the truck bomb and the sophisticated fabrication of the blasting caps required for detonation could not have been possible without the help of expert bomb makers.

Another inspiration for the attack was a plot hatched in 1983 by Richard Wayne Snell, a member of CSA who felt humiliated by the U.S. government for seizing his property after convicting him of tax evasion. Snell considered seriously bombing the Murrah Federal Building in Oklahoma City, where he worked, using a truck bomb. The plan never materialized and Snell was ultimately sentenced to death for killing a police officer in Arkansas. He was executed on April 19, 2005—the same day as the Oklahoma City bombing.

Predictive Indicators

Similar to the Aum Shinrikyo's case, a more vigilant police could have detected preparatory behaviors that were essential for the operation. Hamm pointed out that McVeigh and Nichols broke into the Martin Marietta Rock Quarry to steal explosives and blasting caps. This should have triggered an investigation from the FBI counterterrorism division as well as the local police. Many clues could have uncovered the identity of the perpetrators before they could proceed with their plot. Neglect on the part of the local Sheriff was critical to the success of the operation.

SECTION 8: AL-QAEDA'S 9/11 ATTACKS

On September 11, 2001, Al-Qaeda introduced to the world the ultimate weapon of mass effect. Combing two previous innovations in terrorism—airplane hijackings and suicide bombings—Al-Qaeda created something unforeseen by counterterrorism specialists and never seen before in the history of terrorism: airplanes turning into veritable missiles with which to strike soaring towers and high security facilities. This attack was both a tactical and strategic innovation in terrorism, but it was also a normative innovation in its ability to justify the mass killing of civilians not directly involved in a conflict zone.

Participants and Objectives

Mr. Peter Bergen, New America Foundation, and Dr. Assaf Moghaddam, West Point Combating Terrorism Center, presented their analysis of the preconditions, causes, and the preparatory behaviors leading to the 9/11 attacks. Dr. Mohammed Hafez moderated this session.

Discussion and Findings

Bergen and Moghaddam agreed that the 9/11 attacks were innovation *par excellence*, but as in the previous cases discussed in this workshop, Al-Qaeda's originality lies with its synthesis of older innovations in terrorism. The PFLP and Hezbollah had already pioneered the two elements of Al-Qaeda's mode of attack: politically inspired hijackings and suicide operations. Additionally, Ramzi Yousef had tried and failed in 1993 to bring down the Twin Towers.

Preconditions and Causes

Bergen highlighted the historical and contemporary grievances that animate Al-Qaeda's ideology:

- Deep sense of collective Muslim humiliation
- America's support for Israel
- U.S. presence in Saudi Arabia

As in the previous case studies, both experts stressed the importance of leadership in the 9/11 plot. Bergen argued that but for Bin Laden, the 9/11 attacks would have never taken place. Bin Laden's determination to avenge a personal insult incurred when the United States and Saudi Arabia pressured the Sudanese government to oust him from that country in 1996; the use of his personal largesse to fund the operation; and his dictatorial leadership, all help explain the choice of targets, the scale of the operation, and the inability of other leaders to scuttle the plan despite their strong reservations. Bin Laden also selected the operatives for the plot and shielded the plan's details from others in his organization to ensure maximum secrecy.

Moghaddam agreed with this assessment, but the critical leadership factor in his view was Bin Laden's "centralization of decision [making] and decentralization of execution." As in the cases of the PFLP, ETA, IRA, and Aum Shinrikyo, Al-Qaeda was a highly centralized organization that was open to new ideas and initiative from outside the core leadership structures. Bin Laden's dictatorial style was augmented by his willingness to consider innovative ideas that could serve his agenda.

Another critical leadership variable is the role of the terrorist entrepreneur played by Khaled Sheikh Mohammed. Bergen argued that Mohammed saw himself as a "Jihadi James Bond." His maniacal fascination with fantastic terror operations preceded the 9/11 attacks and was critical to conceiving them. The combination of a well-resourced dictatorial leader and a maniacal entrepreneur strongly resemble the preconditions in Aum Shinrikyo's innovation.

Both Bergen and Moghaddam saw Al-Qaeda's "martyrdom complex" as an important precondition for the attack. This normative context was made possible by a clerical *fatwa* (religious ruling) that sanctioned the mass killing of Western civilians in reciprocity for Western killings of Muslim civilians. Another precondition for the successful attacks was the security mindset of counterterrorism specialists. Up until 9/11, hijackings were presumed to involve taking hostages in order to negotiate concessions from the targeted country. Therefore, the hijackers would have to have in their possession weapons that enable them to secure hostages for the duration of negotiations. All airline security measures, consequently, were oriented toward stopping passengers from bringing onboard guns, bombs, and other materials that make hostage taking possible. It did not occur to security specialists that hijackers would undertake a mission not to negotiate, but to kill and be killed.

Predictive Indicators

Al-Qaeda's penchant for spectacular, simultaneous and mass casualty attacks using suicide operations was not revealed for first time on 9/11; this attack was the climax, not the beginning of its campaign. Like Aum Shinrikyo, Al-Qaeda's earlier operations (the embassy bombings in Kenya and Tanzania in 1998; the Cole bombing in 2000; and the foiled millennium plots in Los Angeles and Amman, Jordan) revealed its attachment to a particular attack type and its future intent to strike the United States. While it was difficult to foresee the specific 9/11 plot, Al-Qaeda's intent to undertake a WME attack against the United States should not have surprised security specialists. Indeed, Bergen, citing the 9/11 report, pointed out that the "system was blinking red."

- Al-Qaeda threatened the United States on many occasions prior to 9/11. It was not afraid to reveal its intent to kill American civilians *en masse*.
- Its training camps in Afghanistan were abuzz with rumors of an impending attack on the United States
- Some of the hijackers were known to be a threat, yet they were allowed to enter the United States and were not placed on a watch list.
- The arrest of Zacarias Moussaoui nearly a month prior to the 9/11 attacks could have revealed connections to a broader conspiracy to use planes as missiles had he been properly investigated by the FBI.

Moghaddam listed at least eight preparatory behaviors that were necessary for the 9/11 attacks to succeed: operational decisions, team selection, coordination and supervision, training, intelligence gathering, flight training, travel and documentation, funding, and post-attack political and military preparation. Theoretically, argued Moghaddam, some of these phases could have produced clues that individually would have been difficult to interpret but collectively could have betrayed the plotters' intentions.

SECTION 9: THE JULY 7, 2005 LONDON BOMBINGS

On July 7, 2005, four suicide bombers detonated their explosives on four separate transportation lines in London, England, killing 52 people and injuring several hundred. Unlike on 9/11, these attacks were not perpetrated by outsiders seeking to strike the far enemy, but instead were carried out by "homegrown" terrorists who lived in England and held British citizenship. This attack, the first mass casualty suicide bombing in Europe, entailed an organizational innovation on the part of Al-Qaeda. Unable to send teams of suicide attackers from abroad, it turned to recruit and train radicalized nationals of the targeted country.

Participants and Objectives

Dr. Lindsay Clutterbuck, RAND Europe, and Dr. Steve Hewitt, University of Birmingham, presented their research findings on the factors that lead to the 7/7 attacks, the nature of this innovation in the context of the terrorist attack cycle, and how to think about predictive indicators in the context of homegrown radicalization. Dr. Mohammed Hafez moderated this session.

Discussion and Findings

If one conceives of innovation narrowly, the 7/7 bombings were not original in their mode of attack or the nature of their target.

- Suicide missions have existed since the early 1980s.
- British nationals carried out two suicide attacks on behalf of Hamas inside Israel in 2003.
- The simultaneous nature of the bombings had become a familiar tactic by the time of the London bombings.

However, if one conceives of innovation more broadly as adoption of tactics in new contexts, or adaptation to security measures, then the London bombings were certainly innovative. The 7/7 attacks involved the adoption of a radical ideology (anti-Western jihadism) and attack type (suicide bombing) in a new setting (England). It also entailed organizational adaptation to a new security environment that made it more difficult for Al-Qaeda to send operatives from abroad. As Clutterbuck pointed out, Al-Qaeda exploited the availability of radicalized Pakistanis who had the ability to travel to Pakistan to visit their relatives on a regular basis and travel back to England without hindrance because they were British nationals, as 400,000 other British Pakistanis do on an annual basis.

Tactically, Hewitt pointed out that the London bombers used triacetone triperoxide (TATP) because it was widely available in pharmacies and hardware stores, whereas fertilizers were much more difficult to obtain. Hewitt viewed the 7/7 attacks as an important WME innovation. By recruiting British nationals, the plotters heightened the adverse psychological intensity of the attack.

Clutterbuck agreed that we should view innovation as evolutionary, entailing adoption, adaptation, and invention of new methods and technologies. He also argued that innovation could be analyzed at various stages of the terrorist attack cycle: *planning* the attack, *preparing* for the operation, *attacking* the target, *escaping*, and *exploiting* the outcome. In each phase, innovation can take place. A simple

focus on attack method may blind us to subtle forms of terrorist innovation in the other, equally important, phases of the operation.

Preconditions and Causes

Hewitt gave credence to the idea that innovation requires an entrepreneurial leader. In the 7/7 bombings, Mohammad Sidique Khan played a vital role in recruiting and motivating others to conduct this operation. The war in Iraq seems to have been the most important motive for carrying out an attack on the United Kingdom because of British critical involvement alongside the United States in the invasion and occupation of that country. The attack was intended to increase pressure on the British government to abandon its ally in Iraq.

The radicalization of British Muslims was also an important precondition and cause for the attack. Some observed sympathies for Al-Qaeda by at least two of the bombers and many British Muslims are weary of US-UK policies in the Middle East and South Asia. The Kashmiri conflict also created radicalized individuals willing to travel to Pakistan to fight in that conflict, which undoubtedly created opportunities for Al-Qaeda to recruit these individuals for its cause. Finally, another important precondition for the attack was the limited funding available to MI5, the British intelligence service, in monitoring all but the most dangerous militants on their watch list. The widespread sympathy for radical Islamist causes meant that only those deemed "primary investigatory targets" were given the required resources.

Predictive Indicators

According to Clutterbuck, it is possible to develop "trajectory indicators" that would enable security services to seek patterns of preparatory behaviors that suggest a person or small group is planning a nefarious activity. He is currently working on an analysis of the six major jihadi plots in the United Kingdom, starting with 7/7, which will discuss those "trajectory indicators." Hewitt argued that in the case of the London bombers there were serious signs of radicalization that were left unexplored.

- Both Khan and Shehzad Tanweer were involved in radical milieus as early as 2001.
- MI5 investigations in Pakistan prior to the attacks revealed Khan's and Tanweer's names as potential militants. The information was passed onto the West Yorkshire Police, but the two individuals were not properly identified until after the attacks.
- In 2003, both individuals were under surveillance as part of Operation Crevice that broke up a network of British militants of Pakistani origins possibly conspiring with Al-Qaeda or its affiliates.

Hewitt pointed to three important lessons of the London bombings:

- In the present context, it is important to increase the resources of the security services to carry out surveillance.
- Given the trend of using small cells of homegrown militants, it is necessary to increase efforts at infiltration and disruption through informers.
- Counterradicalization efforts must accompany counterterrorism ones because widespread radicalization among Muslims in Europe, and Britain in particular, creates opportunities for recruitment.

SECTION 10: DISCUSSION SUMMARY AND CONSIDERATIONS FOR FUTURE RESEARCH

In the concluding session of the workshop, participants offered their thoughts on generalizations that could be derived from the seven case studies.

Preconditions: In all but one case, the innovative organization was large and wealthy. In four of the cases, presenters underscored the combination of centralization in decision-making with decentralized execution. ETA was the only case of innovation in the absence of a large and wealthy organization, but in that case, the impetus came from a very accurate report that detailed the target's activities and vulnerabilities. In all cases, leadership was seen as a key factor. Specifically, three aspects of leadership were highlighted. A determined, perhaps dictatorial, leader can see a plan through. A charismatic leader can motivate those who are to accomplish the innovation. And an entrepreneurial leader (or leaders) can see his/her way round an obstacle, which may seem insurmountable at the start. Most of the presenters focused on one of these leadership types, and many talked in terms of two.

Causes: Presenters were virtually unanimous in highlighting the role of two factors. They saw innovation as a response to actions by the state. The IRA's defeat during the hunger strikes, ETA's suffering under Francoist repression, the ultra-right's anger at gun control laws in the United States, the Palestinian's need to react to the new balance of power in the Middle East after the 1967 war, these were all situations which pitted terrorists against the state and required a response, which came in the form of innovation. Presenters also pointed out the existence of ideologies that justified the struggle, and provided the justification, perhaps the call, to innovation.

Predictive indicators: The experts were pessimistic about our ability to pick up on predictive indicators that could help flag or foil terrorist innovation. In five of the seven cases, experts argued that intelligence and/or law enforcement work could have provided warnings of an impending WME attack attack. However, some of these potential warning signs would not have necessarily been apparent without the benefit of hindsight. The physical evidence was clear in the Oklahoma City and Tokyo subway cases, but in the 9/11 case evidence that an attack on the United States was imminent did not translate into concrete warnings on the nature of the innovation. Moreover, the evolutionary nature of innovation, which is marked by gradual learning and adaptation, and the seemingly endless possibilities of combining older innovations in new ways, makes it difficult to pinpoint the trajectory of specific innovations.

Furthermore, predictive indicators are not universal; any potential list of indicators must be confined to the specific innovation sought after by the terrorists. This finding suggests that security specialists may have to proceed on a case-by-case basis when seeking to anticipate and foil deadly innovations.

Workshop presenters agreed that good intelligence and police work could reveal innovative terrorist plots, and in some cases should have found them (Aum Shinrikyo's subway attacks, Carrero' s assassination, and the Oklahoma City and London bombings). They assess that a bigger role for law enforcement in counterterrorism could help in foiling future plots.

The participants offered their concluding thoughts on how to advance the research agenda for the study of innovations in WME terrorism. Experts agreed that the study of terrorist innovation is a

burgeoning field that requires much more scholarly attention and analytical rigor. We need to consider more than seven cases before making generalizations on terrorist innovations or the strategies that would stifle them. Too many important questions remain unanswered: at what point in the life of a terrorist organization does innovation occur? Is there a relationship between the moment when innovation occurs, and the type of innovation that the terrorists will adopt? Is there a relationship between the moment when an innovation occurs, and a terrorist group's subsequent ability to innovate?

The workshop participants recommended several strategies to help advance our understanding of the topic:

- Investigate past cases of failed terrorist innovations or ones that were not widely adopted by other groups. This type of research could reveal barriers to innovation and diffusion, which can be helpful in shaping security countermeasures against the innovation and diffusion of WME terrorism. Failed and foiled plots offer an opportunity to control for variables that are presumed to advance innovation. This workshop lacked these cases and, therefore, the factors singled out as important or causal could well be present in other cases that did not produce innovation.

- Investigate WME terrorism in developing countries. Some of the most spectacular acts of terrorism in the 20th and 21st centuries have taken place outside the advanced industrial nations. These case studies could reveal patterns of terrorists exploiting opportunities associated with underdevelopment, corruption, state weaknesses, particularly in the law enforcement area, or protracted civil and regional conflicts. We could also expand the historical scope of our research, which began in 1968. Historical examples, even ones in ancient times, might offer insights into how innovation takes place.

- Investigate terrorist campaigns as opposed to individual incidents, because the former could reveal patterns of subtle innovation and adaptation that single episodes cannot uncover. This research would be particularly useful for understanding organizational innovation, which this workshop tended to neglect. Specifically, understanding a series of failed operations in Europe in which Al-Qaeda sought to recruit homegrown radicals could reveal an evolution in Al-Qaeda's strategy of recruitment. Furthermore, campaigns could show innovations not just in attack type, but also in other phases in the terrorist attack cycle.

- One participant pointed out that we limited our investigations to tactical, strategic, and organizational innovations, but we neglected to consider normative innovations that lead to legitimating WME terrorism, such as Al-Qaeda's reliance on *fatwas* that permitted the killing of civilians and the use of suicide attacks. This normative shift could signal a diminution in constraints on the use of WMEs.

The following appendices include selected research papers written by the workshop organizers and participants.

APPENDIX I: MOHAMMED M. HAFEZ AND MARIA J. RASMUSSEN, INNOVATION IN WME TERRORISM: A GUIDE FOR WORKSHOP PARTICIPANTS

This paper outlines the project's objectives; defines the key concepts relevant to studying terrorist innovation; explains the choice of cases selected for in depth research; and discusses some of the issues and debates surrounding the topic of innovative terrorism.

This project, sponsored by the Defense Threat Reduction Agency (DTRA), seeks to study the *preconditions*, *causes*, and *preparatory behaviors* associated with terrorist innovation. Our aim is to generate predictive indicators that could help counterterrorism specialists in law enforcement and intelligence respond to emergent advances in the use of weapons of mass effect (WME). Our approach involves analyzing in great detail and with analytical rigor seven cases of terrorism that involved tactical or strategic innovations with mass destructive, economic, or/and psychological effects:

- Airline hijackings by the Popular Front for the Liberation of Palestine (PFLP) between 1968 and 1972.
- 1973 Euskadi Ta Askatasuna (ETA) assassination of the Spanish Prime Minister Luis Carrero Blanco.
- 1984 Irish Republican Army (IRA) attempted assassination of British Prime Minister Margaret Thatcher.
- 1995 sarin gas attack on the Tokyo subway by the Aum Shinrikyo cult.
- 1995 Oklahoma City bombing by Timothy McVeigh.
- Al-Qaeda's September 11, 2001, attacks on the United States.
- July 7, 2005, bombings of the London Underground and bus system by a cell of radicalized British Muslims with links to militants in Pakistan.

This inductive approach is not limited to describing why and how innovation occurred in the past. It also aims to generate insights into how terrorists come to adopt new patterns of tactical and strategic behavior to advance their objectives. We aim to chart out patterns across cases in order to advance analytical concepts and models for observing future instances of WME terrorism innovation. Specifically, we are asking participating researchers to answer the following questions as they relate to their case studies:

- What factors internal and external to the terrorist organization motivated tactical or/and strategic innovation? (We use "terrorist organization" and "terrorist group" as interchangeable terms throughout this paper) What were the incentives to innovate?
- What were the leadership and organizational requirements for innovation? Did top leaders within the organization drive innovation or did aspiring terrorist entrepreneurs outside of the leadership hierarchy drive it? Did the structure of the organization shape in any way the pace of innovation or receptivity to it?
- When and in what context did innovation occur in the evolutionary cycle of the terrorist group? Were there any particular accelerants of innovation such as technological change, social and/or political contexts, ideological shifts, state sponsorship, or/and security countermeasures?

- Was the catalyst for innovation more a result of pressures internal or external to the terrorist organization?
- Looking back, would it have been possible for counterterrorism specialists to observe and connect together the developments that made innovation possible? What indicators would have enabled security specialists to anticipate the trajectory of innovation?
- Looking forward, what does your case tell us about how innovation in terrorism takes place and how might it inform future efforts to forecast emergent advances in terrorist methods of attack, especially the use of WME?

This white paper outlines the definitional and conceptual issues surrounding terrorist innovation. It should serve as a guide to all participating scholars as they prepare their papers and workshop presentations.

How do we define weapons of mass effect?

The Homeland Security Advisory Council (HSAC) defined WME as "weapons capable of inflicting grave destructive, psychological and/or economic damage" (HSAC, 2006: 10). A DTRA-sponsored study followed a similar approach but refined it further. It outlined at least six dimensions of a terrorist attack, any one of which would result in mass effects (Yengst, 2008: [2-5] 4, 5):

- At least 1,000 fatalities.
- A large area devastated – 10 square miles in rural areas, and one square mile in urban settings.
- Damage or destruction to at least one critical facility, be it a power plant, government center, transportation hub or control system.
- A loss of at least $10 billion to the economy of the United States or another major power, with smaller financial burdens in developing nations.
- A significant (but undefined) interruption in services, industries or quality-of-life functions.
- A manifest "degree of terrorism" – a qualitative, subjective but nevertheless present psychological and/or emotional impact on the population.

We would lower the fatality threshold since we feel the figure of 1,000 is excessive. We searched the Global Terrorism Database managed by the National Consortium for the Study of Terrorism and Responses to Terrorism (START) and found a total of 111 terrorist incidents with over 101 fatalities.[1] Of these, 41 took place during the civil wars of the 1980s and 1990s in El Salvador, Nicaragua, Rwanda, Angola and Mozambique, and 12 took place in Iraq after 2003. Only 2 incidents resulted in 1,000+ fatalities: September 11th and a Hutu attack on the Tutsis during the Rwandan conflict, which we consider to be an act of genocide distinct from traditional definitions of terrorism. One attack in Nepal resulted in 518 fatalities, but this was a conventional attack by Maoist guerrillas against government forces in the town of Bedi, and it was the guerrillas who suffered 500 of the total 518 fatalities. Two attacks (one of which is also connected to the Rwandan conflict) resulted in 400+ fatalities, and all other incidents resulted in 400 fatalities or less. Only 27 incidents

[1] The total figure is actually lower than 111, since the database counts each attack as a separate incident, even those such as the three 9/11 attacks which were part of the same plan. See "Search Criteria: Total Fatalities: (101+)" available at http://www.start.umd.edu/gtd/search/Results.aspx?page=1&casualties_type=f&casualties_max=101&dtp2=all&count=100&expanded=no&charttype=line&chart=overtime&ob=TotalNumberOfFatalities&od=asc#results-table (accessed December 17, 2009).

not connected to the civil wars mentioned above resulted in 150-400 fatalities. Therefore, we would lower the threshold to 100 fatalities. This does not seem too low, considering that other scholars work with a figure of 25 (Quillen, 2002: 280-82).

We also realize that points 4-6 are difficult to quantify and must therefore be evaluated subjectively. Property damage may be quantified, and to some extent, so can the loss of "human capital." It is more difficult to quantify security-related expenditures, or long-term effects on the economy (Hewitt, 1993: chapter 2). The evaluation of psychological effects is fraught with problems. A logical assumption is that popular concerns about terrorism are directly related to the level of terrorist violence. This seems to be verified in the case of opinion surveys after Oklahoma City and September 11th (Hewitt, 2003: 109-100). However, we know of at least one case, Spain, where the perceptions of the terrorist problem seem unconnected to the intensity of the terrorist violence (Hewitt, 1992: 182). In addition, individual stress or psychopathology following a terrorist incident will be influenced by a veritable host of factors (Sprang, 2003: 135-38), and it is also difficult to measure the psychological effects of different types of terrorist operations. Since 9/11, political psychologists have linked evidence of PTSD to the scale of the operation, and our media exposure to it (Melnik, 2002; Cohen Silver, 2002), but there is ample evidence that ETA and the IRA expected to provoke a major psychological effect with one individual assassination, that of a head of government (McGladdery, 2006: 125-140; Agirre, 1975). These may be some of the factors that led Martha Crenshaw (2000: 406) to point out that the study of the psychology of terrorism hadn't advanced much in a decade.

How do we define innovation in terrorism?

The study of innovation in terrorism is not new, but it is hardly systematic, comparative, or oriented toward theory building. There is only one book-length study on this topic (Dolnik, 2007); other scholarly claims about innovation in terrorism are usually embedded within broader studies on terrorist tactics, strategies, and motivations. As a result, there is hardly an explicit scholarly dialogue, much less consensus, on this important issue.

Frequently, terrorism scholars use the term "innovation" without attempting to define it. Among those who do, Dolnik calls it "the adoption of a tactic or technology that the given organization has not used or considered using in the past. This can take the form of the introduction of a weapon or tactic that is entirely new, or that has already been used by other organizations in the past" (Dolnik, 2007: 6). Martha Crenshaw adopts a similar definition of innovation – "the adoption of new patterns of behavior" (Crenshaw, 2001: 3) – and broadens the scope further by distinguishing between strategic, tactical and organizational innovations. Strategic innovations are game-changers, according to Crenshaw, because they involve the development of new objectives for the terrorist organization, and therefore of different operations to reach those objectives. Strategic innovation involves significant shifts in how groups frame their goals, and may thus require new forms of violence, target sets, or audiences to influence. One familiar strategic innovation was Al-Qaeda's shift from aiding insurgencies against "near enemies" (secular regimes in the Muslim world) to attacking the "far enemy" (Western countries). Crenshaw lists several cases of strategic innovation: the Irgun's campaign against British authorities in Mandate Palestine in the 1940s; airline hijackings in the 1960s; Hizballah's campaign of suicide bombings in the 1980s; and Aum's sarin attack in 1995 (Crenshaw, 2001: 5-6).

Tactical innovation involves significant shifts in technologies and techniques of terrorism without a concomitant change in objectives. Crenshaw avers that changes in weapons or targets happen more frequently in the life of terrorist organizations than does a fundamental strategic shift. Among the examples she offers are the murder of Count Folke Bernadotte in 1948, the first time an international mediator was murdered, or the IRA's switch from attacking Ireland to attacking the British mainland. Organizational innovation involves new ways of structuring the terrorist group or inventive methods to reach new recruits.

In this project we follow Crenshaw's definition of innovation, but at the same time recognize that there are issues that the literature has never clarified. Is there a difference between innovation and adaptation? Some use both terms as synonyms (Jackson, 2006: 161). Others seem to argue that terrorist innovation involves a series of adaptations to changing circumstances, most notably government policies (Faria, 2006: 47-8; Crenshaw, 2000: 416). Finally, others seem to be saying that adaptations occur continuously in the life of terrorist organizations and are always gradual, whereas innovations represent major breakthroughs in experimentation and development (Jackson, 2001: 203).

Another question left unanswered in the literature is: Can innovation occur without escalation? Faria (2006: 54) and Morgan (2008: 123) assume that terrorist innovation will bring escalation, and Crenshaw (2001: 3, note 6) states that innovation need not involve escalation, but does not discuss it further. Though it is possible to conceive of terrorist innovation without escalation, in the context of this project, and given our definition of WME above, we would argue that innovation in the direction of WME terrorism will almost inevitably involve escalation. Our goal, however, is not to close the debate completely over these conceptual disagreements. It may well be that close examination of the seven cases and the analytical presentations lead us to a reappraisal of the relationship between adaptation, innovation and escalation.

What was the rationale behind case selection?

For each of the seven cases under consideration, we are inviting two expert scholars to write independent assessments and make independent presentations. Our goal is not only to develop competitive analyses for each case study, but also to encourage informed dialogue across cases with the aim of generating new insights and synthesis. To that end, we are inviting the participating researchers to a two-day workshop to present their findings and discuss them with the group. In addition, we are asking two additional scholars, Martha Crenshaw and Gary Ackerman, to present a general theoretical and historical analysis of innovation in terrorism and its implications for countering WMEs. The seven cases are the following:

Date(s)	Attack	Group Responsible	Presenters
1968-72	Hijackings	PFLP	Ami Pedahzur* Yoram Schweitzer
1973	Murder of Prime Minister Luis Carrero Blanco	ETA	Rogelio Alonso Jose Antonio Olmeda
1984	Attempted murder of Prime Minister Margaret Thatcher	IRA	Richard English William Matchett
1995	Tokyo sarin attack	Aum Shinrikyo	Adam Dolnik
1995	Oklahoma City bombing	Timothy McVeigh	Stuart Wright Mark Hamm
2001	September 11th	Al-Qaeda	Peter Bergen Assaf Moghadam
2005	London subway bombings	Al-Qaeda linked cell	Steve Hewitt

The choice of cases is driven by a number of considerations. First and foremost, we want to break out of the current focus on radical Islamist movements. The current threat emanating from violent Islamist extremists has produced a near myopic concentration on the dynamics of this movement. Innovation in terrorism is a universal process that warrants comparative regional and group analysis. Given our interest in developing broader models of innovation, we think there are many lessons to be drawn from earlier waves of terrorism. In some ways these earlier cases offer an advantage over the current study of radical Islamism because they have receded from the headlines. These historical cases can be studied with greater objectivity and accessibility to a wealth of relevant sources, including terrorist memoirs and oral history, trial records, extensive investigative journalism, and government reports.

An equally relevant consideration is variation on cases. This project is one of theory building, not theory testing. Accordingly, we are looking at a diverse set of cases to highlight the variables that are common to innovation. In the language of social science, we are selecting cases on the dependent variable—innovation—in order to tease out hypotheses as to why and how terrorists innovate. The cases we have selected provide us with a variety of attack types: two individual assassinations of heads of governments, three major bombings, a path-breaking attack (the 1968-1970 hijackings) which launched a frenzy of contagion, one WMD attack, the first suicide attack in Europe, and the ultimate mass effect attack (9/11). In addition, this selection also provides us with a spread across different decades, starting in 1968.

Some of the cases represent innovation by established hierarchical organizations like the IRA, ETA, PFLP, and Aum Shinrikyo; others by networked organizations and groups like Al-Qaeda and the London bombers. One case, the Oklahoma City bombing, is typically described as a lone-wolf attack, though this is the subject of controversy (Hamm, 1997). Some cases involved complex coordination and operational planning (PFLP hijackings and the September 11 attacks) while others did not require high levels of complexity (London and Oklahoma City bombings). Some of these cases were not just innovative in their tactics per se, but did constitute a strategic innovation because of the choice of symbolic targets (IRA and ETA). Others were awe-inspiring because they represented completely new repertoires of terrorism (airplane hijackings, Tokyo subway bombings, and September 11). Given our interest in contexts of innovation, we think these cases that span

several regions, time periods, and ideological motivations can help us understand how socio-political, technological, and normative environments can shape the dynamics of innovation.

What are the critical variables we would like you to explore?
It is important to go beyond the mere narration of details surrounding past episodes of innovative terrorism; the goal of this project is to think analytically and systematically about the underlying factors—the critical drivers—that brought these tactical and strategic innovations to fruition. To that end, we are asking the participating researchers to use the questions and issues raised below as a guideline for the analysis of their individual case in order to generate focused and structured comparisons across cases.

As we think about innovation, we would like to distinguish between *preconditions*, *causes*, and *preparatory behaviors*. Preconditions are those characteristics of terrorist organizations and of the environment in which they operate which make innovation more or less likely. For example, researchers have pointed out that among the Aum Shinrikyo cadre, there were a significant number with highly technical or scientific degrees (Kaplan and Marshall, 1996: 2-3, 26-8, 77-8, 296-7). The existence of personnel with the requisite scientific knowledge would help any terrorist organization solve complex technical problems. Causes are those factors that directly influence the group's decision to innovate. These may include new security environments, factional competitors, or a new strategic direction that requires an escalation in the violence. Finally, once the group has decided it wishes to innovate, there may be activities that the group needs to undertake in preparation, observable behaviors or conducts. To continue with the Aum example, prior to the subway attack, the Japanese police had received reports from the neighbors that a distinct smell was emanating from the Aum compound. Had the police acted promptly on this information, it might have interrupted the workings of Aum's laboratory (Kaplan and Marshall, 148-49).

Preconditions

What are the leadership and organizational requirements for innovation? Are certain types of organizations more likely to innovate than others? Is innovation driven by leaders atop the organizational hierarchy or by aspiring terrorist entrepreneurs outside of the core leadership?
For example, Tucker argues that "entrepreneurial leadership is the key to understanding terrorist innovation", and believes that entrepreneurs are more likely to appear in small and newly formed groups than in large, established organizations (2000: 13; see also Crenshaw, 2001: 16-19). Jackson (2001: 201), by contrast, argues that resources will facilitate innovation, and therefore, financially robust organizations like the IRA or Hizbullah, are more likely to innovate. Along similar lines, de la Calle and Sánchez Cuenca argue that "the capacity for killing is directly related to the resources the organization has, and resources depend on popular support" (De la Calle and Sánchez Cuenca, 2006: 17, see also 26).

Did the structure of the organization shape in any way the pace of innovation or the receptivity to it? Jackson (2006: 161) argues that organizational characteristics such as the group's capacity to learn, technological awareness, openness to new ideas, and attitude toward risk influence its ability to innovate, and that larger organizations would therefore be in a better position to innovate. Along similar lines, Dolnik (2007: 150-52) shows that organizations with a safe haven or territorial stronghold are more likely and/or willing to innovate, and Tucker (2000: 8) avers that domestic terrorist organizations will be less likely to innovate, presumably because they'll be able to count on fewer resources.

Causes

A) Internal to the terrorist organization

C.J.M. Drake argues that, though a variety of factors explain the terrorists' target selection, the ideology of the group is of paramount importance in interpreting the world, defining the enemy and targeting it. Dolnik followed along similar lines by arguing that changes in the group's worldview will provoke a will to innovate (Drake, 1998: 54, 56, 78; see also Dolnik, 2007: 146-150). Moghadam (2008) makes the case that a particularly virulent form of Sunni Islamism—Salafism—was the key driver behind Al-Qaeda's widespread use of suicide terrorism against Western civilians and their coreligionists.

Beyond ideology, we would like you to think about the internal dynamics of the terrorist organization you are discussing. Twenty years ago, Crenshaw argued that organizational forces were more likely to explain the behavior of terrorist groups that ideology or than the analysis of their stated strategy (Crenshaw, 1985 and 1988). In particular, two organizational issues might drive innovation. The first would be the existence of factionalism within the group. The second would be the existence of a rival terrorist organization that is disputing territory or supporters. In either case, innovation might be a way to exercise control or dominance over organizational rivals (see also Bloom, 2004).

B) External to the terrorist organization

Do governments unwittingly encourage innovation, and if so, in what way? A number of scholars have argued this. Faria (2006: 47, 54), Jackson (2006: 165), Dolnik (2007: 152ff) and Byman (2007: 134) argue that counterterrorist strategies drive innovation as terrorists seek to circumvent new security procedures. Enders and Sandler (1993) show that security measures can lead to terrorists substituting tactics and targets. Jackson and Trujillo (2006: 62) in turn state that it is the environmental uncertainty, defined as not knowing what the security forces will do next, that will drive the process. Morgan et. al., (2008: 118) state that in a conflict with insurgents, the state will frequently escalate first in the push for victory, and that this will in turn push insurgents to escalate also.

Does civil society encourage innovation? Here we are thinking of normative contexts that may inhibit or encourage deadly forms of innovation. Waldmann (1982, 213-19), for example, has argued that in Argentina, the decade that preceded the emergence of the Montoneros and People's Revolutionary Army (ERP) terrorist organizations was one in which societal norms relaxed, political antagonism was rife, and violence became more acceptable socially, which in turn made the decision to turn to terrorism easier. Hafez (2007) argued that the widespread use of suicide attacks in Iraq was in part driven by earlier Muslim clerical support for this tactic against Israel.

Preparatory Behaviors

Looking back, would it have been possible for counterterrorism specialists to observe and connect together the developments that made innovation possible? What indicators would have enabled security specialists to anticipate the trajectory of innovation in your case? Since 9/11, many analysts have argued about the importance of intelligence in counterterrorism, and especially about human intelligence. In some cases, notably Israel and Northern Ireland, human intelligence in

the form of informants or agents within terrorist organizations has allowed the security forces to foil plots and prevent deadly attacks (Horowitz, 2004; Geraghty, 2000: especially Chapter 9; Dillon, 1999: chapters 12, 14). Such penetration of terrorist groups is not always possible. But once the terrorist group has decided to innovate, a number of actions may alert law enforcement personnel that something is about to happen. There are cases when terrorist organizations must commit common crimes as they prepare for a terrorist atrocity. But the group may simply need to move weapons, bombs or personnel from one point to another, and in the process, attract attention from law enforcement or from alert citizens, which is what happened with several of the 9/11 hijackers (National Commission on Terrorist Attacks, 2004: chapter 7).

Final Considerations

We are hoping that the comparative discussion and analysis of the seven cases will allow us to make generalizations about the process of innovation in terrorism. There is little doubt that the issues and questions discussed in this paper are relevant to innovation in some cases, but are they all necessary or/and sufficient for innovation to take place? If we were to apply the law of parsimony, which variables are more critical than others—which ones can be jettisoned to simplify our analysis without losing explanatory and predictive powers? Do some combinations make innovation a near certainty? Is the sequence of variables itself a factor in innovation? Can we argue that innovation is more likely to occur at particular moments in the evolutionary cycle of a terrorist group? Or that particular socio-political conditions make it more likely that the push for innovation will be internal, or external to the terrorist organization? Are some of these variables relevant for complex innovations, but not simple ones? Are some more relevant to strategic innovation, but not tactical or organizational ones? And finally, how can we operationalize these variables—i.e. turn them into observable or measurable indicators—that enable us to test their validity across cases and, more importantly, generate heuristic tools for intelligence and counterterrorism specialists?

APPENDIX II: MARTHA CRENSHAW, INNOVATION: DECISION POINTS IN THE TRAJECTORY OF TERRORISM

The question this paper addresses is whether, how, why underground organizations are innovative in designing terrorist challenges to state authority.[2] The question has rarely been asked, much less answered, in studies of violence and terrorism.[3] Even Adam Dolnik, writing explicitly on tactical and technological innovation, proposes that "terrorists are conservative by nature." His overview of trends in terrorist attacks shows remarkably little innovation: "What we have witnessed is that this scope is relatively limited and remarkably unchanging. In fact when one surveys the last 50 years of terrorist operations case by case, very few incidents strike the observer as creative *in any way*."[4]

In the literature on terrorism and insurgency, analysis of strategy is rare.[5] In fact, as noted an authority as the late J. Bowyer Bell concluded that there is little deliberate planning at all in underground organizations:

> Very few revolutionary organizations invest much time in strategic planning or organizational analysis. There may be an investment in ideology or internal propaganda under various guises, but the compelling concerns of the anti-insurgency experts are not found in the underground. Any day-long analytical conference focuses deeper and longer on rebel strategy and tactics than do the rebels over a year. There is little time for contemplation during an armed struggle and that is spent on the faith, survival and operations.[6]

Before 9/11, specialists in the field typically agreed with Dolnik that terrorism was not innovative. Ariel Merari, for example, concluded that in contrast to conventional war terrorism "has not changed much in the course of a century, and virtually not at all during the last 25 years."[7] In his view, stagnation was due primarily to organizational rigidities imposed by the imperative of clandestinity. Similarly, Bruce Hoffman contended that the targets, weapons, and tactics of terrorism had "remained remarkably consistent" over time and that underground organizations were politically radical but operationally conservative.[8] Their repertoires were limited and only the methods used to conceal and detonate explosive devices were likely to vary.

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2 At Wesleyan University Dilyan Donchev provided initial research assistance for this project, with funding from the Christian A. Johnson Foundation.

3 The exception is Adam Dolnik, *Understanding Terrorist Innovation: Technology, Tactics and Global Trends* (London and New York: Routledge, 2007). His analysis is primarily of what I will define as tactical innovation.

4 Ibid., p. 56.

5 M.L.R. Smith argued that strategic assessment has not been applied as an analytical tool to the conflict in Northern Ireland, but the finding is generally applicable as well. See "The intellectual internment of a conflict: the forgotten war in Northern Ireland," *International Affairs* 75, 1 (1999), pp. 77-97.

6 In "Revolutionary Dynamics: The Inherent Inefficiency of the Underground," *Terrorism and Political Violence* 2, 2 (Summer 1990), p. 211 (footnote 1).

7 Ariel Merari, "Terrorism as a Strategy of Struggle: Past and Future," *Terrorism and Political Violence* 11, 4 (Winter 1999), p. 54. See also "Terrorism as a Strategy of Insurgency," *Terrorism and Political Violence* 5, 4 (Winter 1993), pp. 213-251.

8 Bruce Hoffman, "Terrorist Targeting: Tactics, Trends, and Potentialities," *Terrorism and Political Violence* 5, 2 (Summer 1993), p. 12 and following, pp. 12-29. See also his *Inside Terrorism* (New York: Columbia University Press, 1998).

Yet innovation does occur. This paper identifies some possible innovations and the directions that an explanation of innovation might take. I propose a preliminary theoretical framework based on propositions borrowed from the respective literatures of social movements, military strategy, and cognitive psychology.[9] This approach takes into account the fact that innovations in violent behavior may have special characteristics and that definitions of innovation must be sensitive to context and to the social construction of oppositional violence. It distinguishes innovation from adaptation and escalation. It does not assume that innovative approaches to the practice of violence are necessarily successful.

The paper discusses definitions and types of innovation, the decision-making process that leads to innovation, the actors most likely to be innovative, and the points in the organizational development of terrorism when innovation is most likely. It is not intended as a definitive answer to these questions, but rather as an exploratory study. Satisfactory empirical analysis will require extensive primary research into the decision-making processes and politics of underground organizations, since secondary sources are sparse on this topic. Most general histories of terrorism fail to provide sufficient detail, and case studies tend to neglect the subject of innovation. The evidence presented here is thus illustrative rather than comprehensive.

Types of Innovation

By definition innovation involves the adoption of new patterns of behavior, not just the emergence of new ideas. Concepts must be incorporated into action. My analysis attempts to distinguish between strategic, tactical, and organizational innovations in terrorist behavior.[10]

Strategic innovation involves significant points of novelty in the historical development of campaigns of armed resistance, those shifts that change the fundamental pattern of terrorist challenges to political authority. Such transformations in the modes of armed struggle probably require a new conception of strategic effectiveness. That is, strategic innovation requires both a new goal and a new way of relating operations to that goal.[11] Thus it is logical to expect that strategic innovation is the exception; it will occur rarely. (This expectation may explain why specialists in the field tend to think that terrorist behavior is not innovative.)

A preliminary review of the pre 9/11 history of terrorism reveals some promising cases of strategic innovation. For example, Bruce Hoffman, who argues that terrorism is generally routine and predictable, nevertheless describes the Irgun in the 1940s as daring and innovative because the group inaugurated a strategy against British rule in Palestine that launched the trend toward the internationalization of terrorism.[12] J. Bowyer Bell agrees that Menachem Begin, although aware of

9 Lacking here is an economics/business approach.

10 It is also important to distinguish among the concepts of innovation, adaptation, and escalation. Innovation need not involve any escalation in the magnitude of violence, and it goes beyond adaptation to changing circumstances. These distinctions may be problematic, however, and they require further discussion.

11 See Stephen P. Rosen, *Winning the Next War* (Ithaca: Cornell University Press, 1991). The innovative conception, however, may be misguided. For example, Richard Gillespie concludes that urban guerrilla theory was "a defective guide to action, for it failed to explain really how guerrilla action would impel the masses to revolutionary deeds. It merely assumed that efficient military operations would galvanize them, yet one might more reasonably expect the reverse to be true." See "The Urban Guerrilla in Latin America," in Noel O'Sullivan, ed., *Terrorism, Ideology, and Revolution* (Boulder, Colorado: Westview Press, 1986), p. 170. This conceptual weakness may explain why in practice military considerations came to dominate the political.

12 *Inside Terrorism*, pp. 53 ff.

the guerrilla strategy of the IRA and civil disobedience in India, "devised a novel revolutionary strategy of leverage."[13] Begin's "glass house" strategy involved spectacular attacks to humiliate the British and force them to repression that would antagonize the Jewish population, alienate Britain's foreign allies, and, most importantly, make the war unpopular with the British public. No operations would be mounted against purely military targets, and civilian casualties would be avoided. Begin knew that the coercive response of a democratic state would be limited. Thus the British would be forced to choose between indefinite low-level repression, which the public would not tolerate, and withdrawal.

Another possible example of strategic innovation is the campaign of hostage seizures in the late 1960s, including diplomatic kidnappings in Latin America and hijackings in the Middle East.[14] Terrorism became an internationalized strategy of bargaining involving multiple actors, some geographically and politically distant from the theatre of conflict. This development resembles Charles Tilly's interpretation of earlier "claim-making" in eighteenth and nineteenth century Great Britain. At that time new methods of protest were invented that were less immediate in their impact and instead produced cumulative and indirect effects on a broader political and social system. The connection between the identity of the victim and the purpose of the action became more abstract.[15] The target was no longer the direct source of a grievance but a powerful outside actor capable of reshaping the system that perpetuated the grievance. Rather than attack Israel directly, for example, Palestinian organizations hijacked the civilian airlines of Israel's allies.

An earlier but little known instance of attacking foreign targets in order to attract the attention of outside actors occurred in the Balkans around the turn of the century.[16] First, an extremist group linked to the Macedonian Revolutionary Organization (MRO) attempted unsuccessfully to bomb the Ottoman Bank in Constantinople in 1899. The bank was owned by British and French interests, and the group hoped to provoke Europeans into examining the Macedonian problem. In 1901, MRO kidnapped an American missionary and demanded a monetary ransom, paid eventually by the American Missionary Board, and which was used to buy arms.

Another illustration involves European terrorism in the 1970s. David Moss considers the Italian Red Brigades' inauguration of the "strategy of processo-guerriglia" a significant step.[17] In 1976, 52 alleged members of the Red Brigades were brought to trial, and most were convicted in 1978. The strategy was an attempt to influence the outcome by using violence outside the courtroom against prosecutors, jury members, and other officials in order to make it impossible for the court to function, as well as other disruptive tactics such as refusing to accept legal counsel. Moss also argues

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13 J. Bowyer Bell, *Terror Out of Zion: The Violent and Deadly Shock Troops of Israeli Independence, 1929-1949* (New York: St. Martin's, 1977), p. 106.

14 Not all authors are clear about the distinction between strategic and tactical change. Hoffman (1998) states that the 1968 hijacking marked a "demonstrable change in the nature and character of terrorism" and that it was a "revolutionary development" but later defines it as a "dramatic tactical change." See pp. 68-69. Walter Laqueur is notably inconsistent: in *The Age of Terrorism* (Boston: Little, Brown, 1987) he concludes that "The aims of terrorism, in brief, have changed. . . ." (p. 93) but later that "There is an infinite variety of terrorist acts, but, while weapons have greatly improved over the last 100 years, there have been few basic changes in the aims of terrorist operations" (p. 116).

15 See Charles Tilly, *Popular Contention in Great Britain, 1758-1834* (Cambridge: Harvard University Press, 1995).

16 See Duncan M. Perry, *The Politics of Terror: The Macedonian Revolutionary Movements, 1893-1903* (Durham, NC: Duke University Press, 1988), pp. 100-101 and 103-105. I am indebted to Dennis Pluchinsky for calling these examples to my attention.

17 In *The Politics of Left-Wing Violence in Italy, 1969-1985* (New York: St. Martin's, 1989), pp. 230-32.

that this strategy was linked to the kidnapping and murder of Aldo Moro, which was timed to coincide with the 1978 phase of the trial.

Strategic innovations may also include Hezbollah's campaign of "suicide" bombings in Lebanon, beginning in the early 1980s, which was coupled with a strategy of kidnapping foreigners. The strategy was designed not only to end the Western presence in Lebanon but to create an Islamic state on the Iranian model.[18] The tactic has since spread worldwide, thus making an explanation of its origins all the more important. By combining the practice of political suicide or martyrdom with bombings intended to cause large numbers of casualties, terrorism acquired a fundamentally new meaning for its supporters as well as its targets. Ricolfi suggests that "the reduced efficiency of air hijackings could be among the reasons that led to SMs [suicide missions] becoming established among the *feasible set* of fighting means, especially once these started for specific reasons during the Lebanon wave. From this viewpoint, the 'invention' of SMs by several insurgent and terrorist organizations in the 1980s and 1990s could be seen as a sort of technological leap, which allowed those organizations to enhance the effectiveness of their actions and to pursue agenda-setting objectives without paying the same high price in international opprobrium that hijacking attracted."[19] Both hijackings and suicide attacks brought visibility to the cause, but suicide attacks were better image enhancers especially if the target were military, and they suggested purity of motive, whereas hijackings were seen as simple blackmail. The suicide bomber appeared a tragic hero. As Palestinian imitators famously claimed, willingness to die showed that the perpetrators did not fear death.

Another possibility of strategic innovation is the acquisition and use of chemical and biological agents by the Aum Shinrikyo cult in Japan, culminating in the use of sarin gas in the Tokyo subway in 1995. Jonathan Tucker suggests that terrorists likely to resort to such weapons are innovative in designing weapons and carrying out attacks.[20] However, their inventiveness may extend beyond the operational or tactical aspects of confrontation. Beginning in 1990, the strategy was premised on the prediction of apocalyptic destruction. It was intended to cause mass casualties in order to make the Japanese public aware of their impending doom.[21] However bizarre the reasoning, the strategy did involve a new goal and a new means of reaching it.

In many ways the 9/11 attacks represented a new way of resolving an old problem for Al Qaida – how to inflict major devastation on the U.S. homeland.[22] As Mohammed Hafez and Maria Rasmussen note in the concept paper for this workshop, the extension of the struggle to the "far enemy" was a conceptual innovation. However, it is important to remember that attacking the homeland of an occupying power had a precedent in the FLN's strategy during the Algerian war, and that Zionist groups had the intention of attacking the British homeland (which the IRA did more than once). The failure to bring down the towers in the 1993 bombing of the World Trade

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18 Magnus Ranstorp, *Hizb'allah in Lebanon: The Politics of the Western Hostage Crisis* (New York: St. Martin's, 1997).

19 Luca Ricolfi, "Palestinians, 1981-2003," in Diego Gambetta, ed., *Making Sense of Suicide Missions* (New York: Oxford University Press, 2005), p. 103. Possibly Ricolfi is suggesting that this innovation was tactical rather than strategic.

20 Jonathan B. Tucker, "Lessons from the Case Studies," in Jonathan B. Tucker, ed., *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons* (Cambridge: MIT Press, 2000), p. 256.

21 David E. Kaplan, "Aum Shinrikyo (1995)" in Tucker, ed.

22 The following discussion of the 9/11 attacks is drawn from the introduction to a forthcoming volume, *Explaining Terrorism* (New York and London: Routledge, 2010). It contains a selection of my previously published articles and chapters.

Center could be seen as a learning opportunity. The 2001 attacks, expanded in scope, combined hijackings with suicide bombings by using aircraft as the explosive device, to an extraordinary destructive effect that may not have been anticipated (even if wished for). Yet the plot's complexity, length of planning time, number of participants, technical requirements (ability to pilot a commercial aircraft at a minimal level for the leaders, martial arts training for the followers), and ability of the conspirators to remain secret for so long in a foreign country without a popular support network were also exceptional and have not been duplicated since.

Hijackings, the first component, were in themselves an innovation in the late 1960s and early 1970s, as this paper has noted. The practice of hijackings fell into disuse because of enhanced airport security measures, improvement in government rescue capacity, and the unwillingness of potential host governments to provide refuge and asylum for hijackers. Midair bombings offered a substitute, beginning in the mid 1980s, but security measures quickly made it difficult to place a bomb in checked luggage or bring it on board (particularly after the downing of Pan Am 103 in 1988). Governments, however, remained wedded to the idea that the lives of hostages were a useful bargaining chip for hijackers, who would not expend them carelessly. Possibly Al Qaida leaders understood and exploited this preconception. Nobody expected that hijackers could pilot a commercial aircraft, which was a startling development not just because of the acquisition of the skill but the extent of planning and forethought involved in doing so.

A second component of the plot was a suicide mission, thus using another earlier innovation. By 2001 suicide attacks were a well-established element of the terrorist repertory, having "migrated" from Lebanon to other conflict theatres, notably Israel-Palestine and, more geographically distant, Sri Lanka. Al Qaida had used the tactic previously with the 1998 East Africa embassy bombings and the attack on the USS Cole in Yemen in 2000.

The third element, which was least innovative, was the deliberate aim of killing large numbers as well as hitting iconic economic, political, and military targets within the United States. Mass casualties are most easily caused by explosions, which typically require the construction of explosive devices and detonators (now called IEDs or *improvised* explosive devices, although this distinction seems unnecessary). In order to cause extensive damage, a bomb must be large, and sizable bombs are most easily transported by truck, car, boat or other vehicle. The car-bomb technique had been tried unsuccessfully in 1993 with the first World Trade Center bombing organized by Ramzi Youcef, the nephew of Khalid Sheikh Mohammed (KSM), who became the planner and project manager of the 9/11 attacks. As noted, midair explosions were also a well-known and accessible element of the terrorist repertoire, and in the 1990s Youcef and his uncle had planned a simultaneous assault on American airliners over the Pacific. The plot was foiled, but the intention was clear.

Al Qaida leaders thus conceived of hijackings as suicide missions employing the aircraft itself, loaded with fuel for a transcontinental flight, as the explosive device. The implementation of the inventive scheme required operatives with special skills, and in many ways it was unlucky chance that led Mohammed Atta and his co-conspirators from Germany to Al Qaida's camps.

In contrast to strategic innovations, *tactical innovations* are changes in method or operations rather than strategic conceptualization. They typically involve new weapons or targets and are much more frequent than strategic innovations. They occur within strategies rather than replacing them. However, as the above example demonstrates, it is not easy to distinguish between tactical and strategic innovation and between innovation and adaptation. Dolnik, for example, sees competition

among similar groups and pressure from government as the sources of tactical innovation, thus implying that it is a form of adaptation.[23]

For example, the assassination by the underground group LEHI of Count Folke Bernadotte, UN Mediator in Palestine in 1948, was the first instance of selecting an international negotiator as target.[24] IRA bombings of London financial districts between 1988 and 1994 exemplify a switch to economic targets outside the theater of conflict.[25] Earlier IRA tactical innovations included car-bombs, attacks on the British mainland and on British targets in Europe, and remote control detonation of bombs. The 1972 Black September attack on the Munich Olympics marked a shift to international institutions as either targets or a venue for terrorism. The Italian Red Brigades' kidnapping and murder of Aldo Moro also marked an important shift in targets. The hijacking of the Achille Lauro cruise ship in 1985 marked a shift to maritime terrorist hostage seizures. Mid-air bombings, such as Pan Am 103, also marked a shift in terrorist methods, which actually began in the 1980s with the downing of an Air India plane. Hezbollah in Lebanon in the late 1990s developed the technique of videotaping its attacks on the Israeli Defense Forces and distributing the videos to television stations.[26] The World Trade Center bombing in 1993 might also be included in a list of examples of tactical innovation since it involved a new target.[27]

Organizational innovation involves changes in group structure and institutions. For example, Fernando Lopez-Alves comments on the novelty of the Uruguayan Tupamaros' shift to the compartmentalized underground structure of the urban guerrilla in the 1960s.[28] The IRA switched to a small, centralized, clandestine, cellular organizational structure between 1976 and 1978. In the 1980s the Red Army Faction in West Germany established an Anti-Imperialist Front of West European Guerrillas, thus creating an operational alliance with other European terrorist groups particularly in France and Italy.[29] Similarly Walter Laqueur notes that "the most interesting innovation of the Latin American terrorists was the foundation of a 'Junta of Revolutionary Co-ordination'," which linked Argentine, Uruguayan, Chilean, and Bolivean organizations.[30] Beginning

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23 See Dolnik, chapter 7, pp. 146-72.

24 See Nachman Ben-Yehuda, *Political Assassinations by Jews: A Rhetorical Device for Justice* (Albany: State University of New York Press, 1993), pp. 267-274. See also Kati Marton, *A Death in Jerusalem* (New York : Pantheon Books, 1994).

25 See John P.S. Gearson, "Financial Centres and the Terrorist Threat: The Case of the IRA's British Mainland Campaign," paper presented at the Oklahoma City National Memorial Institute for the Prevention of Terrorism Conference, "Terrorism and Beyond: The 21st Century," April 15-17, 2000.

26 See John Kifner, "In Long Fight With Israel, Hezbollah Tactics Evolved," *The New York Times*, July 19, 2000, based on an interview with Sheik Nabil Qaouk, a Hezbollah commander in southern Lebanon.

27 The strategy behind the bombing, however, remains unclear. If it is the key precursor of the 9/11 attacks, then we should regard it as the advent of a major strategic innovation.

28 "Political Crises, Strategic Choices and Terrorism: The Rise and Fall of the Uruguayan Tupamaros," *Terrorism and Political Violence* 1, 2 (April 1989), pp. 202-241, especially p. 215. Strategic and organizational innovation need not coincide. In Brazil, according to Richard Gillespie, the National Liberation Action (ALN) showed great "organizational ineptitude" that led to a fragmented and uncoordinated movement. See "The Urban Guerrilla in Latin America," in Noel O'Sullivan, ed., *Terrorism, Ideology, and Revolution* (Boulder, Colorado: Westview Press, 1986), pp. 157-159. Paradoxically, the "inorganic nature" of the ALN initially favored their survival since the security services could not track or infiltrate the group.

29 I am indebted to Dennis Pluchinsky for this and many other observations. See his "An Organizational and Operational Analysis of Germany's Red Army Faction Terrorist Group (1972-91)," in Yonah Alexander and Dennis A. Pluchinsky, eds., *European Terrorism: Today and Tomorrow* (Washington: Brassey's, 1992). The RAF also cooperated with Palestinian groups.

30 *The Age of Terrorism*, p. 253.

in the 1960s, American right-wing extremists developed the concept of a decentralized "leaderless resistance."[31] In the 1990s the Ramsi Youcef and Usama bin Laden groups also abandoned hierarchical structures, relying instead on diffuse transnational networks. The formation of Hezbollah in Lebanon as a combined resistance movement and political party may also be an example of organizational innovation.

Explanations of Innovation

From the perspective of cognitive psychology, innovative decision-making can be analyzed as a form of problem solving, in which new logical connections are found or problems redefined so as to reach a new solution. From this point of view, innovations are the result of gradual learning and concentrated effort, not a sudden burst of insight.[32] Analogical reasoning relates new solutions to old problems. What stimulates this process of problem solving? What problems are most salient? How are solutions arrived at? Are different explanations required for different types of innovation? Is it necessary that decision makers intend or recognize their choices as innovative? Is it possible to distinguish what is original from what is derivative, or innovation from diffusion of innovation?[33]

Problems and opportunities. To what circumstances or conditions does innovation respond? First, what is the relationship between innovation and the failure of previous attempts to solve a problem? A cautionary proposition, drawn from the literature on military strategy, is that innovation is not simply the automatic result of the failure of other methods. Defeat can only show what not to do, and even then information is incomplete and the lessons that are to be learned are ambiguous.[34]

That innovation is not the automatic result of defeat or failure can be illustrated by the IRA's reaction to public indifference to their campaign in Britain in the 1970s. Smith describes IRA leaders' frustration and bewilderment at the transitory nature of the attention paid to terrorist violence: "The conclusion that the Provisionals reached, however, was not that the premises of their campaign had been incorrect, but that they had failed to turn the military screw hard enough."[35] Thus they escalated the campaign of hitting civilian targets in Britain, which only further desensitized public opinion.

That organizations do not necessarily learn from mistakes is also demonstrated in an example from the Italian terrorist movement. In the opinion of Richard Drake, the Red Brigades knew that attacks that killed ordinary people were unpopular and undermined their support. Nevertheless, in January

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31 See Jeffrey Kaplan, "'Leaderless Resistance'," *Terrorism and Political Violence* 9, 3 (Autumn 1997), pp. 80-95. See also my chapter, "The Organization of Terrorism," in *Terrorism: What's Coming*, ed. James O. Ellis III. MIPT Senior Fellows Report (Oklahoma City, OK: Memorial Institute for the Prevention of Terrorism, 2007).

32 For example, Mihaly Csikszentmihalyi, "Society, culture, and person: a systems view of creativity," in Robert J. Sternberg, ed., *The Nature of Creativity* (Cambridge: Cambridge University Press, 1988), and "The Domain of Creativity," in David H. Feldman, Mihaly Csikszentmihalyi, and Howard Gardner, eds., *Changing the World: A Framework for the Study of Creativity* (Westport, CT: Praeger, 1994).

33 See Manus I. Midlarsky, Martha Crenshaw, and Fumihiko Yoshida, "Why Violence Spreads: The Contagion of International Terrorism," *International Studies Quarterly*, 24, 2 (June, 1980), pp. 262-98, and "Rejoinder to 'Observations on Why Violence Spreads', " pp. 306-10.

34 *Winning the Next War*, especially pp. 1-53.

35 M.L.R. Smith, *Fighting for Ireland: The Military Strategy of the Irish Republican Movement* (London and New York: Routledge, 1995), p. 127.

1979 they caused mass protests and vast damage to their cause when they killed a worker who had denounced a colleague for distributing Red Brigades propaganda.[36]

Furthermore, underground organizations in the same situation will respond differently to failure or frustration, which is to be expected considering that individuals and groups have different outlooks, perceptions, and incentives. For example, within the Palestinian movement, only the Popular Front for the Liberation of Palestine (PFLP) conceived of hijackings as a way of breaking the "Israeli and colonialist siege" after the 1967 war, in an attempt to reach out to world public opinion.[37] Fatah and the Popular Democratic Front for the Liberation of Palestine (PDFLP) accepted a strategy of attacks on Israeli civilian targets, but criticized the hijackings, although Fatah later followed that direction for a short time.

Although something more may be required, innovation may still be linked directly to failure in some cases. Aum Shinrikyo's research program into biological and chemical weapons apparently began in April, 1990. In February, Aum leader Shoko Asahara and a group of followers stood for election to the Japanese Diet. They lost decisively (receiving a total of only 1783 votes) and members began to leave the organization. Suffering from this humiliation, Asahara was apparently faced with a choice between dissolving Aum Shinrikyo or regaining control over the organization. His political defeat intensified his hostility toward society generally, and he now urged that the group acquire military power and actively plan the mass destruction that would be required in order to ensure salvation.[38] The move to "catastrophic" terrorism was the result, although in most cases the actual use of biological and chemical weapons was due to more immediate stimuli, such as the need to remove specific threats to the organization.

What creates a particular problem or makes it especially salient? The process of learning or problem solving that leads to innovation is probably stimulated by the actions of others or by changes in context – a connection that poses again the difficult problem of distinguishing innovation from adaptation. Zisk, for example, proposes that innovation may be a response to an opponent's innovation, although again an innovative response is not automatic.[39] Thus a terrorist group might respond to the government's innovation simply by reinforcing its routine rather than changing. Bell, for example, suggests that British countermeasures against IRA car-bombs in the early 1970s forced the IRA to be more careful but not to shift targets.[40]

However, a displacement or substitution effect is known to exist in general patterns of international terrorism. In non-bargaining situations, effective unilateral counter-measures by one state will increase the vulnerability of other states who do not take such measures.[41] Thus terrorists' choices are sensitive primarily to what governments do to protect themselves, which in essence creates a

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36 C. J. M. Drake, *Terrorists' Target Selection* (London: Macmillan and New York: St. Martin's, 1998), p. 76.

37 See Yezid Sayigh, *Armed Struggle and the Search for State: The Palestinian National Movement 1949-1993* (Washington: Institute for Palestine Studies and Oxford: Clarendon Press, 1997), pp. 210-215.

38 Manabu Watanabe, "Religion and Violence in Japan Today: A Chronological and Doctrinal Analysis of Aum Shinrikyo," *Terrorism and Political Violence*, 10, 4 (Winter 1998), pp. 89-90. See also Kaplan in Tucker, ed., who confirms this explanation. He adds that the Aum leadership blamed their defeat on the Japanese government.

39 Kimberly M. Zisk, *Engaging the Enemy: Organization Theory and Soviet Military Innovation, 1955-1991* (Princeton: Princeton University Press, 1993).

40 *IRA: Tactics and Targets* (Dublin, Ireland: Poolbeg Press, 1990, pp. 74-75.

41 Todd Sandler and Harvey E. Lapan, "The Calculus of Dissent: An Analysis of Terrorists' Choice of Targets," *Synthese*, 76 (1988), pp. 245-261.

security dilemma. Similarly, when new technologies or policies are applied to prevent specific kinds of terrorist events, terrorists may transfer their efforts to new but related targets.[42] Installing metal detectors in airports, for example, apparently led to a decline in hijackings but increased other forms of hostage seizures, such as kidnappings, as well as assassinations.

In addition, Sidney Tarrow suggests that government actions as well as new opportunities and constituencies stimulate innovation in social movements and their strategies of protest.[43] Thus innovation is part of an interactive process, depending on both circumstances and on what other important actors do. It will also depend on the emergence of new assets (e.g., explosives technology, mobility, and communication capabilities) and new vulnerabilities in victims. Thus the absence of these assets will inhibit innovation. For example, J. Bowyer Bell argued that the strategic and tactical inertia of the IRA was due to lack of technological skill.[44]

Donatella Della Porta's analysis of German and Italian violent organizations concludes that in both countries the movements followed a process of "tactical interaction."[45] Groups changed their tactics in order to be able to act once their adversaries had adapted their tactics to those of the movement. The process of innovation, adaptation, and tactical experimentation was reciprocal, with each side responding to the other. She also points out that organizations respond not only to governments but to counter-movements (e.g., the left responds to the right). Numerous actors are thus involved in a complex process of interaction. Strategy is not simply the result of a tit-for-tat relationship with the government.

Is it possible to distinguish sources of innovation according to type? The evidence is inconclusive at this point. Consider, for example, the inauguration of the tactic of hijackings used by Palestinian organizations as a form of leverage over governments outside the Middle East. This move qualifies as a strategic innovation, since the new goal was international recognition of the conflict and the Palestinian cause, and the method new dramatic actions that would sustain media interest and exert a psychological effect on world public opinion. The Palestinian movement as a whole had found that neither conventional nor guerrilla warfare against Israel, mostly cross-border raids, could succeed. The defeat of Arab armies in the 1967 war encouraged a search for alternatives. The advent of mass air transportation created an opportunity. Furthermore, the hijackings might have been an attempt to broaden the constituency for the Palestinian nationalist movement. Furthermore, the PFLP was a minority within the broader movement, competing with larger groups for the available resources. This case thus involves a combination of failure of other methods, reaction to rivals with corresponding need to compete for a constituency from a minority position, and new opportunities.

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42 Walter Enders, Todd Sandler and Joe Cauley, "UN Conventions, Technology and Retaliation in the Fight Against Terrorism: An Econometric Evaluation," *Terrorism and Political Violence*, 2, 1 (Spring 1990), pp. 83-105; Jon Cauley and Eric Iksoon Im, "Intervention Policy Analysis of Skyjackings and Other Terrorist Incidents." *AEA Papers and Proceedings* 8 (1988), pp. 27-31; and Walter Enders and Todd Sandler, "The Effectiveness of Anti-Terrorism Policies: A Vector-Autogression-Intervention Analysis," *American Political Science Review*, 87 (1993), pp. 829-844.

43 See Sidney Tarrow, *Power in Movement: Social Movement, Collective Action and Politics* (Cambridge: Harvard University Press, 1994).

44 *IRA: Tactics and Targets*. See "The Dynamic of IRA Strategy and Tactics," pp. 26-ff.

45 Donatella della Porta, *Social Movements, Political Violence, and the State: A Comparative Analysis of Italy and Germany* (Cambridge: Cambridge University Press, 1995), pp. 190-192. She refers to Doug McAdam, *Political Process and the Development of Black Insurgency, 1930-1970* (Chicago: University of Chicago Press, 1982).

With regard to tactical innovations, most analysts agree that terrorists respond to what the government is doing and to technological and targeting opportunities. Tactical innovation may thus be a form of adapting to what the adversary does as well as to the acquisition of new resources. It might also be imitation of what competitors are doing. Reactivity would be the critical distinction between strategic and tactical innovation. Smith, for example, defines the IRA's attacks in Great Britain in 1973 as an extension of strategy, not a change in direction but a displacement of the focus of the conflict to another theater, thus a tactical innovation. The first attack in Britain was timed to coincide with a border referendum in Northern Ireland, and a second corresponded with negotiations between Northern Ireland political parties to form a power sharing government. He argues that, "these examples were indicative of the Provisionals' attempts to underscore the psychological attrition strategy by demonstrating at each turn of events the irrelevance of any proposed solution to exclude them."[46] Hezbollah's technique of videotaping its attacks was a response to Israeli censorship, which denied them publicity and access to Israeli public opinion.[47] The Irish National Liberation Army developed the mercury tilt-switch detonator for car bombs because the British Army acquired the capacity to scan for the radio signals used to detonate earlier bombs.[48]

Hezbollah's move to kidnapping foreigners may be another example of innovation as a reaction to rivals rather than the government. It is also a case of joint decision-making between a state (Iran) and an underground organization. Magnus Ranstorp argues that Iran was the instigator of the kidnappings, while Lebanese carried them out.[49] The targets were primarily educators and journalists, in the first instance, July 1982, David Dodge, the acting president of the American University of Beirut. According to Hala Jaber, the purpose of the first kidnapping was twofold.[50] One was to secure the liberation of four Iranian diplomats kidnapped by Christian militia who were presumed to be amenable to pressure from the United States. The second was to demonstrate a split from the PLO—the kidnappers were Lebanese members of the Force 17 group—because the PLO was thought to be softening its approach to the Israeli invasion of Lebanon and to be making overtures to the Americans. The kidnapping occurred before Hezbollah was effectively organized, but it set a pattern for future operations, which shifted to actions designed to secure the release of prisoners held by Kuwait and by Israel.

Organizational changes are often closely related to pressure from governments, although they do not necessarily follow a survival imperative, as seen in the Brazilian case. For example, Dennis Pluchinsky explains that the German Red Army Faction's anti-imperialist front initiative coincided with a period of rebuilding after the arrest of the leadership and destruction of most of their assets.[51] A communiqué issued on the occasion of the assassination of Alfred Herrhausen, the head of the Deutsche Bank, in 1989, offers further explanation: it refers to the important new stage this coordination would represent and insists that the prisoners must be a part of the discussion of the new composition of the revolutionary movement.[52] One could thus interpret the innovation as a

46 M.L.R. Smith, *Fighting for Ireland*, pp. 124-25.
47 John Kifner, "In Long Fight With Israel, Hezbollah Tactics Evolved," *The New York Times*, July 19, 2000.
48 Martin Dillon, *The Dirty War: Covert Strategies and Tactics Used in Political Conflicts* (New York: Routledge, 1990), pp. 262-63.
49 See *H'izballah in Lebanon*, pp. 88-91.
50 Pp. 100 ff.
51 "An Organizational and Operational Analysis of Germany's Red Army Faction Terrorist Group (1972-91)," pp. 48-49.
52 "Communiqué on the Assassination of Alfred Herrhausen, Chairman of Deutsche Bank, in Frankfurt on 30

novel solution to the problem of how to secure the release of jailed comrades. Lopez-Alves suggests that the Tupamaro shift to an underground military organization resulted from the government's repression of rural protest movements. The change was also linked to the possibility of new constituencies for the revolutionary movement. The organizational shift, Lopez-Alves argues, was also part of a strategic shift to the urban guerrilla, or a strategy of terrorism, as opposed to the organization of social movements.[53] The IRA's internal reorganization was the result of a "Staff Report" that referred to the need to halt the infiltration of the security services into the IRA as well as to prevent the disclosure of information through interrogations.[54] The 1990s development of decentralized networks of supporters of radical Islam is thought to be a response to effective government surveillance and penetration of underground movements. It is also responded to opportunity: technological advances in communications, especially access to electronic networks via computer and cellular telephones.

Finding solutions. How do innovative solutions arise, once conditions are appropriate and the stimulus to innovation exists? What sort of thinking produces inventive answers to problems? Cognitive psychology points to new associations of familiar methods, or the modification of an explanation derived from a known situation to fit a new situation. Holyoak and Thagard argue that "mental leaps" occur when someone is confronted with an unfamiliar situation, in a disordered environment. Decision-makers move between the familiar domain of experience and the new puzzle. The decision-maker sees similar elements in the old and the new and imposes a structural parallel between the two analogs.[55]

Theories of social movements agree that innovations are not completely new; they occur at the margins or periphery of existing repertoires or familiar practices. They are built on the past. Tilly, for example, notes that new repertoires emerge logically from the past, when known routines are stretched past familiar limits. He suggests that "the prior path of collective claim-making constrains its subsequent forms" by providing memories, information, and a basis for future interactions.[56] Most change is incremental. Tarrow agrees that innovation is at the margins, built on the framework of what is known and practiced.[57] So does Traugott, who says that innovations are "an outgrowth of customary practices" and that old customs are not abandoned but supplemented.[58]

This process of inference of analogy is hard to trace, however. In a rare mention of the subject, J. Bowyer Bell agrees that solutions come from the past. He argues that the IRA is generally conservative and that few choices of target are surprising. However, he explains, "Even new techniques, new technological assets, new talents that permit 'new' targets will arise from historical

November 1989," in Yonah Alexander and Dennis Pluchinsky, *Europe's Red Terrorists: The Fighting Communist Organizations* (London: Frank Cass, 1992), pp. 68-69. I am indebted to Dennis Pluchinski for calling this document to my attention.

53 "Political Crises, Strategic Choices and Terrorism: The Rise and Fall of the Uruguayan Tupamaros," pp. 213-17.

54 See John Horgan and Max Taylor, "The Provisional Irish Republican Army: Command and Functional Structure," *Terrorism and Political Violence* 9, 3 (Autumn 1997), pp. 21-24. They further refer to Tim Pat Coogan, *The IRA* (London: Harper Collins, 1995).

55 Keith J. Holyoak and Paul Thagard, *Mental Leaps: Analogy in Creative Thought* (Cambridge: The MIT Press, 1995).

56 See p. 37.

57 Tarrow, pp. 114-15.

58 Mark Traugott, "Barricades as Repertoire: Continuities and Discontinuities in the history of French Contention," *Social Science History* 17, 2 (Summer, 1993), p. 317.

example. The IRA plays by history's rules, targets as history dictates."[59] Bell stresses self-image as an explanation for choice among known alternatives. Self-image is built on a sense of how one wishes others to perceive one as well as a sense of their expectations. For example, the IRA spent considerable time in trying to acquire surface-to-air missiles, which they regarded as an appropriate military asset, but they never gave serious consideration to the exotic or hi-tech methods of terrorism, such as chemical or biological weapons, so often imagined by theorists and government analysts.[60]

The development of diplomatic kidnappings began with the Brazilian revolutionary movement in 1968, and was adopted by the Uruguayan Tupamaros in their shift to the urban guerrilla.[61] The revolutionaries had several problems to solve. One was securing the release of their jailed comrades. The military had seized power in Brazil in 1964, and repression was severe. Similar conditions confronted the Tupamaros. Another problem was how to effectively combat repression or military dictatorship. The solution they arrived at involved the militarization as well as the internationalization of the struggle. Kidnapping Western diplomats, especially American, was a means of demonstrating imperialist complicity in local injustice. For example, when the Tupamaros kidnapped the British Ambassador they offered to exchange him for one hundred and eleven of their members who were in prison. While holding the ambassador, they also pursued the alternative of organizing an escape from prison. When the jailbreak succeeded, they released the ambassador.[62] Possibly the historical source was two fold. One was the political kidnappings of far right extremist organizations. The second was the obvious parallel between the government's holding prisoners and the revolutionary organization's need to acquire its own hostages in order to bargain. However, rather than respond to arrest in direct and proportional fashion—by seizing members of the police, for example—they seized representatives of what they regarded as Western imperialism. The identity of the bargaining chip was the imaginative solution.

Holyoak and Thagard point out that many potential sources of analogies lie in memory and experience, and that some sources emerge when they are "noticed" by a decision-maker through serendipity or accident.[63] An almost random event calls the source to the attention of a decision-maker who is already trying to solve a particular problem.

Some examples of such associations can be suggested, although the evidence is limited. In a 1997 interview, George Habash, founder of the PFLP, explained that the "hijacking idea" stemmed in part from concern about Israel's nuclear capability in the 1960s: "We used to have an advisory board consisting of Palestinian professors and other friends, and they thought we should draw world attention to the nuclear issue. Meanwhile Wadi [Haddad] and I were trying to determine how world opinion could be awakened to the injustice that has been done to the Palestinian people. Wadi came up with the hijacking idea. . . . We wanted to attract world attention through some action, and that was it."[64]

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59 *IRA: Tactics and Targets*, p. 114.

60 *IRA: Tactics and Targets*, p. 50.

61 See Carol Edler Baumann, *The Diplomatic Kidnappings: A Revolutionary Tactic of Urban Terrorism* (The Hague: Martinus Nijhoff, 1973); Carlos Marighela, *For the Liberation of Brazil* (London: Penguin Books, 1971). See also Alain Labrousse, *The Tupamaros: Urban Guerrillas in Uruguay* (Harmondsworth: Penguin Books, 1973). Translated by Dinah Livingstone from an edition published in Paris by Editions du Seuil in 1970.

62 See Maria Esther Gilio, *The Tupamaros* (London: Secker & Warburg, 1972). Trans. Anne Edmondson.

63 See p. 192.

64 "Taking Stock: An Interview with George Habash," *Journal of Palestine Studies* XXVII, 1 (Autumn 1998), p. 93.

The Black September organization's decision to attack Israeli athletes at the Munich Olympics may have been provoked by the International Olympic Committee's failure to respond to two formal Palestinian requests to send a team to the games.[65] This rejection, which was interpreted as a deliberate insult, stimulated a decision process that led to an attempt to secure the release of prisoners held by Israel and to attract international attention to the Palestinian cause. Rohan Gunaratna suggests that the Liberation Tigers of Tamil Eelam (LTTE) leader Prabhakaran got the idea of devising a bomb worn on the body of the attacker from the film "Death Wish II."[66] The technique was first used to assassinate Rajiv Gandhi in order to prevent his re-election, which the LTTE leadership thought would lead to the re-introduction of Indian troops into the Sri Lankan conflict. M.R. Narayan Swamy refers to a "meticulously planned operation using a diabolically novel method," adding that Prabakharan deceptively arranged a meeting with Gandhi to "let bygones be bygones" in order to lull him into complacency.[67] Hezbollah apparently developed the idea of suicide bombs (which began in November, 1982) from Iran's human wave attacks during the war with Iraq.[68] Magnus Ranstorp also points to the symbolic martyrdom displayed during Shi'ite religious processions, as well as the Iranian model.[69]

Innovative actors. What types of organizations and leaders are most likely to be innovative? The literature on social movements points to the key role of individual entrepreneurs. Cognitive psychology points to the willingness and ability to spend time and effort in thinking of new solutions. Sternberg also argues that innovation requires hard work, and that innovators are more likely to be intrinsically motivated than driven by the desire for external reward.[70] Merari and Bell agree generally that lack of time discourages innovation. Thus both willingness and capacity to spend time on solving problems are important.

At this stage of research systematic comparisons are not possible. Ideally one should be able to identify the features that innovative actors have in common as well as the features that distinguish them from actors who are not innovative. Information on this question is uneven. However, individual leaders with strong personalities and authoritarian leadership styles seem to have been extremely important in the decision-making processes that led to innovation. Innovative decisions can associated with attempts to establish authority in internal power struggles. The following examples provide some clues.

The interview was conducted by Mahmoud Soueid, the director of the Institute for Palestine Studies in Beirut.

65 Abou Iyad, *Palestinien sans patrie: Entretiens avec Eric Rouleau* (Paris: Fayolle, 1978), pp. 167 ff. He concludes that the operation was a success, not only because it captured world opinion but because the Palestinian people imposed their presence on an international gathering that had tried to exclude them (p. 176). Sayigh, however, contends that the Palestinian leadership thought otherwise because of the high cost exacted by the Israeli retaliation.

66 Rohan Gunaratna, *Sri Lanka's Ethnic Crisis & National Security* (Colombo: South Asian Network on Conflict Research, 1998), p. 341. However, Sumantra Bose says that "The Tiger who pioneered the suicide bomber phenomenon in South Asia was a teenager codenamed 'Miller,' who blasted a Sri Lankan army camp, killing 112 soldiers, on 5 July 1987." See *States, Nations, Sovereignty: Sri Lanka, India and the Tamil Eelam Movement* (New Delhi: Sage, 1994), p. 119.

67 M.R. Narayan Swamy, *Tigers of Lanka: From Boys to Guerrillas* (Delhi: Konark, 1994), pp. 333-34. However, he says that Sivarasan was the one who worked out the mode of assassination, although he kept Prabakharan informed at each stage. Planning began in 1990 in Jaffna.

68 Hala Jaber, *Hezbollah: Born with a Vengeance* (New York: Columbia University Press, 1997), p. 76.

69 See pp. 46-47.

70 See "A three-faceted model of creativity," in Robert J. Sternberg, ed., *The Nature of Creativity* (Cambridge: Cambridge University Press, 1988).

Hijackings were the brainchild of Wadi Haddad, the head of the Special Operations or Special Apparatus branch of the Popular Front for the Liberation of Palestine, under the leadership of George Habash.[71] Both Habash and Haddad were Greek Orthodox Christians educated in Beirut who, according to David Pryce-Jones, "were obliged to act as extremists in pursuit of better credentials as Arabs."[72] The PFLP, according to AbuKhalil, represented an extreme case of personality cult, oriented around the charismatic, authoritarian, and popular leadership of Habash.[73] Habash and Haddad were intimate associates, although Haddad was said to lack the "sophisticated intellectual qualities" of Habash, to whom he nevertheless remained loyal. In 1971, however, the PFLP Central Committee halted hijackings, and Haddad defected from the Front in 1972.

Salah Khalaf, former intelligence chief of Fatah, planned the 1972 Munich Olympics attack (considered here as a tactical innovation). He was stripped of his responsibilities after the Palestinian defeat in the Jordanian civil war, although he remained a member of the PLO central committee.[74] Khalaf was also turned down when he tried to take over Fatah activity in Jordan. His former Lieutenant Ali Hasan Salama directed the assassination of the Jordanian prime minister in November, 1971, the first appearance of the "Black September Organization." In spring 1972 Khalaf took over attempts to rebuild a clandestine organization in Jordan. The drama of several terrorist attacks organized in this period by the PFLP and dissident groups appealed to him, and he had first raised the idea of an international effort in October 1971. Khalaf was also reacting to the failure of his efforts against Jordan. Khalaf apparently organized the Munich attack independently, outflanking the leadership of Arafat and provoking costly reprisals from Israel. Arafat may not have known of the attack but praised it ex post facto. As a result of the Olympics attack, Khalaf gained prominence in Fatah politics and became a threat to Arafat.

Carlos Marighela originated the strategy of diplomatic kidnappings.[75] Marighela was a member of the Brazilian Communist Party who split from the party to establish the National Liberation Action organization (ALN). Marighela had apparently been a devoted member of the party for forty years, including acting as the head of the Sao Paulo committee and as a member of the Executive Committee of the Central Committee of the Party. However, he rebelled against its bureaucratization when he was in his late 50's. His first act of defiance was to attend a conference of the Organization for Latin American Solidarity in Havana, which the Brazilian party had decided to boycott.

Menachem Begin possessed a distinctive personality as well as a fresh approach to the Palestine question. Bell notes that he came to Palestine from the Polish diaspora, and "saw the British with new eyes."[76] Begin also devoted extensive time to solving the problem of establishing a Jewish state.

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71 The practice was initiated in 1968 with the hijacking of an El Al airliner to Algeria; it also included the spectacular hijackings of four international airliners to Jordan in 1970. According to Sayigh, Haddad was assisted by Hani al-Hindi (p. 213).

72 David Pryce-Jones, *The Face of Defeat: Palestinian Refugees and Guerrillas* (London: Weidenfeld and Nicolson, 1972), p. 54.

73 As'ad AbuKhalil, "Internal Contradictions in the PFLP: Decision Making and Policy Orientation," *Middle East Journal* 41, 3 (Summer 1987), pp. 361-378.

74 See Sayigh, pp. 292-299 and 306-312. According to Sayigh, Fatah's turn to terrorism, both local and international, was due in part to rivalries within the central committee, as well as to Israeli pressure.

75 See Carol Edler Baumann, *The Diplomatic Kidnappings: A Revolutionary Tactic of Urban Terrorism* (The Hague: Martinus Nijhoff, 1973); Carlos Marighela, *For the Liberation of Brazil* (London: Penguin Books, 1971).

76 Bell, 1977, p. 106. See also p. 111.

Bell refers to repeated meetings with Arieh Ben-Eliezer as they thought through the problem of how to drive the British out of Palestine, well before the Irgun moved to action and attracted the attention and surveillance of the British. Bell describes Begin as someone who "had a most remarkable presence in the underground, which created an atmosphere of contained power and moral authority, combined with a keen analytical mind cleared of the dense undergrowth of previous Zionist assumptions." Furthermore, "his views, even when opposed to all others, inevitably won by dint of logic, by his grasp of the strategic options and consequences, and by his dominant presence."[77]

Since adolescence Vellupillai Prabhakaran, leader of the LTTE, devoted his life to the Tamil cause.[78] He acted as both chairman of the Central Committee of the LTTE and commander in chief of its military wing. As a leader, he stressed strict discipline and obedience as well as puritanical values. No rivals or opposition within the organization were permitted. He originated the idea of cyanide capsules for LTTE cadres as well as the use of extremely powerful land mines, in addition to suicide bombs. He was described as capable of both rage and calculation, extremely cautious and safety-conscious, a meticulous planner, and practical rather than ideological. He favored Clint Eastwood and other Western movies and Soldier of Fortune magazine, and read only military literature as well as books on and by Subash Chandra Bose, Fidel Castro and Che Guevara. According to Swamy, "There would be no stopping him if he began a monologue on the Indian independence struggle and Tamil history."[79]

Shoko Asahara, the leader of Aum Shinrikyo, was charismatic and authoritarian. He exercised absolute power over the organization. Partially sighted, as a youth he attended a school for the blind, where his behavior was "dominating, manipulative, bullying, and sometimes violent."[80] These tendencies strengthened as he matured. As guru, his religious belief system was both eclectic and bizarre, and he seems to have been obsessed with both science and violence. The organization he created was a totalistic community, in which his tendencies toward megalomania were sustained by the adulation and complete subservience of his disciples. Nevertheless, Asahara struggled to maintain control over the group and reacted angrily to defections, which were punishable by death. He seems also to have suffered from paranoia.

Khalid Sheikh Mohammed was the planner behind the 9/11 attacks, apparently convincing a skeptical Bin Laden that the extravagant plot could succeed (although he also persuaded Bin Laden not to advance the date of the planned attacks, in order to allow thorough preparation).[81] He was a mechanical engineer by training. He seems to have devoted himself to planning operations against the United States, beginning at least with the 1995 Bojinka plot. He could certainly be called single-minded and relentless in his pursuit of this objective.

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77 Bell, 1977, p. 105.

78 William McGowan, *Only Man Is Vile: The Tragedy of Sri Lanka* (Calcutta: Raup & Co., 1992), pp. 183-185, and Swamy, *Tigers of Lanka*, pp. 49-92.

79 Swamy, p. 56.

80 Robert Jay Lifton, *Destroying the World to Save It: Aum Shinrikyo, Apocalyptic Violence, and the New Global Terrorism* (New York: Henry Holt and Company, 1999), p. 14. The description that follows is based on his account.

81 See profile at http://www.timesonline.co.uk/tol/news/world/us_and_americas/article1517893.ece (accessed June 24, 2010). In this case the Wikipedia entry is most comprehensive: http://en.wikipedia.org/wiki/Khalid_Sheikh_Mohammed.

Conclusions

In contrast to the views of many scholars who think terrorism is inherently static, I have argued that innovation does occur. Strategic innovation, which requires a new goal and a new way of relating operations to that purpose, can be seen in several cases: the Irgun's strategy of the "glass house" against the British in Palestine, the Brazilian and Uruguayan revolutionary strategies of diplomatic kidnappings, hijackings and international operations inaugurated by the PFLP, briefly imitated by Fatah, and Aum Shinrikyo's focus on chemical and biological weapons in order to bring about the apocalypse. Tactical innovation, which involves new weapons or new targets within the same overall strategic context, exists in numerous instances, a sampling of which is cited here. So, too, does organizational innovation.

What explains innovation? The process of innovative decision-making is neither simple nor determined exclusively by circumstances. I suggest first that innovation responds to specific problems and opportunities in the organization's environment. It is not, however, an automatic response to challenge, frustration, or government pressure. Political rivalries within nationalist or revolutionary movements also provide catalysts to innovation at all levels. Technological developments and defensive government reactions contribute most strongly to tactical and organizational innovation. Second, I examine the search for a solution once a problem has been recognized, such as the need to secure the release of imprisoned members of the organization or to secure international recognition. Finding a solution usually takes work; it is not the result of sudden inspiration. Furthermore, answers to problems may be based on the past, through a process of analogical reasoning, although it is difficult to find evidence for this proposition. The solution may be triggered through unpredictable associations from the past or from other contexts. Third, the leaders who make innovative decisions appear to be important to the process. A preliminary review suggests that they tend to be obsessive and controlling, with an absolute commitment to the cause. Their personal ambitions play a strong role.

This analysis has raised more questions than it has answered, but perhaps it will stimulate further debate and research. As M.L.R. Smith argued with regard to the conflict in Northern Ireland, "there is a whole raft of areas that have received little or no systematic academic attention," notably the specific mechanics of the campaigns of violence waged by both sides of the struggle.[82] He criticized the conventional justifications for academic reluctance to become involved in the study of violent strategies of the underground: claims of shortage of reliable information and the difficulties of research, unfashionability of the topic, and a dominant scholarly orthodoxy that promotes an intellectual distancing from the unpleasant problem of how people choose to kill others. This orthodoxy tends to be based on the assumption that violence is largely an involuntary response to conditions rather than the result of a strategic calculation. I also challenge this orthodoxy and argue instead that strategies of violence vary and that they can change significantly. The changes are not automatic; they represent decisions based on different reasoning, perception, and experience as well as the dynamics of the conflict.

82 "The Intellectual Internment of a Conflict," p. 84.

APPENDIX III: GARY ACKERMAN, UNDERSTANDING TERRORIST INNOVATION THROUGH THE BROADER INNOVATION CONTEXT

The introductory material for this workshop has established that terrorist engagement with innovations, specifically with respect to adopting the use of WMEs, is a crucial but under-researched component of our understanding of terrorist behavior, one that the present gathering seeks to address. As with any nascent research enterprise, in addition to collecting as much inductive evidence as possible, a modicum of guidance is often required as to how to go about making sense of the historical data. In the current endeavor, this means that we are less likely to make spurious inferences from a limited set of case studies if we can test them against a coherent set of deductively or inductively derived hypotheses. One possible source of such hypotheses is to look beyond the specified context to other domains of behavior in search of theories and findings related to the phenomenon of interest. Here, we are fortunate that, despite the relative dearth of research on terrorist innovation, there is an immense corpus of prior work on innovation in other areas, not only in the military context, but more generally in disciplines as diverse as business management, public policy and sociology.

Terrorism scholars have sometimes been accused of focusing too narrowly, albeit deeply, on the terrorist context at the expense of taking advantage of insights from the broader social and behavioral sciences. Although this has recently begin to change, as more scholars from a wider range of disciplines have entered terrorism research and facilitated reachback into the theoretical or empirical traditions of psychology, sociology, anthropology and so forth, this has not really been the case with terrorist innovation, especially not with respect to weapons. After all, it is trite to say that terrorists are human beings and terrorist organizations are at their most basic human organizations, which suggests that an examination of how innovation occurs in social systems more generally might prove fruitful. At the very least, it might reveal – when it is compared to the historical experience of terrorism – that terrorists are *sui generis* in their relationship to innovation, which would beg further investigation into why this is so. The only attempt to explicitly relate broader insights of innovation to the terrorism realm of which I am aware has been that of Jackson,[83] and even then his discussion was limited to the domains of technology adoption and private sector behavior.

This chapter will therefore examine prominent theories and findings with respect to the phenomenon of innovation, both in general and specifically with respect to weapons innovation. It will do so in order to suggest insights for hypotheses and analytical tools that might prove useful in understanding terrorist innovation and, conversely, also to examine whether the general theories and findings regarding innovation can be extended practically to as unique and extreme a social context as terrorism. Of course, there is no expectation that theories or results found outside of the terrorism domain will address all aspects of interest to us, but they may very well provide signposts for where the answers to our questions might lie, or failing that, at least provide a point of departure from which to construct our own framework of terrorist innovation.

The chapter will first explore the concepts, theories and practice of innovation in a general context, although it must be admitted at the outset that much of this literature is based upon studies of the

[83] Brian Jackson, "Technology Acquisition by Terrorist Groups: Threat Assessment Informed by Lessons from Private Sector Technology Adoption," *Studies in Conflict and Terrorism*, 24 (2001).

business world. It will attempt to do so through the structure of preconditions, causes and precursor behavior adopted by the workshop organizers. However, after preliminary research, it quickly became apparent that although preconditions and causes might transcend contexts, precursor behaviors for terrorist innovation are most likely to be unique to the terrorism context. Therefore, the discussion focuses explicitly on the first two aspects of investigation, only mentioning general precursor behaviors on the rare occasion when these are believed to have potential application to the terrorism realm. Owing to the expansiveness of the literature, the discussion is separated into that surrounding the nature, generation and diffusion of innovations, as well as the obstacles thereto. After the general survey of innovation theory and findings, the chapter proceeds to consider in greater detail a particular type of innovation of interest to the current effort, namely how weapons innovation occurs and spreads. Last, the chapter raises some questions for the applicability of these general insights to the terrorism context, thus providing some guidance for which innovation dynamics may be more or less appropriate when dealing with terrorist actors in particular.

The Nature of Innovation

While the workshop organizers have followed Crenshaw in quite broadly defining innovation in the context of terrorism as "the adoption of new patterns of behavior,"[84] by considering two alternative conceptions of innovation from other contexts and examining what scholars in those contexts hold to be the essence of innovation, we may be able to derive insights relevant to our own inquiry. Everett Rogers, a sociologist and communications scholar, is widely regarded as the father of the study of innovations and how these diffuse through populations. He defines innovation as "an idea, practice, or object that is perceived as new by an individual or another unit of adoption,"[85] thus making the conceptual focus one of *subjective determination*. By orienting innovation around the perceptions of the creator or user, he also draws attention to the inherent uncertainty in all innovation decisions about whether the new practice is really "new" in any significant sense or will prove superior to existing ways of doing things. This forms the impetus for the ubiquity of information-seeking behaviors about a prospective innovation in order to address this uncertainty.[86] Brian Arthur, an economist and student of technological development, focuses on innovation in situational terms, by equating innovation – or at least significant innovations beyond incremental improvements – with the concept of a *redomaining* of technology.[87] In this sense he describes innovations as, "the expressing of a given purpose in a different set of components,"[88] i.e. a different domain of practice or material technology. This implies that innovations often involve achieving the same end with qualitatively different means, which in turn suggests that anticipating the new patterns of behavior we have associated with terrorist innovation may require looking beyond the strategic, tactical or material attributes traditionally associated with terrorist actors.

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84 Martha Crenshaw, "Innovation: Decision Points in the Trajectory of Terrorism," paper presented at the conference *Trajectories of Terrorist Violence in Europe*, Harvard University (March 2001), p.3. This is very similar to the definition favored by Ronald Kostoff, Systematic Acceleration of Radical Discovery and Innovation in Science and Technology, *Technological Forecasting and Social Change*, 73 (8), p. 924, where innovation "reflects the metamorphosis from present practice to some new, hopefully "better" practice".

85 Everett M. Rogers, *Diffusion of Innovations, Fifth Ed.* (New York: Free Press, 2003), p. xx. He reiterates this by stating explicitly that "If an idea seems new to the individual, it is an innovation." (ibid., p.12).

86 Ibid., p. xx.

87 Brian W. Arthur, *The Nature of Technology: What it is and How it Evolves* (New York, NY: Free Press, 2009), pp. 73-74.

88 Ibid., p.73.

The above notions of innovation introduce two additional concepts that are likely to pervade any discussions about terrorist innovation, especially in the area of WME, namely the centrality of knowledge in the innovation process and the connection between innovation and technology, broadly construed. First, knowledge is inseparable from innovation in the sense that the generation or transfer of knowledge about a new idea or behavior is a prerequisite to implementing it. Yet knowledge is a multifaceted phenomenon and scholars of innovation have drawn distinctions between different species of knowledge. Mokyr distinguishes *propositional* knowledge ("what" knowledge or beliefs about how nature works) from *prescriptive* knowledge ("how" knowledge or techniques for accomplishing something).[89] Further, several scholars categorize knowledge according to its transferability. They differentiate between *explicit* knowledge (that which can be codified) and the more pervasive[90] *tacit* knowledge (that which cannot),[91] and the similar but not quite coequal concepts of *techne* and *metis*, as propounded by Kenney.[92] For our purposes at this point, it suffices to note that these authors appear to argue strongly that successful innovation requires proficiency in or transfer of both elements of each aforementioned knowledge pair.

Second, with respect to technology, since the type of innovation of most interest to us here is WME – which essentially involve technology, as opposed to other patterns of new behavior like organizational change – it is worthwhile to expound a little on what is meant by the term. Here, most descriptions in the literature are similar, at least on the surface, in that they view technology primarily as the manipulation of natural phenomena as a means of fulfilling a human purpose, whether this takes the form of a material object or a process such as a software algorithm.[93]

The final preliminary observation worth making concerns the distinction between innovation and invention, and in particular whether this might be significant in the terrorist context. Invention is usually alluded to as "the process by which a new idea is discovered or created,"[94] in other words "an increment in the set of the total technological knowledge of a given society."[95] Innovation, on the other hand, is taken in the majority of the literature to constitute an intrinsically social process, involving the integration of an invention into one or more cultural, organizational, economic or political contexts.[96] At the same time, the majority of scholars who have looked into the matter with

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89 Joel Mokyr, *The Gifts of Athena: Historical Origins of the Knowledge Economy* (Princeton: Princeton University Press, 2002), p.4. Mokyr denotes propositional knowledge by and refers to it as *episteme*, while prescriptive knowledge is denoted by and referred to as *techne*. One of Mokyr's primary contentions is that increases in useful, prescriptive knowledge of how to do things is predicated in the long run on an expansion of knowledge, which includes scientific discovery. Also see Martin Heidegger for a more obtuse expression of a similar idea, (Martin Heidegger [William Lovitt, transl.], *The Question Concerning Technology and Other Essays* (New York: Harper & Row, 1977), p.13.

90 Donald MacKenzie, *Knowing Machines: Essays on Technical Change* (Cambridge: MIT Press, 1998), p. 11. MacKenzie characterizes tacit knowledge as "informal 'know-how'…unverbalized and perhaps unverbalizable." (Ibid.).

91 Jackson, op. cit., pp. 187-188.

92 Michael Kenney, *From Pablo to Osama: Trafficking and Terrorist Networks, Government Bureaucracies, and Competitive Adaptation* (University Park, PA: Penn State University Press, 2008), p.4.

93 Compare Arthur, op. cit., pp. 28-31; 50-51 and 110; Rogers, op. cit., p.13, Mokyr, op. cit., p.13; M. J. Tushman, & P. Anderson, "Technological discontinuity and organizational environment," *Administrative Science Quarterly*, 31 (1986), p. 440 and Andrew Hargadon, *How Breakthroughs Happen: The Surprising Truth About How Companies Innovate* (Boston: Harvard Business School Publishing Corporation, 2003), p.8.

94 Rogers, op. cit., p. 181.

95 Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (Oxford: Oxford University Press, 1990), p.10.

96 Chesbrough refers to this in the business context as "invention implanted and taken to market" (Henry

some scrutiny acknowledge that this distinction is far from absolute.[97] One might argue that terrorists rarely, if ever, invent a tactic, organizational principle or weapon from scratch and hence that the factors undergirding invention as such are less important to explaining terrorist innovation. Yet, revolutionaries from Karl Heinzen and Carlos Marighella to Ramzi Yousef and Abu Hamza al-Muhajir, have built upon existing weapons and tactics, modifying and adapting them to such an extent that most dispassionate observers would apply the label of novelty. Therefore, even those factors traditionally associated with the basic invention of new technologies or principles may inform our understanding of how and why terrorists innovate. At least for the purposes of the current enterprise, then, it makes sense to look at both concepts. More simply, and without significant loss in conceptual clarity, we can treat invention and innovation together in the current review.

What Stimulates Innovation?

There has been some research on which factors give rise to innovation, although less than one might expect, especially when compared with the copious literature on how innovations diffuse. Much of the work in this area is caught up in a scholarly debate, especially among economic and social historians, which oscillates between those advocating for the precedence of a form of *technological determinism* (in which technology and innovation affect the structure and functioning of society) and those propounding the *social construction of technology* (where social factors shape technology and innovation).[98] Since the two viewpoints are not necessarily mutually exclusive[99] and our primary aim is to shed light on terrorist innovation rather than resolve scholarly disputes, I adopt an agnostic approach here and hold the discussion open to both possibilities.

The most basic question about an innovation that an actor is presented with is whether or not to attempt to develop or adopt it at all, in other words whether it is worth the time and effort to replace the *status quo ante* with something that may, or may not, prove superior, as opposed to investing available resources in maintaining or expanding existing capabilities. Fairly consistent findings have emerged from the extant literature,[100] which can be usefully separated into those relating to underlying environmental conditions that provide more or less fertile ground for the emergence of innovation within a society or organization, as well as those relating to more direct factors or drivers that specifically motivate actors to innovate. It should be noted at the outset, though, that none of the environmental or motivational factors have been unequivocally shown to be either necessary or sufficient for innovation in general and thus cannot be construed as strictly causal in nature. Moreover, there will always remain a place in striving to understand innovation for the role played by serendipity and innovation. Historians have long since discredited the notion that invention and innovation emerge fully formed from flashes of scientific or technical brilliance on the part of lone geniuses. At the same time, one cannot discount the continuing contribution of

Chesbrough, *Open Innovation: The New Imperative for Creating and Profiting from Technology* (Boston: Harvard Business School Press, 2003), p. ix.). See also, Mokyr (1990), op. cit., pp.10-11.

97 Rogers, op. cit., p. 181; Mokyr (1990), op. cit., p.190.

98 Rogers, op. cit., pp.147-148.

99 See MacKenzie, op. cit., pp.13-14 for a detailed discussion of the bidirectional interplay between technology and social factors.

100 Fariborz Damanpour, "Organizational innovation: a meta-analysis of effects of determinants and moderators," Academy of Management Journal, 34 (3), (1991), p.555.

individual, inscrutable bursts of creative thinking,[101] which should always be considered in any analysis of past cases of innovation.

Before listing the environmental conditions and motivational drivers associated with innovation, it is worthwhile considering that one of the major observations emanating from the literature is that innovations only rarely emerge *de novo* from the epistemological ether. Much of the genesis of new technologies[102] and other types of innovation[103] is argued to lie in a combination or synthesis of previous ideas, technologies or practices, often using components borrowed from other domains of activity.[104] Apart from harnessing the relatively few truly new discoveries of or ways to control natural phenomena, innovations are thus *recombinant*, but also *recursive* in that they are themselves made up of other sub-innovations and so on.[105] In the specific context of technology, Arthur postulates that therefore a mechanism of *evolution by combination* operates in a quasi-Darwinian fashion,[106] leading invariably to greater complexity in new innovations and (usually) enhanced usefulness. Technology, from this perspective, thus becomes largely *autopoietic* (or self-creating).[107] I see no immediately apparent reason why Arthur's arguments should not be applied to the concept of innovation more generally,[108] which would be in accordance, in the terrorism context, with the commonly-observed behavior of terrorists in combining well-understood components (say, dynamite and garage door openers) into novel and more efficient means of destruction. Further, it has long been recognized that innovation in a particular area of activity is often inextricably connected to (and sometimes dependent on) parallel technological or behavioral developments in related or constituent domains.[109] Canonical examples include the fact that Leonardo da Vinci's prescient designs for tanks and aircraft (in the domain of military technology) were unproduceable without long-subsequent advances in the metallurgical domain, and the observation that tremendous leaps in computing power have enabled the practical, low-cost sequencing and manipulation of genomes, thus opening synthetic biology up to rapid commercialization.[110]

What the recombinant, recursive and parallel nature of innovation suggests in terms of understanding terrorist innovation is that terrorists, in order to innovate to even a large extent, need not possess within their ranks a creative genius on the order of a Leonardo or an Einstein, but only someone with sufficient mental alacrity to scan the horizon of existing methods and materials and think of new ways of combining them to suit organizational or personal goals. The bar for even

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101 Mokyr (1990), op. cit., p.146; Rogers, op. cit., p. 158.

102 Arthur, op. cit., pp. 203-204.

103 Hargadon, op. cit., p.viii. Hargadon cites the well-known historian of technology, Abbot Payton Usher, who wrote in 1929 that "Invention finds it distinctive feature in the constructive assimilation of pre-existing elements into new syntheses, new patterns, or new configurations of behavior," [cited in Ibid., p.24].

104 Ibid., p.viii. and Chesbrough, op. cit., p.60.Indeed, a National Academies of Science panel on forecasting technologies refers to innovations stemming from "crossover advances" to hold the greatest potential for yielding surprising consequences. (Committee on Forecasting Future Disruptive Technologies, *Persistent Forecasting of Disruptive Technologies* (Washington, D.C.: National Research Council, 2010), p. 45).

105 Arthur, op. cit., p.3.

106 Ibid., pp.21-23.

107 Francisco J. Varela, Humberto R Maturana & R. Uribe, "Autopoiesis: the organization of living systems, its characterization and a model," *Biosystems* 5 (1974), pp. 187–196.

108 Mokyr (1990, pp.163-165), however, cautions against viewing technology and innovation as purely path dependent.

109 David Landes, *The Unbound Prometheus* (Cambridge: Cambridge University Press, 2003), p.2; Mokyr, (2002), op. cit., p. xi; and Arthur, op. cit., p.134.

110 Landes provides another historical example, in that the steam engine only became possible when superior methods of metalworking enabled the production of more accurate cylinders (Landes, op. cit., p.2).

potentially dramatic innovation is thus, theoretically at least, lower than the level at which it is often popularly portrayed.

Preconditions

1. *Feasibility and compatibility*: It goes almost without saying that the *sine qua non* for innovation to occur is that the underlying principle, practice or technology must be technically feasible within the abilities and resources of the innovator.[111] However, in most cases, the innovation must also be economically feasible, in other words at least as efficient as existing ways of operating,[112] as well as ideologically compatible, that is, not complete anathema to the innovator's core worldview or existing cultural values.

2. *Hospitable environment:* Writers in the context of commercial enterprises have observed that so-called "non-market forces" (including intellectual property law, government regulation, industry standards and labor practices) can stifle innovation by reducing both the motivation and capability to innovate.[113] The policies of the Ming Dynasty in China (1368-1644) and the Tokugawa shogunate in Japan (1600-1867) are legendary examples of political and legal environments that discouraged innovation. Analogs in the terrorism sphere that could stifle innovation might be an oppressive security regime or underdeveloped industrial and communications infrastructures. Conversely, in cases where terrorist organizations enjoy some degree of assistance or toleration from the country in which they reside, or operate in a highly developed technical environment, innovation can be expected to be easier and more prevalent, *ceteris paribas*.

3. *Networks of actors:* Several researchers decry the "myth of the lone genius"[114] and claim that communities of practice and social networks facilitate innovation.[115] A diversity of expertise and bringing in new blood periodically has also been favorably described as helping to catalyze innovation. There are, however, often a host of disincentives in place to confound the development of collaborative networks, especially across disciplines[116] and within hierarchies[117], which could stymie or delay successful innovation. In the terrorism context, networks have been shown to have a significant and large impact on terrorist organizations' decision as to whether to pursue CBRN weapons and whether or not to engage in mass-casualty attacks.[118]

4. *Ample resource reserves:* Possessing a variety of resources in substantial amounts not only makes it more likely that the feasibility criterion will be met, but it also can facilitate innovation by

111 Clayton M. Christensen, *Seeing What's Next* (Boston: Harvard Business School Press, 2004), p.21.
112 Mokr (1990), op. cit., pp.291-292.
113 Chrsitenson, op. cit., pp.20-21; 290; Landes, op. cit., p.19; Mokyr (1990), op. cit., 180-181.
114 Hargadon, op. cit., p.93.
115 Hargadon, op. cit., pp.ix; 60, Chesbrough op. cit., p.x, and Arthur, op. cit., p.108.
116 Ronald Kostoff, "Simulating Discovery" in Klaus P. Jantke and Ayumi Shinohara (eds.), *Discovery Science: Proceedings of the 4th International Conference, Washington, D.C., November 2001* (Heidelberg: Springer-Verlag, 2001), pp. 196-197.
117 MacKenzie, op. cit., p.13.
118 Gary Ackerman, Victor Asal and R. Karl Rethemeyer, "Toxic Connections: Terrorist Organizational Factors and the Pursuit of Unconventional Weapons," in Gary Ackerman and Matthew Rhodes (eds.) *START 2009 Research Review* (College Park, MD: National Consortium for the Study of Terrorism and Responses to Terrorism, 2009), pp. 14-15.

allowing, for example, for numerous people with different expertise to work on the innovation (thus bolstering network effects) or for extensive experimentation with different methods and materials. All else being equal, one can expect a greater amount of innovation the more resources are expended in this direction.

5. *Risk tolerance:* Since any innovation challenges the status quo and is beset by a certain degree of uncertainty as to its efficacy, those seeking to innovate are initially at least, in a very fundamental sense, deviants.[119] In an organizational setting, if these persons do not control decision making, in order for innovation to succeed there needs to be a sufficient degree of tolerance for taking risks and accommodating deviance within the organization. Given that the natural posture of many organizations is a conservative one (in terrorist organizations, especially with respect to tactical deployments[120]), innovation can be expected to be more prevalent in organizations and societies that support risk.[121] Researchers have also observed that, broadly speaking, younger adults tend to be more willing to take risks than older adults.[122]

Drivers of Innovation

1. *Problem solving*: One of the primary pathways to a decision to innovate is initiated when an actor perceives that there is a problem to be solved that is not addressed, or not addressed as efficiently as it could be, by existing practices or technologies.[123] The perceived discrepancy between an actor's expectations and its current performance is known as the performance gap and is said to be a major activator of innovation.[124] The innovation process is thus driven to some extent by supply and demand – the demand to fulfill a particular goal (or even for a new goal) and the supply of available means with which to do so. While these goals and means are often of a purely economic nature, they can more generally be viewed in the sense of the fulfillment of a perceived social need. In either case, the decision to innovate to address perceived performance gaps can be expected to follow many of the dynamics of the familiar rational choice paradigm, including the weighing of costs and benefits.[125] In the terrorism context, the "social need" might take the form of a requirement to circumvent a new defensive measure by the terrorists' opponents or to maximize psychological disruption with limited resources. An important observation is that the requirement to innovate is

119 Hargadon, op. cit., pp.27-28.

120 Brian Jenkins, "Defense Against Terrorism," *Political Science Quarterly 101, Reflections on Providing for "The Common Good,"* (1986), pp. 777-778; Adam Dolnik, *Understanding Terrorist Innovation* (London and New York: Routledge, 2007), pp. 26, 36, 56; Bruce Hoffman, *Terrorist Targeting: Tactics, Trends, and Potentialities* (Santa Monica, California: RAND, 1992), p. 15; and Baruch Fischhoff, Roxana M. Gonzalez, Deborah A. Small, and Jennifer S. Lerner, "Judged Terror Risk and Proximity to the World Trade Center," *Journal of Risk and Uncertainty* 26:2/3 (2003), p. 138.

121 Arhur, op. cit., p.108; Mokyr (1990), op. cit., p.157.

122 Committee on Forecasting Future Disruptive Technologies, op. cit., pp.44-45.

123 Arthur, op. cit., pp.108; 154.

124 Rogers, op. cit., p.422; Eric Abrahamson, "Managerial Fads and Fashions: The Diffusion and Rejection of Innovations," *Academy of Management Review*, 16(3) (July 1991), p.592.

125 MacKenzie, however, warns that the inherent uncertainty of radical invention permits only *ex post* genuine economic analysis and therefore that actors are forced to rely on heuristics and "satisficing" in choosing whether and how to innovate. This in turn opens the door to a host of non-rationalistic (in the sense of formal decision theory) influences, such as culture, personality, social relations, and national circumstances (MacKenzie, op. cit., pp.51-53; also see Chesbrough, op. cit., p.70). We discus several of these "non-rational" factors below.

subjective – so long as the actor sees an unmet need, there can arise an incentive to innovate, even if the perceived need is self-created, for example, if it is based on a delusional goal or an artificial timeline. Indeed, Samuel Butler stated as early as 1912 that "All progress is based upon a universal innate desire on the part of every organism to live beyond its income."[126] Conversely, even if a genuine need exists, but remains unrecognized by the individual or organization, there will be no immediate prompting for innovation.

2. *Competition and Status*: The literature recognizes that competition with other entities in the environment can spur innovation as organizations seek to distinguish themselves from their rivals and gain a competitive advantage. A highly competitive environment has therefore been associated with increased innovation among companies in markets, [127] educational institutions[128] and states in the international system.[129] Similarly, organizations seeking to increase their status or visibility for other reasons (for instance, to attract investment or talented staff) can also be expected to seek to innovate in pursuit of prestige. Competition among terrorist groups has sometimes been cited as the driver for adopting new tactics in the form of "outbidding".[130]

3. *Invention and Discovery*: While we have acknowledged above the common aphorism that "necessity is the mother of invention," it is less obvious that the converse can also apply. Several scholars have noted that historically there have been many instances where new technological developments have served as the precipitants of "hitherto unrecognized desires."[131] These in turn could serve to stimulate adoption of the invention, and by extension innovation. In this instance, invention and discovery in the external world can drive innovation by actors and organizations.[132] The same might occur with new practices or beliefs, which by their very novelty call out to be used. In the context of WME, this implies that new technological developments, say in the area of chemical microreactors, might attract the attention and interest of enterprising terrorists, especially those with an idiosyncratic affinity for new technologies like Prabhakaran, or for chemical weapons, like Shoko Asahara.

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126 Samuel Butler, *Notebooks,* 1912 (Note: Life, xvi), accessed from Project Gutenberg at http://www.gutenberg.org/dirs/etext04/nbsb10h.htm on July 25, 2010.

127 Paul Osterman, "How common is workplace transformation and who adopts it?" *Industrial Labor Relations Review, 47 (1994), pp. 173-188.*

128 Erich Studer-Ellis, "Organizational responses to adversity: evidence from higher educational organizations," Paper presented at the Annual Meeting of the American Sociological Association, Toronto (1997).

129 Mokyr (1990), op. cit., pp.206-207. Indeed, competition between European states is one of the reasons given by Landes for the tremendous technological advances experienced there during the Industrial Revolution (Landes, op. cit., p.31).

130 Mia Bloom, *Dying to Kill: The Allure of Suicide Terror* (New York: Columbia University Press, 20017), passim.

131 Mokyr (1990), op. cit., p.151. See also, MacKenzie, op. cit., p.109 and Arthur, op. cit., p.110 for similar expressions of the same idea.

132 Rogers maintains that in fact "Most organizations engage in an opportunistic surveillance by scanning the environment for new ideas that might benefit the organization… most organizations continuously scan for innovations and match a promising innovation with one of their relevant problems" (Rogers, op. cit., pp. 422-423).

Diffusion of Innovations

We now turn from the generation of innovations to how they spread or diffuse across a social system. This is crucial to understanding terrorist innovation because in the majority of cases terrorists are more likely to adopt a new idea, practice or weapon that has been developed elsewhere. The literature on how innovations diffuse is vast, including over 4,000 reviewed studies,[133] making it "perhaps one of the most widely researched and best documented social phenomena."[134] Diffusion concepts have in more recent times expanded their application from an original focus on the spread of new commercial products and government programs to explain collective political action and protest.[135] Yet several gaps in the literature have been identified, in particular a lack of attention to unsuccessful cases of innovation diffusion (a so-called pro-innovation bias) and insufficient research into actors' motivations for adoption or rejection.[136] Despite the broad scope of the literature, then, it is unlikely that we will find guidance in existing research to all of the questions we have about how terrorists adopt new behaviors. Further, limitations on space preclude covering the entire literature on innovation diffusion. Therefore, I will focus here on some of the fundamental and most widely cited dynamics, especially those with potential salience in the terrorist context.

The term "diffusion," as commonly used, encompasses a range of behaviors, including contagion, mimicry, social learning and organized dissemination, but is always an essentially social process[137] involving human decisions. The doyen of diffusion studies, Everett Rogers, has done the most to clarify the basic concepts involved and several of his core ideas are synthesized below within the frame of our inquiry. Rogers defines innovation diffusion as "the process in which an innovation is communicated through certain channels over time among the members of a social system,"[138] with the implication that because this involves a new idea, there is a degree of inherent uncertainty on the part of the potential adopter that must be addressed through information seeking and processing.[139] Rogers's theory focuses in turn on each of the aspects of the definition (*innovation*, *channels of communication*, *time* and *social system*), the first of which we have already discussed in some detail. Moreover, Rogers maintains that the diffusion process usually induces changes in both the innovation itself and the organization adopting it.[140]

Rogers proceeds to posit a five-stage model of what he labels the innovation-decision process, whereby a decision-making entity (individual, committee, or organization as a whole) first engages an innovation, makes a decision whether to accept or reject it and then implements and confirms this decision.[141] The five stages therefore consist of: (1) *knowledge* (becoming aware of the innovation and

133 Ibid.

134 Vijay Majahan & Robert A. Peterson. *Models for Innovation Diffusion* (Newbury Park, CA: Sage Publications, Inc., 1985), pp. 7.

135 Douglas McAdam, " 'Initiator' and 'spin-off' movements: diffusion processes in protest cycles," in M. Traugott (ed.). *Repertoires and Cycles of Collective Action* (Durham, NC: Duke University Press, 1995), p. 231.

136 David Strang & Sarah A. Soule, "Diffusion in Organizations and Social Movements: From Hybrid Corn to Poison Pills," Annual Review of Sociology, 24 (1998), p.285; Abrahamson, op. cit., p. 586 ; Rogers, op. cit., pp.106, 115.

137 Ibid, p. 4.

138 Ibid, p. xx.

139 Indeed Landes contends that the "communicability of experience is the basis of scientific and technological advance, because it makes possible the transmission and cumulation of knowledge. The stuff of a dream is evanescent; the perceptions of a 'religious experience' are highly personal." (Landes, op. cit., pp.25-26).

140 Rogers, op. cit., p. 425.

141 There is also a prefatory function of agenda setting, which can occur before an innovation even presents itself.

pursuing further information), (2) *persuasion* (active information seeking, during which the actor forms a positive or negative attitude towards the innovation), (3) *decision* (essentially, accept or reject), (4) *implementation* (including any needed modifications to the innovation or organizational restructuring), and (5) *confirmation* (whether or not to continue utilizing the innovation).[142] It should be noted that each stage in this process represents a potential rejection point.[143]

Most of these activities involve some degree of information seeking about such topics as the nature, workings and effectiveness of the innovation or the costs of adoption and potential disadvantages. Indeed, the core dichotomy in innovation diffusion research is related to the channels of transmission of information about an innovation. On the one hand, there is the mechanism of external influence, in which a change agent or other force outside of the system of potential adopters seeks to encourage diffusion in a given system. This is referred to as diffusion *into* a population and can be accomplished through a variety of means, with the broadcast media being a common example.[144] On the other hand, there is the mechanism of internal influence, where diffusion occurs based on actors within the system learning from and imitating other actors in a dynamic akin to contagion in epidemiology. Indeed, Rogers refers to the latter mechanism as the "heart of the diffusion process,"[145] whereby potential adopters model their network partners who have previously adopted. It has been argued, however, that a purely mechanistic imitative theory, as reflected in some of the formal models described below, is insufficient in light of the various social influences on the innovation decision process.[146]

One specific example of this is that as a result of the inherently subjective character of diffusion decisions, they are subject to a range of perceptual and affect-based biases. Perhaps the most prominent is confirmatory bias, where actors tend to seek out and seriously consider adopting only those ideas and practices that accord with closely-held values, deeply-ingrained heuristics and standard operating procedures, while rejecting other ideas irrespective of their intrinsic value.[147] Social bias also operates, wherein prior adopters are more likely to "broadcast the details of their approach when blessed with success than when plagued by failure."[148] In other words, once resources have been expended on adopting an innovation, very few actors are prone to point out that the Emperor has no clothes.

Furthermore, although knowledge of the innovation is clearly central to the process, there is little research on several aspects of the provision and reception of information. For example, more insight is required into the significance of whether the potential adopter observes first-hand the innovation in operation, versus hearing about it second-hand through a variety of media. A related question is whether observation of the practice of an innovation or knowledge of its outcome is more salient in the decision to adopt.[149] Neither is theoretically necessary, but research carried out on

This involves identification and prioritization of needs in an organization and initial scanning efforts for means to address these needs. See Ibid., p.422.

142 Ibid., p.37.

143 Ibid., p.177.

144 Strang and Soule, op. cit., pp. 270-271.

145 Rogers, op. cit., pp.18-19

146 David Strang and John W. Meyer, "Institutional Conditions for Diffusion," *Theory and Society*, 22(4), (August 1993), p.490.

147 Rogers, op. cit., p.171.

148 David Strang and Michael W. Macy, "In Search of Excellence: Fads, Success Stories, and Adaptive Emulation," *American Journal of Sociology*, 107(1), (July 2001), p.155.

149 Strang and Soule, op. cit., p.269.

the diffusion of French coal mining strikes and hijacking attempts suggests that in terms of political practices both are important.[150]

The most attention in the literature with respect to diffusion has been devoted to examining the *rate* at which diffusion proceeds. The rate of adoption has been defined as "the relative speed with which an innovation is adopted by members of a social system."[151] Ingrained cognitive heuristics at the individual level and organizational inertia at the bureaucratic level mean that changing the status quo is often an arduous process, and even a seemingly simple case of adoption can take an extended period of time.[152] In fact, Rogers and others partition the set of adopters of an innovation into categories according to their relative rate of adoption, as follows: (1) *innovators*, (2) *early adopters*, (3) *early majority*, (4) *late majority*, and (5) *laggards*.[153] Research has shown that members of each of these categories have several psychological and social characteristics in common. For example, innovators are typically venturesome with a relatively high tolerance for risk, whereas members of the late majority category are more likely to be of a lower socio-economic status.[154] Rogers supplies several dozen generalizations distinguishing those who become aware of or adopt an innovation earlier versus later. The most important of these with respect to terrorism possibly include that earlier knowers have higher levels of education, social status, exposure to both mass-media and interpersonal channels of communication, and are generally more cosmopolite than late knowers.[155] Similarly and additionally, earlier adopters are more likely to have higher levels of formal education, social status, and exposure to all communication channels; display less dogmatism, more intelligence, greater tolerance for change and risk, and more favorable attitudes to science; are more socially interconnected; and generally use the innovation more tentatively at first than do later adopters.[156] Overall, early adopters take less time to move through the five stages of the innovation decision than later adopters.[157]

Reinvention, or the optional modification and adaptation of an innovation by the adopter during the diffusion process to suit the adopter's unique needs, is likely to be a key aspect of terrorist innovation adoption and we might therefore benefit from consulting the literature in this regard. Reinvention is said to occur when the adopting entity needs to adapt an innovation to fit in with its existing structure,[158] and is more likely with innovations that are relatively difficult to understand[159]

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150 Carol Conell & Samuel Cohn, "Learning from other people's actions: environmental variation and diffusion in French coal mining strikes, 1890-1935," *American Journal of Sociology*, 101(2), (1995), p.366; Robert T. Holden, "The contagiousness of aircraft hijacking," *American Journal of Sociology,* 91(4), (1986), p.874.

151 Rogers, op cit., p..23.

152 The archetypal and perhaps most widely-cited case is the diffusion of the prophylaxis for scurvy, which even after James Lind, a British naval officer wrote a treatise in which he identified the importance of citrus fruit, was not implemented by the Royal Navy for several decades (James Lind, *A Treatise on the Scurvy*. (London: A. Millar, 1753)).

153 Rogers, op. cit., p.22. Moore (pp.12-13) provides detailed descriptions of each of these categories as they relate to technology adoption in particular (Geoffrey A. Moore, *Crossing the Chasm* (New York: HarperCollins, 2006)).

154 Rogers, op. cit., pp.22, 282.

155 Ibid., p. 174.

156 Ibid., pp.204, 288-291.

157 Ibid., p.214.

158 James D. Westphal, Ranjay Gulati, and Stephen Shortell, "Customization or conformity? An institutional and network perspective on the content and consequences of TQM adoption,". *Administrative Science Quarterly*, 42 (1997), pp. 366-394; Ann Majchrzak, Ronald E. Rice, Arvind Malhotra, Nelson King and Sulin Ba, "Technology Adaption: The Case of Computer-Supported Inter-Organizational Virtual Teams," MIS Quarterly, 24(4), (2000).

159 Judith K. Larsen and Rekha Agarwala-Rogers. *Reinvention of Innovation: A Study of Community Health Centers.* (Palo

or those that represent a generalized concept with multiple possible applications.[160] Rogers maintains that reinvention is likely to be more frequent later in the overall diffusion of an innovation,[161] rather than among the earliest adopters. If a particular innovation is accompanied by a high degree of reinvention, it is argued to be more likely to be adopted more rapidly, and enjoy a higher degree of sustainability.[162] Indeed, in many cases extensive modification or adaptation can result in the most efficient or popular form of an innovation differing considerably from the initial version that was available for adoption.[163]

Despite the tendency to screen out contrary information, during the confirmation stage of the adoption process sufficient information about the performance of the innovation might reach the adopter to make him question his decision, even if the perceived diminution in expected performance results from misuse by the adopter. Discontinuance may follow and it has been observed that later adopters show a greater proclivity to discontinue innovations than earlier adopters.[164]

System-Level Analysis of Diffusion

Much diffusion research has been conducted in the aggregate, at levels beyond the decisions of individual potential adopters. These analyses assume that there is some degree of imposed or emergent structure in the diffusion process overall[165] and utilize techniques that fall under the rubric of *diffusion curve analysis* to examine the rate of adoption. Possibly the most ubiquitous and robust finding in all of innovation studies emerges from this type of analysis, namely, that in the vast majority of cases the cumulative number of adopters of an innovation when plotted over time yields an "S"-shaped curve.[166] While the steepness of the curve varies according to the overall adoption rate across innovations, the so-called "S-curve" dominates the diffusion of innovations in a surprisingly wide variety of contexts.[167] The prevalence of the "S-curve" was responsible for suggesting to many scholars that the diffusion process possessed at least some common structural characteristics independent of the type of innovation or the identity of the adopting entities.[168] The S-curve demonstrates that innovations can have extended periods of latency followed by a rapid acceleration in adoptions.[169] Indeed, Rogers argues that the portion of the diffusion curve representing points between 10 and 20 percent adoption were crucial in that after this point "it is often impossible to stop the further diffusion of a new idea."[170]

Alto, CA: *Report of the American Institute for Research in the Behavioral Sciences*, 1977).

160 Rogers, op. cit., p. 186.

161 Ibid., op. cit., p. 187.

162 Ibid., p. 183.

163 Chesbrough, op. cit., p. 13.

164 Rogers, op. cit., pp.190-191.

165 Paul J. DiMaggio & Walter W. Powell, "The iron cage revisited: Institutional iso-morphism and collective rationality in organizational fields," *American Sociological Review*, 48 (1983), pp. 147-160; this system-level structure might emerge from such factors as cultural norms or government regulation.

166 This implies, of course, that the adoption of an innovation, in terms of frequency over time, has a roughly normal distribution.

167 Rogers, op.cit., pp.272-274; Bryce Ryan, "A Study in Technological Diffusion," *Rural Sociology*, 13 (1948), Robert M. Dimit, "Diffusion and Adoption of Approved Farm Practices in 11 Counties in Southwest Virginia" Ph.D. dissertation, (Ames, Iowa: Iowa State University, 1954), Robert L. Hamblin, R. B. Jacobson and J. L. Miller, *A Mathematical Theory of Social Change* (New York, NY: Wiley, 1973); Majahan and Peterson, op. cit., p.8.

168 Rogers, op. cit., p.xvi.

169 Strang and Soule, op. cit., p.278.

170 Rogers, op. cit., p. 274.

Although it may be a widely accepted phenomenon in the diffusion of innovations, the underlying reasons for the S-curve's applicability are far more contested. Explanations abound, including those based on the uncertainty, resource requirements and advantages attached to the innovation,[171] learning theories,[172] substitution dynamics,[173] communications,[174] 'meme' transfer,[175] and adoption thresholds.[176]

This observed structural regularity in the diffusion of innovations has resulted in the development of a range of mathematical diffusion models, which have grown increasingly complex over time. These models represent the diffusion process in terms of the number of adopters over time and have mostly been developed so they can be used to predict – through some form of extrapolation – the future diffusion potential of an innovation. Most applications of these types of models have been used to predict long-term sales of durable consumer goods.[177] Most of these models (summarized in Mahajan and Peterson)[178] also involve estimating a limited number of parameters that specify the trajectory of the adoption rate, such as whether or not it is symmetrical about a point of inflection. The S-curve almost always emerges from these models so long as the number of adopters of an innovation at any point in time is taken to be based to some degree on the prior number of adopters (i.e. includes an endogenous component to diffusion).[179]

The most well-received models usually include both a component reflecting external influences, such as the mass media or other change agents,[180] as well as dynamics internal to the system, which capture network effects and reflect responses to the number of prior adopters in the social system. An example of a "mixed-influence" model of this type is the Bass prediction model of fitting a curve.[181] There are other modeling approaches besides parameterizing a curve that can be used to model diffusion, although most of these are generally more complicated to use and require extensive data on the system and the entities involved. These alternative methods include Box-Jenkins type time series analysis[182] and, more recently, social network analysis. Examples of additional diffusion

171 E. Mansfield, "Technical change and the rate of imitation," *Econometrica*, 29 (1961), p.741.

172 D. Sahal, *Patterns of Technological Innovation* (Reading, MA: Addison-Wesley, 1981).

173 A. W. Blackman, Jr., "The Market Dynamics of Technological Substitutions," *Technological Forecasting and Social Change*, 6 (1974), p. 41 and M. N. Sharif and C. Kabir, "A generalized model for forecasting technological substitution," *Technological Forecasting and Social Change*, 8 (1976), p.353.

174 Rogers, op. cit., passim.

175 Gabriel Tarde, *The Laws of Imitation* (New York: Holt; Chicago: University of Chicago Press, 1903) translated by Elsie Clews Parsons [1969]; Bryce Ryan and Neal C. Gross, "The Diffusion of Hybrid Corn Seed in Two Iowa Communities," Rural Sociology, 8 (1943), 15.

176 Mark S. Granovetter , "Threshold Models of Collective Behavior," *American Journal of Sociology*, 83 (1978), p.1420.

177 Mahajan and Peterson, op. cit., p.21.

178 Mahajan and Peterson. op. cit.

179 Gabriel Rossman, Ming Ming Chui, Joeri M. Mol, "Modeling Diffusion of Multiple Innovations Via Multilevel Diffusion Curves: Payola in Pop Music Radio," *Sociological Methodology,* 38(1), (2008), pp. 206-207. These types of models usually display points of inflection or "tipping points" when the number of prior adopters reaches a critical mass that results in a rapid acceleration or cascade of adoption (Ibid., p.202).

180 Thomas W. Valente, "Diffusion of Innovation and Policy Decision Making," *Journal of Communication*, 43(1), p.30.

181 The Bass diffusion model can be written as, $\frac{dF}{dt} = (a + bF)(1 - F)$, see Frank Bass, "A New Product Growth Model for Consumer Durables," *Management Science*, 13(5), (1969), p.215.

182 George Box and Gwilym Jenkins, *Time Series Analysis: Forecasting and Control* (San Francisco: Holden-Day,1970) and Alan Pankratz, *Forecasting with Univariate Box–Jenkins Models: Concepts and Cases* (New York: John Wiley & Sons, 1983).

modeling approaches include the Strang-Tuma hazard model[183] and the Marsden-Podolny spatial diffusion model.[184] Formal diffusion models are not a panacea for all the questions surrounding innovation diffusion in that they explain little beyond the rate of adoption,[185] are often used atheoretically and are undergirded by sets of assumptions which are rarely met in practice.[186] Nonetheless they can be useful tools for more robustly characterizing innovation and have proven quite accurate in many circumstances.

As with the generation of innovations, many of the findings on innovation diffusion can be broadly categorized into drivers (which focus on actor choice) and preconditions (which focus on environmental forces retarding or facilitating diffusion). Although I have attempted to partition the following findings related to the nature, effectiveness, and rate of diffusion along these strata, the dividing line between drivers and preconditions is not always clear and is open to interpretation.[187]

Preconditions

1. *Information flows*: Since communication of information is crucial to the diffusion process, both with respect to knowledge that an innovation exists and data about the nature of innovation, the more open, effective and widespread the channels of communication in the social system, the easier it is for innovations to diffuse. So, in cases where these channels are circumscribed, such as under a totalitarian regime or in an area with limited telecommunications infrastructure, this can retard the diffusion of an innovation, both in terms of its speed and its success. Access costs to information therefore become important, but in the current age of the Internet and other means of globalized communication, in many instances access costs are close to zero,[188] at least with respect to the explicit aspects of knowledge. Mass-media communication channels are regarded as being the best means of creating awareness knowledge of an innovation, while interpersonal channels are more effective in actually persuading an entity to adopt the innovation.[189] The business literature has recently put forward as a new approach what is referred to as *open innovation*, which distinguishes itself from traditional or "closed" innovation principles by advocating a less proprietary, more open-source approach to innovation and its associated intellectual

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183 David Strang and Tuma, "Spatial and Temporal Heterogeneity in Diffusion," *American Journal of Sociology*, 99, (1993), p. 614. The Strang-Tuma model can be expressed as:
$r_n(t) = exp\left[\alpha' x_n + \sum_{s \in S(t)} (\beta' v_n + \gamma' w_s + \delta' z_{ns})\right]$

184 P. V. Marsden and J. Podolny, 1990. "Dynamic Analysis of Network Diffusion Processes," in H. Flap and J. Weesie (eds.), *Social Networks through Time* (Utrecht: ISOR, 1990), pp.197-214.

185 Strang and Macy, op. cit., p.148.

186 Mahajan and Peterson, op. cit., p.25.

187 For example, I have placed those findings associated with the attributes of the innovation itself within the driver's category because they directly affect the decision-making of the adopter, but these could arguably also be included as preconditions based on the fact that they are intrinsic to the innovation and exist even prior to the innovation decision process.

188 Mokyr (2002), op. cit., pp. 8; 77.

189 Rogers, op. cit., p.18. This is related to Granovetter's seminal work on social networks in which he asserted that an actor is more likely to learn novel information from those contacts who are not closely enmeshed in his immediate social network (Mark S. Granovetter, "The strength of weak ties," American journal of Sociology, 78 (1973), p.1360). However, those people with whom the actor has strong ties (i.e. people he knows who know each other) are likely to exert greater influence on his perspective (Strang and Soule, op. cit., p.272; Hargadon, op. cit., p.59).

property.[190] In this approach, companies look externally as well as internally for inspiration and innovation and share (through such mechanisms as licensing) their own innovations with others. Although this is a somewhat radical approach in the business world, terrorists have long been known to borrow techniques (such as suicide tactics) from other violent non-state actors, and even to share these with allies in their ideological or functional networks.

2. *Legitimacy*: Practices that enjoy greater legitimacy, culturally or otherwise, in the wider social system are likely to diffuse more quickly than those that do not.[191]

3. *Homophily*: The greater the degree to which the actors in a social system are alike, the more likely diffusion is to occur and be successful. This includes both structural and cultural forms of similarity.[192] The observed behavior is thought to result from a competitive desire to mimic one's peers or from the greater likelihood of effective communication and persuasion between actors with common languages, standards, norms and so forth. For example, a common culture or identity between the potential adopter and the actor he is using as a model might reduce the subjective uncertainty of the prospective adopter by instilling a sense of trust in the legitimacy and efficacy of the innovation. Unfortunately, as Rogers points out, a distinctive problem in diffusion is that participants in the adoption process are often heterophilous[193] (i.e., differing along certain dimensions such as beliefs, technical knowledge, social status and so forth), thus making effective communication (and presumably then diffusion) more difficult.

4. *Spatial proximity*: Diffusion research has repeatedly shown that spatial proximity between two actors enhances interaction and mutual influence.[194] One such study cited by Strang and Soule mapped radical ideology in Chile as spreading from mining communities to nearby agricultural communities,[195] while Jared Diamond stresses geographical proximity as a major factor in disseminating agricultural and other innovations, which according to this argument tended to spread more quickly across the East-West axis than the North-South axis (where climate and natural barriers hampered interaction).[196]

5. *Origin of innovation*: Where the innovation first occurs might affect its adoption; innovations are more likely to be accepted and adopted if they are produced "in-house", in other words within a given organization or network than if they are developed somewhere else.[197] This is known in business circles as the "not invented here" syndrome, and is likely to be more acute when the potential adopters do not have opportunities to adapt or re-invent an externally-developed innovation, whether this is because of factors inherent to the

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190 Chesbrough, passim.
191 Strang and Soule, op. cit., p. 278; P. M. Hirsch, "From ambushes to golden parachutes: corporate takeovers as an instance of cultural framing and institutional integration," *American Journal of Sociology*, 91 (1986), p.800.
192 Strang and Meyer, op. cit., p.490.
193 Rogers, op. cit., p.19.
194 Strang and Soule, op. cit., p. 275; L. A. Brown, *Innovation diffusion: A new perspective* (New York: Methuen, 1981); Rogers, op. cit., p.88.
195 J. Petras and M. Zeitlin, "Miners and agrarian radicalism," *American Sociological Review,* 32 (1967), p. 578.
196 Jared Diamond, *Guns, Germs, and Steel: The Fates of Human Societies* (New York: W. W. Norton & Co., 1999).
197 Rogers, op. cit., p.425.

innovation itself, or because of regulatory or other constraints on the adopter's freedom of action.[198]

6. *Innovation cycles*: Periods of increased innovation and diffusion have been identified in several contexts. For example, Tarrow[199] describes episodes of heightened collective action in a social milieu (such as the American civil rights and antiwar cycle of the 1960s) in which new ideas, frames of meaning and tactics underwent rapid creation and diffusion.

Drivers

1. *Advantage relative to existing means*: It has been established that the greater the degree to which an innovation is perceived to be able to improve upon existing practice the more rapidly it is likely to be adopted.[200] Perceived relative advantage can follow developments in the actor's environment, the simplest case of which would be awareness that an innovation has been used successfully elsewhere. It can also be internally driven, through recognition of a problem that requires solving (see the above discussion of factors stimulating innovation) but which the entity is unable to address through internal efforts, including self-innovation. Under the pure version of this approach, the innovation that is perceived to supply the greatest benefit for the least cost will be adopted.[201] As is the case with innovation generation, one must, however, be cautious in using diffusion models that are overly rationalistic,[202] since innovation decisions are subjective and can be influenced by a variety of factors besides the simple relative efficiency of the innovation. Further, Abrahamson notes that this so-called "Efficient-Choice Perspective" assumes that decision makers have a high degree of certainty about both their own goals, as well as the efficacy of the innovation in contributing towards those goals.[203]

2. *Chance and the self-fulfilling prophecy*: Diffusion can experience increasing returns to scale.[204] For example, the more a product is adopted in a market, the cheaper it is to produce and the more firms have an incentive to make the product more marketable, which in turn spurs new adoption, and so forth. Similarly, a few actors might adopt a practice for idiosyncratic reasons, but other potential adopters then believe that the practice is generally advantageous and proceed to adopt it as well, spurring yet others to adopt in a bandwagon effect. These types of situations create feedback loops that magnify small initial perturbations and give the diffusion process an emergent, non-linear quality, which can present problems for traditional economic analysis. In practical terms, it means that when several options are available to potential adopters, it is not necessarily the best technology or practice that will succeed, but the technology that, because of a random stroke of luck, becomes "locked" into the system. As Donald MacKenzie observes, "Technologies … may be best because they have triumphed, rather than triumphing because they are best."[205] In a related vein, MacKenzie, through the use of several enlightening case studies, has shown that the ultimate success or

198 Ibid.
199 Strang and Soule, op. cit, p.280.
200 Rogers, op. cit., p.15.
201 Strang and Meyer, op. cit., p.489.
202 Rogers, op. cit, p.116.
203 Abrahamson, op. cit, p.592.
204 Arthur, op. cit., p.2.
205 MacKenzie, op. cit., p.7.

failure of a technological innovation is to at least some extent dependent on actors' beliefs and expectations about its future efficacy. He argues, for example, that if actors believe that a given technology will succeed, this lends impetus to inventors, prompts investment in the technology and encourages adoption by system members, thus making creation and diffusion of the technology (and presumably other innovations as well) more likely in something akin to a self-fulfilling prophecy.[206]

3. *Prestige and fear*: These two concepts are mirror images, and are related to competition between actors. They may or may not be based upon rational appraisals of extant conditions, but both factors might spur entities to adopt an innovation. In the prestige case, the actor might believe that its current status – irrespective of the functional advantage gained – would be advanced by adopting an innovation before its peers and competitors can do so.[207] In the fear case, the actor might fear falling behind its peers or opponents – whether in terms of status or in instrumental terms – if it does not adopt a certain innovation and others do. Theories of so-called "bandwagon pressure," claim that the perceived pressure for an actor to adopt an innovation rises with the number of adopters in the system.[208] Yet, while an innovation might be adopted because it is symbolically or emotionally fulfilling, it is less likely to be retained for an extended period if it does not bestow any relative functional advantage. Moreover, whether an innovation provides a functional or symbolic competitive advantage, this can whither over time as more and more peers or competitors adopt it and thereby negate the initial advantage.[209]

4. *Authority*: The decisions, whether based on whim or rational calculus, of those in power can drive the adoption process.[210] Therefore, in systems or organizations where authorities can impose their will upon most of the organization's behaviors, adoption can occur very swiftly once the authorities decide to innovate.[211] However, because subordinates can generally still subvert the diffusion at the implementation stage, it is only in the most extreme cases that an overarching authority will be able to drive innovation in a completely unobstructed fashion.

5. *Opinion leaders and change agents*: In less extreme, but far more common, circumstances, an actor seeks to influence members of a social system to adopt an innovation. Where the actor is a member of the system itself, who is able informally – usually through reputation and example – to influence other members' behavior towards or away from adopting an innovation, he is known as an opinion leader and is often associated at the hub of a large social network. Opinion leadership can, for instance, take the form of sports celebrities proffering a new brand of soft drink or social movement activists like Gandhi or William Pierce who sought to foment resistance to a sitting government. Change agents are actors

206 McKenzie, op. cit., p.7 and passim.
207 Rogers, op. cit., p.116.
208 Abrahamson, op. cit., p.597.
209 G. R. Carroll, & M. T. Hannan, "Density Dependence in the Evolution of Populations of Newspaper Organizations," *American Sociological Review*, 54 (1989), pp. 524-541and Abrahamson, op. cit, p.599.
210 The role of the government has been studied with special intensity in this regard. See, *inter alia*, G. R., Carroll, J. Delacroix & J. Goodstein, "The political environments of organizations: An ecological view," in B. M. Staw & L. L. Cummings (eds.), *Research in organizational behavior* (Greenwich, CT: JAI Press, 1988); P. J. DiMaggio, "Interest and agency in institutional theory," in L. G. Zucker (ed.), *Institutional Patterns and Organizations: Culture and Environment* (Boston: Pitman, 1987) and W. R. Scott, "The adolescence of institutional theory," *Administrative Science Quarterly*, 32 (1987).
211 Rogers, op. cit., p.29.

external to a given social system, such as companies – often represented by sales representatives – trying to sell their products to consumers, or the classic Farm Bureau extension agents in the United States who worked at the local level to encourage the adoption of agricultural innovations. Change agents are less likely to share as many of the same attributes of the adopting entities as opinion leaders, but on occasion utilize opinion leaders to drive adoption within the system on their behalf.[212] In the terrorist context, we are perhaps more likely to see opinion leaders than change agents, with terrorist organizations like al-Qa'ida serving as theological and tactical models for a variety of other terrorist groups. Opinion leaders and change agents are tied into the notion of fads and fashions,[213] one variant of which maintains that in the face of uncertainty about innovations, actors tend to imitate other organizations, whether in the hope of gaining legitimacy,[214] preventing potential disadvantage,[215] or achieving some other goal through emulation of a perceived trendsetter. Here the locus of the decision shifts from which innovation to adopt to which actor to emulate.[216] Fads and fashions (even those pursued by actors honestly seeking better performance) can result in the rapid adoption of innovations that are of little functional value, with rapid abandonment following shortly thereafter.[217] It has been proposed that in the early stages of diffusion, adoption is mostly driven by the rational choice of relative advantage, while in the later stages adoption can be driven more by the imitation associated with fads and fashions, even where this leads to adoption of inefficient innovations.[218]

6. *Driver modifiers*: While not drivers in their own right, several aspects of the innovation itself can affect adoption behavior by influencing the potential adopter's perception of the abovementioned drivers and hence their decision calculus. Important factors in this regard include the extent to which the innovation is perceived to be compatible with existing values, goals and past experiences of the potential adopters; the perceived complexity of the innovation in terms of adoption and use;[219] the degree to which the innovation can be experimented with on a trial basis; and the ease with which the results of the innovation and its prior adoption are observable to others. All else being equal, it is argued that those innovations perceived to have greater compatibility, trialability and observability and less complexity are more likely to be adopted and to be adopted more rapidly than others.[220] Indeed, between 49% and 87% of the rate of adoption across innovations can be explained by relative advantage plus these aspects of the innovation itself.[221]

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212 Ibid., p.27.

213 Abrahamson distinguishes between the two by holding fashions to be the imitation of organizations outside the group, while fads are taken as the imitation by organizations of other organizations in the same grouping. (Abrahamson, op. cit., p. 597).

214 Carroll & Hannan, op. cit.

215 Eric Abrahamson, & L. Rosenkopf, "When do bandwagon diffusions roll? How far do they go? And when do they roll backwards: A computer simulation," *Academy of Management Best Paper Proceedings* (1990), pp. 155-159.

216 DiMaggio & Powell, op. cit.

217 Strang and Macy, op. cit., pp.154-155.

218 Abrahamson, op. cit., pp.605-606.

219 MacKenzie claims that highly complex systems and technologies can also introduce "relatively novel hazards" (MacKenzie, op. cit., p.209). In the case of terrorist weapons, these hazards may very well be of the direct, physical type. According to Fay, Morrisey and Smyth's data, for example, approximately 47% of all Provisional IRA members killed in Northern Ireland between 1970 and 1998 were killed in accidents involving guns or explosives. Marie Therese Fay, Mike Morrissey and Marie Smyth, *Mapping Troubles-Related Deaths in Northern Ireland, 1969-1998*, 2nd ed. (Belfast, UK: INCORE, 1998).

220 Rogers, op. cit. pp.15-17.

221 Rogers, op. cit. p.221.

It should be remembered that, while purely structural forces such as the number of prior adopters in the system can directly affect innovation and the diffusion thereof, the socio-cultural aspects of potential adopters can also play a role. These contingent factors, including ideology, institutional practice and cultural attitudes can significantly affect the viability of adoption, either positively, as in the case of homophily, or negatively if they result in structural contacts generating boundaries and conflict instead of cooperation and innovation adoption.[222]

[222] Strang and Soule, op. cit., p.276.

Box 1: Innovation in Organizations

The above preconditions and drivers are applicable to both individuals and organizations, albeit manifesting somewhat differently in each type of actor. However, as collectives possessing of an internal structure and made up of individuals whose interests do not always coincide with each other or with those of the super-ordinate body, there are additional factors influencing innovation generation and diffusion that are specific to organizations. Perhaps the most important of these is that few organizations possess a completely unitary decision making process,[223] thus opening up innovation decisions to at least some degree of internal debate. The strength of coalitions for or against innovating or adopting an innovation, together with all the permutations for inter-organizational interaction,[224] can therefore impact the final innovation decision. At the end of the day, it is usually the desire of the most powerful leader or leading coalition in the organization that will hold sway,[225] making the attitude of the key decision maker(s) towards both a specific innovation and innovation in general an important factor. Nevertheless, the influence of internal supporters can have a strong impact on the success of an innovation. In many cases, innovation is facilitated by the presence of internal organizational champions and a strong, supportive coalition in favor of either innovation in general or the particular innovation under consideration.[226]

With respect to structure, whether significant in its own right, or as a proxy for a host of other structural variables, it has been found that larger organizations generally embrace innovations more rapidly.[227] Additionally, in the business world, research suggests that organizations that are technically specialized, with high levels of internal interconnectedness and low levels of centralization and formalization are more apt to innovate rapidly.[228] However, Rogers concludes after surveying several hundred studies of organizational innovativeness that each of the abovementioned structural factors individually has a relatively low correlation with organizational innovativeness, and that this may be due to these variables having a positive effect on innovativeness in the initial stages of an innovation decision but a negative effect during the implementation stages, or vice versa.[229]

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223 The innovation decision process itself might differ somewhat in an organizational context, with more emphasis on agenda-setting to identify perceived organizational problems and a process of calculated matching whereby a problem from the agenda is paired with an ostensibly appropriate innovation (Rogers, op. cit., pp. 423-424).

224 For a seminal discussion of these, see William A. Gamson, "A Theory of Coalition Formation," *American Sociological Review,* 26(3), (June 1961), pp. 373-382.

225 There is always, however, the possibility of spoilers or mavericks attempting to circumvent leadership decisions and either tacitly opposing or proceeding with the implementation of an innovation "under the radar," but this is the exception rather than the rule, and could be a decidedly hazardous choice of action in the context of an already violent terrorist organization.

226 Strang and Soule, op. cit., p.270; Rogers, op. cit., p.414.

227 Ibid., pp.409-411.

228 T. Burns and G. M. Stalker, *The Management of Innovation* (London: Tavistock, 1961).

229 Rogers, op. cit., 412-413.

Barriers to Innovation

Innovation and the diffusion of innovations are neither simple nor free-flowing processes. There are numerous countervailing forces that invariably act to oppose either the generation or adoption of innovations[230] and multiple failure points at which these forces can bring innovation processes to an abrupt halt. Terrorist organizations are not immune from these forces for the status quo, and might even be singularly susceptible to some of them. Therefore, although I have alluded to several potential obstacles during our discussions of permissive conditions for innovation and innovation diffusion, it is worthwhile to enumerate potential innovation pitfalls a little more systematically in the hope that any analysis of terrorist innovation will consider both the drivers of and the impediments to innovation.[231]

1. *Ideology*: The foundational values and precepts held by an actor play a pivotal role in not only whether an innovation will be developed or adopted, but in whether one will be sought after in the first place. This can stem from explicit tenets within an ideology decrying innovation,[232] or from the fear that innovation will bring with it alien ideas, structures and social relations that will somehow pollute the purity of closely-held values.[233] Religion is perhaps the most well-known manifestation of ideological resistance to innovation.[234] Entrenched, dominant religious systems are almost by their nature conservative and this conservatism can be especially pronounced with respect to novelties that move beyond the confines of sacred texts or current ritual and hence could conceivably threaten the supreme authority of the religion. One of the most famous examples is that of Islam, which in its initial phases embraced a host of new ideas from Greek and Roman civilization and proceeded to expand upon them. Though a sentiment present to some extent since the beginning of Islamic history, especially after the theologian al-Ghazali (1058-1111) determined that science and technology posed a threat to the preservation of the faith, the concept of *bidaa* (innovation) took on heretical connotations,[235] and resulted in a subsequent resistance to and tight control over all new technologies, with arguably deleterious consequences for the military and political power of the Islamic world. Ideological resistance need not, however, always emerge from the selfish maintenance of existing power structures. Some of the resistance, especially when the innovation is clothed in new technologies, may actually be selfless, such as where well-meaning intellectuals seek to protect adherents from perceived "dehumanizing" effects of the innovation.[236]

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230 Mokyr (1990), op. cit., p.266; MacKenzie, op. cit., p.37; Some of these can even spark counterinnovation movements of their own, for example, the Luddite-type movements in Europe during the Industrial Revolution.

231 Some of the obstacles apply only to either the generation or adoption of innovations, but many apply to both processes and a single list is thus presented.

232 Mokyr (2002), op. cit., p.249.

233 Ibid., p.241.

234 Ibid., p.170.

235 Bernard Lewis, The Muslim Discovery of Europe (New York: W. W. Norton & Co., 2001), p.224-226; Landes, op. cit., pp.28-29; Volkman, op. cit., p. 60.

236 Mokyr (2002), op. cit., p.241. Karl Marx and Martin Heidegger arguably fall into this camp.

2. *Resistance from guardians of current practice*: Ideology is not the only internal source of resistance. Existing practices create vested interests whose positions, status and power within an organization may suffer if current practices are displaced by innovations.[237] In large, hierarchical organizations, this is typified by bureaucratic coalitions that emerge to protect the status quo. In any event, the implementation of any decisions in such organizations, even if not actively resisted, may be slowed down by an ingrained routine originally developed to ensure continuity and stability,[238] in what can be labeled as "bureaucratic inertia."

3. *Structural adjustments and near-term demands*: Even if decision makers have high confidence that an innovation would be more efficient than current practices and there are no inherent cultural barriers, they may perceive the transition itself as an insurmountable obstacle. One reason is that adopting a new idea or technology may require costly restructuring of an organization and its related practices,[239] with the possibility for a chain reaction of unforeseen and unwanted consequences. Another is that, even though an organization might regard future innovation as essential, it still has mouths to feed today,[240] whether these are current shareholders in a company, or, in the case of terrorism, constituencies who require constant demonstration of attack prowess. In such cases, current exigencies may not allow for the diversion of resources towards development or adoption of an innovation that might bestow benefits only at some future date.

4. *Transfer of tacit knowledge*: Although there are numerous related concepts,[241] the notion of tacit knowledge probably suffices to highlight the obstacles of knowledge transfer in the adoption of an innovation. The basic idea is that in any transfer of knowledge about a practice or technology, there are at least some elements[242] that cannot be captured in easily transmissible media, such as manuals, textbooks or Internet sites. Such elements, usually related to the "how-to" skills associated with an innovation, need to be transferred from person to person in a hands-on manner usually akin to some form of apprenticeship – essentially recreated each time they are transferred.[243] Moreover, unlike explicit knowledge that can be preserved in books and on Internet forums, tacit knowledge can be lost,[244] which might pose particular problems for terrorists who are at risk of losing the possessors of tacit knowledge (for example, bomb-makers) to arrest, accident or assassination. It has already been pointed out that, especially in terms of the transfer of new weapons and tactics to and across terrorist organizations, the less accessible requirements for tacit knowledge transfer can complicate or derail successful adoption.[245]

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237 Ibid., pp. 238, 258.
238 Rogers, op. cit., p.150.
239 Arthur, op. cit., p.139.
240 Eric Von Hippel, Stefan Thomke and Mary Sonnack, "Creating Breakthroughs at 3M," in [no author], *Harvard Business Review on Innovation* (Boston: Harvard Business School Publishing Corporation, 2001), p.33.
241 See Kenney, op. cit., p.4, cf. Arthur's "deep craft" (Arthur, op. cit., pp.159-160).
242 Cowan and Foray argue that tacit knowledge is a complement, rather than a substitute for explicit knowledge, in that even codebooks and manuals require (tacit) shared understanding in order to be correctly interpreted (Robin Cowan & Dominique Foray, "The economics of codification and the diffusion of knowledge," *Industrial and Corporate Change*, 6(3), (1997), pp. 595-622.
243 MacKenzie, op. cit., pp.216, 235.
244 Ibid, p.216.
245 Jackson, op. cit., pp. 187-188.

5. *External regulation*: Political barriers – usually put in place by various levels of government – can be set up that obstruct innovation.[246] This can result not only from hampering information flows, as mentioned earlier, but also from direct regulatory mechanisms (such as import controls or safety regulations) that serve to stifle innovation, whether or not this was the original intent of the policymakers.

6. *The diffusion chasm*: At least in the realm of high-technology innovations, it has been posited that there is a significant obstacle (referred to in the literature as a "chasm"[247]) situated at the point in the S-curve just before the innovation takes off and diffusion accelerates. The gap is described as occurring between those initial adopters of an innovation who are willing to take risks and tolerate initial setbacks and the vast, pragmatic majority of potential adopters who are not and who desire a high degree of certainty that the innovation will work as intended. In the world of cutting-edge technology products, the diffusion chasm is said to be responsible for many a failure of an innovation to gather enough momentum to really penetrate the marketplace.

None of these obstacles is necessarily insurmountable – after all, the rapid growth in production, technology and social connections over the past two centuries bear witness to the successful generation and diffusion of countless innovations. Among the many strategies adopted by organizations and individuals to overcome innovation barriers include purposive organizational changes to facilitate innovation; the creation of separate, independent "skunkworks" organizational entities to avoid bureaucratic inertia and vested interests;[248] and the use of specialized brokers to bridge various domains and seek out and nurture new technologies and practices.[249]

246 Committee on Forecasting Future Disruptive Technologies, op. cit., p. 43; Mokyr (2002), op.cit., p.231.
247 Moore, op. cit., pp. xi, 6-7, 90.
248 Rogers, op. cit., p.149.
249 Hargadon, op. cit., p.26.

Box 2: Disruptive Innovations

An intriguing concept with potential applicability to terrorist innovation is that of disruptive innovations, first propounded by Clayton Christensen of Harvard University.[250] Most innovations are not disruptive, but sustaining, that is, they are "improvements to existing products on dimensions historically valued by customers."[251] Disruptive innovations on the other hand are those innovations that are essentially game changers – in the business landscape, they "introduce a new value proposition" and in turn "either create new markets or reshape existing markets"[252] by opening up a market to new consumers or enabling existing consumers to more easily and effectively do what they were already attempting to get done.[253] Disruptive innovations are closely linked to what have been termed *radical innovations*,[254] *discontinuous innovations*[255] or *competence-destroying innovations*[256] in that they usually require adopters to uproot current modes of behavior, create new networks or build completely new competencies (and abandon previous investments) in order to use them.

The central implication of Christensen's work is that despite being initially inferior to existing technologies or practices in the areas of most importance to mainstream customers / adopters (while offering a new performance dimension), disruptive innovations eventually displace the established technologies (and often also any incumbent users or purveyors of those technologies).[257] This occurs when, as it matures, the disruptive innovation's performance trajectory eventually intersects the trajectory of performance demanded by adopters (the market).[258]

The literature on innovations has yielded many insights, yet these have been robustly verified in only a relatively limited set of contexts, primarily illustrating how new commercial technology develops, how products diffuse in markets, how techniques diffuse among companies and how government programs such as birth control are developed and propagated. What has emerged is a picture of the

250 Joseph L. Bower and Clayton M. Cristensen, "Disruptive Technologies: Catchin the Wave," *Harvard Business Review*, 73 (1995), Clayton M. Christensen, *The Innovator's Dilemma: When New Technologies Cause Great Firms to* Fail (Boston: Haravard Business School Press, 1997); Christensen (2004), op. cit.

251 Ibid., p.xvi.

252 Ibid., p.xvii

253 Ibid., pp.6-7.

254 MacKenzie, op. cit., p.62; Hargadon, op. cit., p.10.

255 Moore, op. cit., p.10.

256 Michael L. Tushman, and Philip Anderson, "Technological Discontinuities and Organizational Environments," *Administrative Science Quarterly*, 31(3), (1986), pp.439–65.

257 Erwin Danneels, "Disruptive Technology Reconsidered: A Critique and Research Agenda," Journal *of Product Innovation Management*, 21 (2004), p.247.

258 The concept of disruptive innovations (or disruptive technologies) has not been without its critics. Christensen's exclusive use of "successful" cases in his empirical work has been questioned (Daneels, op. cit., p.250) and studies by others have apparently yielded results somewhat at odds with those predicted by the theory in terms of the proportion of radical innovations actually brought to market by incumbents (Rajesh K. Chandy and Gerard J. Tellis, "The Incumbent's Curse? Incumbency, Size, and Radical Product Innovation," *Journal of Marketing* 64(3), (2000)). Others have called the entire concept into question (see John C. Dvorak, "The Myth of Disruptive Technology," PCmag.com, 8/17/04, accessed at http://www.pcmag.com/article2/0,2817,1628049,00.asp on July 25, 2010) but it appears as if these critics misunderstand some of the core elements of the theory.

creation and diffusion of innovations that is often complex in the details, but consistent in two overall respects. First, each innovation bears elements of contingency and uniqueness, each experiencing its own growing pains and its own set of obstacles before it emerges as a useful complement to society.[259] As David Landes rather wistfully describes, "Each innovation seems to have a life span of its own, comprising periods of tentative youth, vigorous maturity, and declining old age."[260] Second, any model of innovation diffusion must simultaneously account for influences that originate externally to the adopting entity (such as the actions of peers or government regulation) and those that emerge from internal dynamics (such as subjective considerations of cost-benefit).[261] We would do well to equip ourselves with these lessons, and the many other results described above, as we attempt to traverse the intellectual terrain of terrorist innovation, with the forewarning that the extent to which they apply in this quite different context is an empirical matter.

Innovation in the Use of Weapons

Up to this point, the discussion has engaged the innovations themselves at a relatively nonspecific and abstract level, in order to identify dynamics of innovation that are potentially generalizable across contexts, specifically to that of terrorism. Since one of the primary aims of this workshop is to understand the conditions under which terrorists might innovate with respect to WME in particular, this section will briefly consider the phenomenon of innovation when the objects of the process are weapons, whether wielded by states or other political entities. To what extent do the general preconditions and drivers of innovation described above carry over to the domain of the means of human combat? Are there additional salient factors when dealing with weapons innovation in particular that did not emerge from an innovation literature that is for the most part based on analysis of commercial and governmental social practices?

Fortunately for those seeking to understand weapons innovation (but unfortunately in almost every other respect), the history of weapons development and their use in warfare spans millennia and serves up many examples upon which to draw. Limitations on space preclude considering more than a handful of these, but an impressionistic reading of the historical record should suffice to provide preliminary support for the applicability of general innovation dynamics to the domain of combat and weaponry.

To begin with the nature of the weapon itself, it is readily apparent that in the military sphere, innovation does not always arrive in the shape of a sudden ferocious blast felt across the battlefield, but can also take more subtle and variegated forms. First, some weapons innovations consist of cumulative improvements, which in isolation may not seem that worthy of note, but can eventually reach a tipping point that represents a huge qualitative advantage on the battlefield. A pertinent example is in the area of small arms, which experienced incremental advances over an extended period of several centuries, including rifled barrels, breech-loading and the percussion cap, none of which produced any military sea-change. However, when these factors came together for the first time as a mass-produced weapon in the form of Von Dreyse's Prussian needle-gun (*Zundnadelgewehr*)[262] the weapon – when combined with appropriate tactics and organization in the

[259] Mokyr (2002, op. cit., p.22) puts this in blunt economic terms: "novel ideas and knowledge are expensive to generate but cheap to use once generated."

[260] Landes, op. cit., p.3.

[261] See, for example, the discussion in Strang and Macy, op. cit., p.173.

[262] Geoffrey L. Herrera and Thomas G. Mahnken, "Military Diffusion in Nineteenth Century Europe: The Napoleonic and Prussian Military Systems" in Emily O. Goldman and Leslie C. Eliason (eds.), *The Diffusion of*

1866 war with Austria – was able to revolutionize land warfare. It is, in addition, actually not uncommon in the annals of weapons innovation for a weapon to go through multiple iterations of development and refinement before proving effective in combat or to be initiated by one set of actors and then consummated after significant delay by a completely different set. Perhaps one of the clearest examples is the use of self-propelled rockets on the battlefield, which from their earliest appearances in Ancient China to the Mysore Wars and the War of 1812 had played no more than a supporting and sporadic role on the battlefield, that is before making a reprise in World War II and coming to dominate modern warfare.[263]

Second, while there is a tendency to expect weapons innovation to naturally progress to larger and more complex forms (as occurred with siege engines, warships and aerial ordnance), in several cases the innovation in weaponry is represented by weapons becoming smaller and less complicated. To mention just two examples – Charles VIII's bronze cannon that in 1494 obliterated the fortresses of the Italian kingdoms were smaller and lighter than the hulking, multi-piece bombards that preceded them[264] and Shaka Zulu's short stabbing spear provided a range of advantages over the long *assegai* in close-quarters tribal combat in 19th century southern Africa. The past century has, however, witnessed the historically curious trend of simultaneous miniaturization of weapon components and an exponential increase in their complexity.

Third, although most weapons innovations are characterized by the introduction of a novel physical apparatus, this does not necessarily have to embody substantial improvements in destructive capabilities like range, mobility or firepower. Innovations in weaponry can also arise in aspects less directly related to actual combat performance, such as costs of production or the expertise required to use the weapon. In fact, on occasion a new weapon can underperform on several physical dimensions, but still constitute an innovation, as seen with the advent of the crossbow, which was heavier, more expensive and had a lower rate of fire than either the composite bow or the longbow. The crossbow's chief source of innovation, however, derived from the dramatically shorter training period required, when compared with other bows, before a soldier became proficient with the weapon – an important advantage when expert archers took decades to develop their skills and were thus a comparatively scarce and expensive element of a military arsenal.[265] Indeed, as the above examples suggest, weapons have often seemed to display the characteristics, discussed earlier, of a disruptive innovation, which may be indicative of the role played by WME in the hands of terrorists.

Turning to an analysis of the preconditions and drivers of weapons innovation, one observes similar dynamics to those predicted in the general innovation literature. With respect to the permissive

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Military Technology and Ideas (Stanford: Stanford University Press, 2003), p. 220; Max Boot, *War Made New: Technology, Warfare, and the Course of History, 1500 to Today* (New York, NY: Gothman Books, 2006), pp.128-129.

263 Willey Ley, *Rockets, Missiles, and Men in Space* (New York: Viking Press, 1968), pp. 61-75 and Wernher von Braun and Frederick I. Ordway III, *Rocketry and Space Travel*, 3rd ed. (New York: Crowell, 1975), pp. 30-34.

264 Boot, op. cit., p.4.

265 One example of the effectiveness of the crossbow was its ability to keep Muslim attackers at bay during Richard the Lionheart's march down the Levantine coast in 1191 (Matthew Bennett, "The Crusaders' "Fighting March" Revisited," *War in History* 8(1), (2001), pp. 1-18). The exploits of the Catalan Company of crossbowmen between 1282 and 1311also demonstrated the usefulness of the crossbow in battle. For more discussion of the crossbow as an innovation, see James F. Dunnigan, *Digital Soldiers: The Evolution of High-Tech Weaponry and Tomorrow's Brave New Battlefield* (New York: St. Martin's Press, 1996), pp.9, 279; William H. McNeill, *The Pursuit of Power: Technology, Armed Force and Society since A.D.1000* (Chicago: University of Chicago Press, 1984), pp. 67-68; p. 80 and Bert S. Hall, *Weapons and Warfare in Renaissance Europe* (Baltimore, MD: The Johns Hopkins University Press), p. 17.

conditions for and barriers against the generation of innovation, ideological, social and cultural compatibility with an innovation certainly seems to play a role in creating an environment that is either fertile or hostile to new weapons development.[266] An illustrative case is the Japanese rejection of firearms – for more than two hundred years – under the Tokugawa Shogunate, which has been at least partly explained by the incongruity between the chemical reactions of firearms and traditional Shinto sentiments regarding harmony with the natural world and the purity of bodily kinetics.[267] The risk aversion and hence general circumspection of military commanders with respect to new weapons, especially for those introduced during the crucible of actual combat, has also been noted.[268] The business literature suggests that organizations with lower levels of centralization and formalization will be more able to innovate rapidly, but in contrast Rosen points out that although such a structure might make an organization more receptive to innovation, a strict hierarchy with tighter control mechanism may be more capable of implementing an innovation, especially during wartime.[269] Overall, Goldman and Ross conclude that a military organization's capacity to adapt its doctrine and institutional structure to an innovation is key, and that this is at least partly dependent on resource levels and the compatibility of the innovation with existing organizational norms,[270] factors that were identified as important in the general innovation literature.

In terms of those factors that drive weapons innovation, again these largely mirror those identified in the general literature. First, much weapons innovation throughout history has originated from the perceived need to solve a problem not addressed by contemporary weapons, which then drives actors to initiate a process of weapons innovation (or, alternatively, to scan their external environment for solutions). There is no shortage of examples, from the development of siege engines by conquerors from Assyrian times in order to assail walled towns,[271] to attempts to equip motorized vehicles with tracks and armor to overcome the muddied trenches of the First World War and the efforts to produce guided munitions as a solution to unaffordably high levels of inaccuracy in aerial bombing.

Second, prevailing competition between political entities seems to have been one of the central drivers of weapons innovation, from stone-age peoples[272] to the superpowers of the Cold War. Competition does not only take the form of keeping up with rival states, clans or tribes, but also in terms of the commonly described 'offense-defense' co-evolutionary dynamic, which Turney-High has gone so far as declaring to be the central driving force in weapons development. "The offense thinks up new weapons or improves the old ones," Turney-High avers, "so that the defense's genius must think up new defense or be crushed out of existence. There is nothing new nor old in this. The

266 Jeremy Black, 'Determinisms and Other Issues', *The Journal of Military History*, 68:4 (2004), p.1223.

267 John Keegan, *A History of Warfare* (New York: Vintage Books, 1993), pp. 44-45.

268 Steven Peter Rosen, *Innovation and the Modern Military: Winning the Next War* (Ithaca, NY: Cornell University Press, 1991), p.25; Dunnigan, op. cit., p. 6.

269 Rosen, op. cit., p. 39. He does concede, however, that under certain conditions of independent data gathering and implementation procedures by individual operating units, a decentralized structure may facilitate innovation.

270 Emily Goldman and Andrew Ross, "Conclusion: The Diffusion of Military Technology and Ideas—Theory and Practice," in Goldman and Eliason, op. cit., pp. 301-302.

271 Thucydides provides a superb contemporary description of the tribulations associated with attempting to overcome the dedicated defense of a city in a *History of the Peloponnesian Wars* (sections 2.75, 2.76 and 4.100), where both the besieged and the besieger worked hard to undermine (sometimes literally) each other's constructions.

272 John Keegan (Keegan, op. cit., pp. 26-27), for example, ably describes the rapid production and diffusion of the *mata'a* a more lethal spearhead on Easter Island during a time of heightened internecine discord.

entire history and prehistory of weapons is summarized in this cycle."[273] This process implies further that the offense can be compelled to progress in order to circumvent robust defense.

Third, the function of status in the innovation decision is also no stranger in the realm of weaponry, no doubt playing at least some role in the often (literally) ludicrous lengths to which medieval European armorors went to create ever larger, more elaborate and arguably less functional swords. Not to mention the proverbial "pissing contest" between Germany and Great Britain over the size and complexity of warships at the turn of the twentieth century. Fourth, there have been several cases of "invention being the mother of necessity" with respect to weapons innovation, in which new scientific or technological discoveries (often in the civilian world) prompt the creation of new weapons. The canonical example of this would be the Manhattan Project, when Einstein and Szilard brought the implications of the tremendous advances in nuclear physics in the 1920s and 1930s to military and political leaders' attention, eventually spawning the development of the atomic bomb.

Something not emphasized in the general diffusion literature is that weapons innovation can arise somewhat spontaneously, without a conscious driver. In this case trial and error or curious tinkering results in existing (or newly discovered) objects or practices being put to new purposes, thus creating novel weapons. This most likely occurred in pre-modern societies as creative individuals recognized that traditional hunting tools could be used for more than bringing down large prey, or at least for dispatching a more zoologically familial sort of prey. Conversely, although innovation depends to at least some extent on individual flashes of insight, weapons innovation need not always come bubbling up organically through the ranks of warriors and military technicians, but is often the result of a top-down, institutionalized process specifically set up to develop novel weapons. Examples abound, from the Assyrians at Nineveh[274] and Dionysus at Syracuse,[275] to the rulers of Italian city-states, the British Ordnance Boards and the U.S. Defense Advanced Research Projects Agency.

With respect to the diffusion of weapons innovations, information flow regarding the innovation is not as much of a determining factor as one might expect, chiefly because awareness of a significant innovation in weaponry tends to spread quickly regardless of the ease with which information spreads in the broader society. This can occur through espionage, by demonstration during combat between other entities (whether circulated by hand-delivered scroll or global television networks), or – least preferably for the potential adopting force – through being on the receiving end of the weapon's enhanced performance in combat against a prior adopter. In this regard, one might for instance suspect that the following report by Francesco Guicciardini of the bronze cannon used by the French in Italy in 1494 could not have gone unnoticed by the great houses of Europe for very long at all:

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273 Harry H. Turney-High, *Primitive War: Its practice and concepts* (Columbia, SC: University of South Carolina Press, 1949), p. 7.

274 Ernest Volkman, *Science Goes to War: The Search for the Ultimate Weapon, From Greek Fire to Star Wars* (New York, NY: John Wiley & Sons, 2002), pp. 20-21.

275 Dionysus, the ruler of the Greek city-state of Syracuse set up a concentrated program of weapons development, "since the ablest skilled workmen had been gathered from everywhere into one place. The high wages, as well as the numerous prizes offered the workmen who were judged to be the best, stimulated their zeal" (Diodorus Sicilius, *Library of History Vol. VI*, translated by C. H. Oldfather (Cambridge, MA: Harvard University Press, 1954), p.131 [Book XIV, Chapter 42]). Among other innovations, Dionysus oversaw the invention of the catapult.

> The French developed many...pieces, which were even more maneuverable, constructed only of bronze. These were called cannons, and they used iron cannonballs instead of stone as before…and so little time elapsed between one shot and another and the shots were so frequent and so violent was their battering that in a few hours they could accomplish what previously in Italy used to require many days.[276]

It also seems that awareness of a weapons innovation might be facilitated by certain qualities inherent to the weapon itself or its effects, such as whether the weapon represents a significant departure from previous weapons or whether its effects are easily observable and immediate. The loud bang emanating from the earliest gunpowder weapons may thus have had something to do with the rapid growth in awareness of these weapons in Europe despite their initially poor performance relative to torsion or tension projectile weapons. It can be hypothesized that in a modern society seemingly obsessed by the latest iPad or other high-technology device, weapons associated with the latest technical breakthroughs or with popular fiction (including 'WMD') might garner widespread and rapid attention by would-be purveyors of violence.

A dearth of available resources needed to produce a new weapon can of course hinder its adoption. This may have been one of the major reasons why the Ancient Egyptians, who did not have access to copious quantities of the materials to make bronze, were still employing clubs and stone-tipped spears at the start of the Middle Kingdom (approx. 2000 BCE),[277] despite the Bronze Age being well underway. Even more so than is the case with many other innovation types, one element that can especially bedevil the successful adoption and fielding of a new weapon is a fixation on the kinetic aspects of a weapon to the detriment of sufficient attention or provision of resources to the support systems required to effectively deploy the weapon (such as the necessity for mid-air refueling for strategic bombers). This leads to what can be described as something of a consensus among scholars, namely that a crucial element in the successful adoption of any weapon innovation is the incorporation not only of the physical components of the weapon itself (the "hardware"), but also of the requisite changes in doctrine, organization, training and even in the broader social structure of the adopting entity (the "software"). [278] Two among many instances where weapons adoption was unsuccessful or only partially successful because of a failure on the part of the adopter to transfer the required organizational software along with the hardware of a weapons system are the lackluster attempts by several European countries to imitate Prussian combat arms in the latter part of the nineteenth century and the no less ineffectual attempts by Arab nations to adopt advanced tanks in the latter part of the twentieth.

Another factor that can curtail weapons diffusion is conscious action by the current possessors of the weapon to forestall its spread. This can consist either of efforts to keep the technology underlying the weapon a closely-held secret, as seen most famously in the Byzantines' jealous guarding of Greek fire, or multilateral cooperation to prevent the knowledge and materials required to produce the weapon from spreading, for example through global nonproliferation regimes such as the NPT.

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276 Francesco Guicciardini, *Storia d'Italia* , quoted in Hall, p.159.

277 Barry Kemp, *Ancient Egypt: Anatomy of a Civilization* (London: Routledge, 1983), p. 269.

278 Brett D. Steele and Tamera Dorland, "Introduction" in Brett D. Steele and Tamera Dorland (ed.), *The Heirs of Archimedes: Science and the Art of War Through the Age of Enlightenment* (Cambridge, MA: MIT Press, 2005), pp. 16-17; Boot, op. cit., pp.88-89; Goldman and Ross, 'Conclusion', op. cit., pp. 382-384; and Martin Van Creveld, *Technology and War: From 2000 B.C. to the Present* (New York: The Free Press, 1991), p.156.

Just as has been portrayed in the general diffusion literature, the cultural and ideological compatibility of the potential adopter with innovation in general and the specific characteristics of the new weapon in particular, are also often central to the adoption process. On the one hand, cultural incompatibility raises a huge barrier to adoption. In addition to Japanese rejection of guns, several other militaries were unable to make the social and organizational adjustments necessary to effectively adopt firearms because of cultural incompatibilities. One such example were the half-hearted attempts by the ruling Mamluks of Egypt to employ gunpowder weapons (the Mamluks viewed firearms as beneath them and used traditional weapons themselves while recruiting gunners and musketeers from black Africans and people of the Maghreb) and their consequent ignominious defeats at the hands of the Ottomans in the battles of Marj Dabiq (1515) and Raydania (1516).[279] Yet cultural incompatibility to new weapons was far from universal, as seen in the Native Americans' adroit adoption of firearms, which they wove fairly effortlessly into existing cultural traditions.[280] Homophily also seems to have been singled out by military scholars as facilitating innovation diffusion, at least at the level of states. The adoption of military innovations are argued to be facilitated by cultural or other affinities between the military or political leadership in the innovating and potential adopter states, and hampered by dissimilarities.[281]

The diffusion obstacles of institutional inertia and defense of the *status quo* have many illustrations in the history of weapons innovation. Military organizations, with their intrinsic orientation towards obedience, discipline, martial values[282] and routinization, are held up as being particularly prone to elicit internal opposition to change, especially those changes that originate outside of the military establishment.[283] The most well-known case of such behavior is possibly the resistance of horse-mounted medieval knights – who represented an elite social as well as military class – to the introduction of infantry weapons that could jeopardize their dominion over the field of battle and thus put their social status at risk. Although the annals of weapons development say little specifically about the impact of spatial proximity or innovation cycles, this does not mean that these concepts could not feature in the terrorism context.

Turning last to the drivers of weapons diffusion, while most of the actors in a social system quickly became aware of a new weapon, this did not necessarily mean that they would choose to adopt it. In exploring how such decisions get made, we must first consider who the decision-making authority is. Primitive societies evidently possessed no unitary decision maker; the widespread adoption of a new weapon like the flint-topped spear most likely resulted from a multitude of micro-decisions responding to individual Darwinian-type pressures, which together constituted an emergent process of adoption. The terrorist analog might be found in highly decentralized and diffuse movements

279 Keegan, op. cit., p. 36; Geoffrey Parker, *The Military Revolution* (New York: Cambridge University Press, 2007), pp. 126-127. Indeed, the Mamluk leader Kurtbay is reported to have lamented that "A single one of us can defeat your whole army. If you do not believe it, you may try, only please order your army to stop shooting with firearms…The contrivance is that musket which, even if a woman were to fire it, would hold up such and such a number of men … And woe to thee! How darest thou shoot with firearms at Muslims!" Keegan, op. cit., p. 37, quoting from D. Ayalon, *Gunpowder and Firearms in the Mamluk Kingdom* (London: Vallentine, 1956), pp. 94-95.

280 Patrick, M. Malone, *The Skulking War of War* (Lanham, MD: Madison Books, 2000), p. 25.

281 Leslie Eliason and Emily Goldman, "Introduction: Theoretical and Comparative Perspectives on Innovation and Diffusion" in Goldman and Eliason, op. cit., pp. 15-16.

282 The argument here is that these values create a cultural barrier between the armed forces and the rest of society, one that breeds insularity and an inherent distrust of new developments, especially those emerging from non-military innovators.

283 John Keegan, op. cit., p. xvi; Hall, op. cit., pp. 4-5; Rosen, op. cit., p. 19 and Van Creveld, op. cit., p.220.

consisting of multiple lone actors each displaying organization and tactical (but not necessarily strategic) independence, as seen in certain sectors of the radical environmentalist movement.

Most political entities through history, however, developed some form of hierarchy with a central leadership, often a single individual, in whom ultimate authority was vested, including deciding whether or not to adopt a weapons innovation. The degree of consultation with other elements of the hierarchy (such as priests or the elite warrior caste) varied considerably across cultures and institutions. Powerful leaders could use their authority to mandate the adoption of a new weapon, overriding most other considerations, although it was probably extremely rare for even the most despotic of rulers to remain completely beyond the influence of functionaries representing vested interests. In certain cases it appears as if the adoption of a new weapon might not have occurred (at least within a reasonable time-frame) were it not for the unique personality traits of a particular ruler, whether these reflected the ruler's astuteness or idiosyncrasy. For example, it is debatable whether the longbow would ever have attained such a prominent position on European battlegrounds such as Crécy in 1346 and Agincourt in 1415, had Edward I in the thirteenth century not recognized that the longbow, a favorite Welsh hunting weapon, could be deployed in battle to deliver a dramatic concentration of fire.[284]

The dominant driver of adoption in the literature on weapons diffusion seems to be a combination of the factors of relative advantage and competition identified in the general diffusion literature. At the level of states in the international system, the arch neo-realist Kenneth Waltz s maintains that "The possibility that conflict will be conducted by force leads to competition in the arts and instruments of force."[285] Hence, a strong incentive exists for military and political leaders of a state to imitate any new weapon that they perceive to be advantageous out of fear that failing to do so will create an imbalance of power vis-à-vis those states that do. In evolutionary terms a weapons innovation anywhere can be viewed as a mutation in an organism, to which other members of the species must either adapt (adopt the same or an offsetting mechanism) or perish.[286] The intense build-up of warships in Europe at the end of the 19th century and the spread of nuclear weapons among the superpowers after World War II are clear examples of this phenomenon in practice. One should not, however, forget the role of prestige in certain adoption decisions, as illustrated perhaps by several of the more recent acquirers of nuclear weapons or the sometimes preposterous purchases by small yet wealthy states of more fighter jets than they have available pilots for.

The notion of competition spurring adoption as a means of preventing relative disadvantage leads logically to the well-described phenomenon of arms races in international politics. It also leads to the hypothesis that the decision to adopt is facilitated during situations where the adopter perceives high levels of threat, though this facilitation does not necessarily extend to the ability to successfully complete the adoption process. Indeed, there are numerous cases of failed adoption despite highly motivated adopters facing genuine threats to their survival. An example is the willingness but continued inability on the part of South Asia's indigenous militaries to properly incorporate gunpowder weapons into their military doctrine, as demonstrated by the ineffective performance of the artillery of the Maratha Confederacy in the Battle of Assaye (1813).[287] Nonetheless, the rate of

284 Volkman, op. cit., p. 44; for more detail see Matthew Strickland and Robert Hardy, *The Great Warbow* (Stroud: Sutton Publishing, 2005).

285 Kenneth N. Waltz, *Theory of International Politics* (New York: McGraw-Hill, 1979), p. 196; cited in Eliason and Goldman, "Introduction," op. cit., p. 8.

286 Hall, op. cit., p. 3.

287 *Vide*, Arthur Wellesley to Henry Wellesley, October 3, 1802, in John Gurwood (ed.) *The Dispatches of Field*

adoption of a new weapon does seem to be correlated with the extent of perceived benefits (or the military costs of non-adoption), as well as the amount of resources made available for implementation of the adoption process, both of which are dependent to some extent on prevailing perceived threat levels. One must not forget that, as described above, cultural or ideological incompatibilities, bureaucratic inertia or inter-organizational "turf battles" can vitiate the adoption process irrespective of the relative advantage of the weapon.

Change agents and opinion leaders also feature prominently in weapons adoption. First, there are the change agents, who as we have defined them act from outside the system of adopters. The civilian producers of weapons, who in one way or another stand to profit from their adoption, have often acted to encourage the dissemination of a new weapons system, in effect "pushing" the innovation onto military organizations.[288] This has been witnessed fairly frequently through the ages, with external actors having varying levels of influence on adoption decisions ranging from the relatively minimal influence exerted by craftsmen's guilds and royal armorers in medieval Europe to the at times quite substantial voice achieved by artillery producers in the late nineteenth century or arguably by defense contractors today (often caricatured as the driving force behind the so-called "military-industrial complex"). Analogs in the terrorism context could conceivably be arms dealers or other transnational criminal organizations that act as purveyors of weapons to non-state actors.

When it comes to opinion leaders (i.e. those working from within the system of potential adopters to encourage diffusion), the picture is a little different from the general diffusion case. There are still those whose reputation in the system stimulates diffusion, for example, when weaker polities, who cannot hope to realistically compete militarily with a far more powerful political entity, still strive to emulate their weapons acquisition decisions in a form of bandwagoning. However, another type of influence that might be included under the opinion leader rubric is the quasi-voluntary weapons adoption that occurs across alliances, such as occurred with respect to naval technology amongst the Allies in World War II.[289] Then there are the "invisible colleges" that persist between scientists and technicians across different armed forces – despite all attempts by militaries at maintaining secrecy – and that can be used to raise the awareness of and encourage professional colleagues in other organizations to adopt new weapons. Last, one must remain cognizant of the important role sometimes played by innovation champions within organizations. These individuals or factions (whether civilian or military) can catalyze the adoption decision, *vide* Lieutenant (at the time) William Sims' direct advocacy to Teddy Roosevelt of continuous aim gunfire in the U.S. Navy, but might also deepen organizational resistance, as was the case with Basil Liddell Hart and his abortive promotion of mechanized warfare in Great Britain.[290] At the same time, factions within an organization (such as a functional branch of a state military) engaged in bureaucratic rivalries over resources, favor or influence, might either support or oppose a particular weapons innovation based not on its intrinsic benefits and costs, but rather the extent to which it strengthens the faction's position.

Marshal the Duke of Wellington During His Various Campaigns in India, Denmark, Portugal, Spain, the Low Countries, and France, from 1799 to 1818, Vols. I-II (London: John Murray, 1834).

288 Goldman and Ross, op. cit., p. 374; Dunnigan, op. cit., p xv.

289 Of course, in some cases, alliances function more like coercive regimes, such as the Warsaw Pact, where the core power imposed the adoption of new weapons on its members from the top down (Jones, "Reflections on Mirror Images: Politics and Technology in the arsenals of the Warsaw Pact," in Goldman and Eliason, op. cit., p. 117). In this case, the primary adoption driver would be the authority mechanism.

290 Rosen, op. cit., p. 13

In sum, the history of weapons development appears to largely reflect the dynamics reported in the general theoretical and empirical literature on innovation and diffusion.[291] Rational choice-based dynamics of cost and benefit in the face of competition (embodied in the interstate context by the neo-realist paradigm) emerge as a key driver in both the creation and diffusion of weapons innovations. Yet, at the same time it is in the military sphere that an understanding of innovation as a social process, i.e., invention manifesting into a particular political, cultural and institutional milieu, is essential. For the rational choice approach to weapons innovation suffers in the face of numerous examples of political entities that rejected new weapons in spite of their strategic or tactical advantages. So, while it might provide a basic impetus, a 'logic' as it were for weapons innovation and diffusion, the simple desire to attain military advantage or retain strategic parity must be conditioned by a host of cultural and institutional factors that act to facilitate or retard weapons adoption decisions. These "non-rational" forces can at times become so strong as to override the core calculus of innovation. It is also clear that if an actor wants the creation and adoption of new weapons to be successful, it must be willing and able to incorporate not only the bare physical weapon into the existing arsenal, but also the new systems, structures, and doctrines that accompany the incorporation of the innovation. Moreover, as the entity adapts to the new weapon, the weapon itself can adapt to the entity in a dynamic process that can involve extensive improvisation and the synthesis of old and new.[292]

Applicability to the Terrorist Context

This paper first described the rich theoretical and empirical literature relating to general concepts of innovation and the diffusion thereof. It then considered the history of weapons innovation and diffusion and revealed that, at least on a *prima facie* basis, most of these general dynamics and influencing factors seem to apply to a species of innovations that is very different from those upon which the general theories were developed and tested. At the same time the historical record suggested several dynamics peculiar to weapons innovation, such as the inherently highly risk averse nature of warriors when it comes to assessing new weapons. The final piece of the puzzle is to examine the extent to which these theories of innovation generation and diffusion (including that of weapons) carry over to terrorist actors, which is not a given, since much of the theory and empirical evidence presented thus far was derived from the behavior of commercial enterprises and agencies of a formal government. For instance, it would be interesting to assess the extent to which the S-curve distribution of the number of adopters of an innovation holds in the terrorist context,[293] or whether opinion leaders within terrorist networks can really act to bolster the legitimacy of innovations such as WME. The task of analyzing in detail the preconditions and drivers of terrorist innovation and how these compare with the general dynamics of innovation falls to the remainder

291 We must be careful not to state our case too strongly, for the dangers of hindsight bias lurk in any exposition reliant on a handful of examples. A more vigorous statement would require a far more systematic and extensive survey of the historical record than that presented here.

292 As mentioned above, new technologies often arise as combinations of old technologies, and the incorporation of a weapons innovation into an organization can result in new innovation. At the same time, the initial tactical deployment of weapons innovations has often been an attempt to force them into existing patterns of analogous weapons usage until the true tactical and strategic significance of the innovation is realized. Thus, we see that the arquebus was at first fielded as a tactical substitute for the longbow and the tank essentially as a mobile shield for the infantry.

293 The shape of the S-curve is based largely on the mimetic elements of innovation diffusion and might be expected to hold in at least some cases of recognized emulation by terrorist groups of others in their network, such as in the case of the adoption of the tactic of suicide bombing among Sunni Islamist militants. Whether this is indeed the case is an empirical question, however.

of the papers presented at this workshop. Before embarking on that journey, however, it remains to highlight some of the ways in which the context of terrorist organizations differs from states and companies and thus to identify possible avenues of departure from the more general theories and dynamics.

In many respects, terrorist organizations, despite their violent character, will experience the same constraints and influences that beset all organizations, including such typical organizational features as internal rivalries and cultural filters. This implies that we can expect many of the same effects on terrorist innovation from these factors as seen in the general case. However, terrorist organizations differ from other organizations in several key respects. First, at a structural level, terrorist organizations tend to be less bureaucratic, hierarchical and centralized than either commercial enterprises or modern state militaries. At the same time, they are by necessity hyperdynamic, in the sense of their survival often depending on the alacrity with which they can adapt tactically, strategically and organizationally in response to the actions of counterterrorist forces. Furthermore, terrorist organizations are arguably more likely to consist of a charismatic leader who dominates decision making, surrounded by fanatically devoted followers, than many other organizations, which can in a variety of circumstances increase the likelihood of diverting decisions regarding innovations from even the limited rationality present elsewhere.

At the motivational level, terrorists often evoke recondite ideologies, but even in instances (such as irredentist claims) where this is not the case, their goals and therefore the benchmarks against which they judge a potential innovation, are generally more complex than those, say, of firms pursuing profit or state militaries seeking battlefield dominance. For example, as consummate asymmetric opponents, terrorists attempt to influence a wide array of audiences beyond their immediate victims. They might thus place additional emphasis in their decision making on the cultural or ideological acceptability of an innovation or the potential for psychological impact of a new weapon.

Terrorists operate under a unique set of the environmental conditions, which can adversely affect their freedom of operation and hence possibly also their capacity to create or adopt innovations in WME. They are forced to operate clandestinely for fear of arrest or worse, which imposes basic constraints on the nature of the weapons they develop or adopt, largely limiting their physical characteristics in terms of weight, size and concealability.[294] Unlike states or the vast majority of corporations, terrorists also usually operate at or near the very limit of their available resources, not only in terms of physical resources like finances and equipment, but also in terms of human capital and technical ability. This may alter both the willingness and ability to innovate, and simultaneously encourage improvisation and reinvention of weapons when they are adopted. At the same time, this highlights the importance to successful adoption of efficiently transferring both explicit and tacit types of knowledge surrounding a weapon, because it is unlikely that a terrorist group would be willing to wager its limited resources on multiple failed attempts to adopt a new weapon rather than remain with existing tried and true methods. On the other hand, terrorists often (unrealistically) believe that they will only achieve ultimate success after a long, epic struggle. When one combines their long-term orientation with a typical flexibility in tactical approaches, this suggests that at least some terrorist groups may embark upon protracted weapons development programs that closely resemble the extended planning horizons associated with state or commercial R&D programs. For all of these reasons, the weapons innovation decisions of today's terrorists might more closely resemble those of less formal armed forces from earlier times than those of current militaries or

[294] Van Creveld, op. cit., p. 306.

multinational corporations, suggesting that pre-modern weapons innovation experiences might be a particularly appropriate analog for terrorist adoption of WMEs.

While competition among terrorist groups (for the support of set constituencies) is not uncommon,[295] the primary competitive relationship terrorists engage in is with one or more target states. Given that terrorists cannot hope to "balance" against these states in any conventional sense (hence the basic necessity for engaging in asymmetric warfare), the neo-realist underpinnings of relative advantage in the face of competition being a key driver of innovation may not apply. After all, a terrorist is unlikely to want to develop or adopt a new weapon out of fear that the state will get them first. Instead, innovation in the terrorism context may be driven more directly by the recognition of problems that require solving and assessments of relative advantage, with these problems often arising from counterterrorism actions by the state.

In coming years, technological progress is likely to improve exponentially[296] to reach levels of scientific and technical innovation and global distribution unprecedented in human history.[297] Advances in fields as diverse as synthetic biology, nanotechnology and sensor integration can present both unparalleled opportunities and dire threats, especially as these technologies come to the attention of violent non-state actors like the current crop of amorphous and bloodthirsty terrorists. Yet, technology, as they say, "opens doors; it does not force society to walk through them."[298] In order to make sense of coming threats, as these pertain to WME, we need to more fully understand the process by which terrorists might generate or adopt innovations associated with technological advances and other precipitants. Drawing on past experience and research in other fields of human endeavor, this paper has sought to provide a basic theoretical and empirical framework on which to build such an understanding.

295 Bloom, op. cit., passim.
296 Ray Kurzweil, *The Singularity is Near* (New York: Penguin Group, 2005), p.12.
297 Committee on Forecasting Future Disruptive Technologies, op. cit., p. 34
298 Mokyr (2002), op. cit., p.162.

APPENDIX IV: YORAM SCHWEITZER, INNOVATION IN TERRORIST ORGANIZATIONS: THE CASE OF PFLP AND ITS OFFSHOOTS

Between the end of the 1960's and the mid 1980's, the Popular Front for the Liberation of Palestine (PFLP) and its various offshoots pioneered an innovative terrorist strategy, along with several related tactics. The PFLP's innovation lay, first, in the identification of the global community as the primary target audience for Palestinian activism; second, in the selection of the aviation system as the prime target for their attacks; and third, in the incorporation of foreign nationals into their operations. Offshoots of the PFLP extended this strategy, pioneering significant micro-tactical innovations. These innovations enabled the PFLP and its offshoots to execute some of the most dramatic operations seen in the 20th century, setting a trend that would only be broken decades later by the September 11th, 2001, attacks. Further, these attacks provided a template not only for other Palestinian groups, but for terrorist groups all over the world. This makes the PFLP's record a good starting point for exploring the factors that produce and drive innovation within terrorist organizations. In turn, this exploration builds a solid platform for discussing the extent that security organizations, knowing these factors, can predict and undercut the emergence of innovative capacities in both contemporary and future terrorist networks.

The Rise of the PFLP's International Terrorism Strategy

After Israel's decisive victory in the Six Day War, Palestinian resistance groups realized their hopes of liberation would not be fulfilled by the armies of Arab states, and that they would have to pursue their radical agenda on their own. Lacking a conventional military, many in the resistance movement argued that they should engage in guerrilla/terrorist warfare against Israel, operating out of the newly occupied territories and relying on the strategic depth of neighboring Arab countries. However, the terrain of the West Bank was unsuitable for this style of warfare, and the Arab states were unwilling to support their Palestinian brethren. These factors, combined with the fact that Israel reacted effectively to those attacks that were carried out, led many militant Palestinian leaders back to the proverbial drawing board. This re-evaluation sparked a revolutionary approach to terrorism in the minds of PFLP leaders.

Steered by George Habash and Waddia Haddad − Christian Palestinians trained as physicians at the American University in Beirut − the PFLP was born out of a merger between several earlier organizations, most notably, the Arab Nationalist Movement, Youth for Revenge, and the Palestine Liberation Front. From its inception, the PFLP was dedicated to the expulsion of Jews from Israel and, more broadly, to the Pan-Arabist belief that the Arabs must unite to overthrow Western imperialism and the reactionary puppet regimes it had installed in the Arab world.

In a 1967 meeting of the organization's leadership, Waddia Haddad, then the leader of the group's military wing, leveled a direct challenge to the strategy of guerrilla operations: "Trying to get men and weapons across the Jordan into Israel is a waste of time and effort. Armed struggle of that type will never achieve the liberation of Palestine" "We have to hit the Israeli army in a qualitative way, not quantitative way. This is a particular animal, the IDF [Israel Defense Forces]; we cannot fight it

plane for plane, tank for tank, soldier for soldier. We have to hit the Israelis at the weak joints".[299] His proposed solution involved a major strategic shift:

> What do I mean by the weak joints? I mean spectacular, one-off operations. These spectacular operations will focus the world's attention on the problem of Palestine. The world will ask, 'What the hell is the problem in Palestine? Who are these Palestinians? Why are they doing these things?' At the same time, such operations will be highly painful for the Israelis. High-profile, sensational operations, carried out by thoroughly trained people in secure underground structures – this is how we shall hit at the painful joints. In the end, the world will get fed up with its problem; it will decide it has to do something about Palestine. It will have to give us justice.[300]

Elaborating, Haddad explained that the main idea was to hijack an El Al airliner and to hold its passengers and crew hostage. Haddad claimed that if such an operation failed to get the attention of international media, then probably nothing could succeed in achieving this goal. "It shouldn't be necessary to use actual violence. We don't even have to hit Israeli targets all the time. But we must be a constant irritation, a bug under the skin of the developed world. We must make them lose patience with Israel and Palestine that hard way."[301] While these actions would not precipitate Israel's downfall, they would, Haddad argued, draw sufficient international attention to the Palestinian problem and force a resolution. In the following months, Haddad created a separate special operations unit dedicated to executing such international operations.

Palestinian operatives developed this innovative strategy through the experience of executing spectacular attacks. The first hijackings were designed to impact Western public opinion and to inflate the power image of Palestinian groups, demonstrating their ability to attack Western targets if their demands and national agenda were not met. At the same time, the new strategy aimed to coerce the release of prisoners in Israeli jails and, later, the release of failed hijackers who were caught during their missions. These tactics were rapidly adopted by other Palestinian groups as well as other international terrorist groups.

In July 1968, five members of the new unit were deployed, hijacking an El Al flight from Rome to Tel-Aviv. The kidnappers forced the plane to divert to Algeria, carrying 36 passengers and ten crew members. After landing, the kidnappers released the non-Israeli passengers. The remaining five passengers and seven crew members were held hostage in an Algerian police station near the airport. As Haddad hoped, the airline's hijacking became an international incident; Israel, faced with an unfamiliar challenge, turned to the U.S. for help. All U.S. attempts to find a swift resolution failed, and the crisis dragged out until September, ultimately coming to resolution through Italian mediation. In August 1969, the PFLP followed up on this initial foray, deploying two operatives to take control of TWA flight 840 from Los Angeles to Tel Aviv. Claiming that they launched the attack in retaliation against U.S. military aid to Israel, the hijackers landed the aircraft in Syria, de-planed the hostages, and blew up the cockpit.[302] The U.S. demanded that Syria arrange the release of all hostages, but the Assad regime declined, allowing only a dozen crew members and 93 non-Israeli

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299 Bassam Abu-Sharif and Uzi Mahnaimi, *Tried by Fire*, (London: Little Brown & Co., 1995) p. 59.
300 Ibid, pp. 59-60.
301 Ibid pp. 59-60.
302 Timothy Naphtali, *Blind Spot: The Secret History of American Counterterrorism,* (New York: Basic Books, 2005) pp. 35-36.

passengers to leave. Two male Israeli hostages were released at the end of October 1969, only after Israel agreed to release some Egyptian soldiers.

This strategic innovation soon gave rise to tactical innovations as well, such as ground attacks on European airports. For example, in December 1968 a parked El Al airplane was attacked at Athens International Airport. One mechanic was killed and two others were injured[303]. In February 1969, four PFLP operatives opened fire and threw grenades at an El Al airline while it was departing Zurich Airport, killing an Israeli co-pilot, three other crew members, and injuring three passengers. An Israeli air marshal managed to kill one of the terrorists, while the three other operatives were eventually captured.[304]

Habash's organization declared it would broaden its worldwide activities and focus, not only on Israeli targets, but on any target that belonged to the U.S.-led "imperialistic world."[305] Throughout the summer and fall of 1969, the PFLP bombed several European and Israeli targets, including three Israeli related-businesses and a Marks and Spencer shop in London[306]. In September, the PFLP extended its scope to targets in the Netherlands, Belgium, and West Germany. These attacks expanded the plan to attract Western attention and built on the group's declared agenda of international revolution. The success of the first operations encouraged them to continue with this second gambit. Haddad personally selected all targets and supervised every operation.

These high-profile operations were not only tactical successes, but strategic victories as well. As Haddad had predicted, they brought international attention to the Palestinian problem. Their success also significantly boosted the PFLP's stature among Palestinian groups. In 1969, after the PFLP accepted Iraqi and Soviet sponsorship, Habash's organization fully capitalized on its increasing popularity, nearly tripling its size and significantly upgrading its capabilities. These improvements were on full display when the organization launched the so-called "airplane operations" – the most spectacular, innovative undertaking it has attempted to date.

The "Airplanes Operation": The Pinnacle of PFLP's International Operations

Building on the success of the earlier hijackings, Haddad resolved to hijack not one, but three airplanes en route to New York – selecting an American target because attacking American objectives led to the highest level of media attention. The planes were all to be landed on the same isolated strip in Jordan (an Arab country targeted for reasons beyond the scope of this paper). The operation was launched on September 6th, 1970, when TWA flight 741, en route from Frankfurt, was hijacked with 141 passengers and 10 crew members aboard. The next airline to be hijacked was Swissair flight 100 from Zurich, with 143 passengers and 12 crew members aboard.

While the first two hijackings went according to plan, the third hijacking, El Al flight 219, Amsterdam to New York, did not. According to Haddad's plan, an operative from a left-wing Nicaraguan guerrilla group and a Palestinian woman by the name of Leila Khaled would pose as a married couple to deceive El Al security personnel in Amsterdam. Two other operatives were

303 "Memorial Institute for the Prevention of Terrorism's Terrorism Knowledge Base", <www.tkb.org>, [MIPT-TKB]. (Website is no longer available. For clarification please contact the author.)
304 Ibid.
305 Ibid.
306 Ibid.

supposed to infiltrate the plane in the traditional fashion. While the "married" couple managed to board the plane, the other two, of Palestinian origin, were not allowed to board, but were also not arrested by the authorities.[307] Shortly after takeoff, the two remaining operatives attempted to hijack the plane. The Israeli pilot, who had been trained in counter-terrorism tactics – a direct result of the 1968 Algeria hijacking – turned the plane sharply and entered it into a steep nose-dive.[308] As a result, the hijackers lost their footing and an undercover Israeli security officer shot and killed the male operative. A group of passengers leaped from their seats, charged Khaled, and started beating her. Khaled pulled the safety pin from the hand-grenade that she was carrying and tossed it.[309] Fortunately, the grenade did not explode. Her actions, however, indicate that she was ready to turn the operation from a hijacking into a suicide attack. After the passengers took control of Khaled, the pilot turned the plane back and made an emergency landing in London. Khaled was arrested immediately after landing.[310]

The implementation of Haddad's plan suffered from another complication. The two Palestinians who were turned away by El Al security decided to ignore Haddad's directions and improvise instead. The operatives bought tickets on Pan Am flight 93 to New York and successfully hijacked the plane, its 153 passengers, and 17 crew members. This airplane, however, was not suitable for Haddad's plan; Pan Am flight 93 flew a Boeing-747, which was too large for the sandy landing strip in Jordan. The kidnappers were ordered to divert the flight to Beirut and load it with explosives. After that, they would fly to Egypt and blow up the plane at Cairo International Airport after evacuating all the hostages. The PFLP's intention for this improvised plan was to embarrass Egypt for announcing its ceasefire with Israel, which ended "the war of attrition" in the Suez Canal.[311]

The Swissair and TWA flights landed as planned at an abandoned British airport in Jordan known as "Dawson's field," later renamed the "Revolution Airport." PFLP operatives waited on the ground and helped in securing the plane and handling the hundreds of hostages. Among those at the field was the commander and mastermind of the operation, Waddia Haddad.[312] After completing the hijacking phase of the operation, the PFLP announced that they were not targeting U.S. civilians themselves, but rather the U.S. administration's policies. On the practical level, the PFLP demanded the release of terrorists held by the countries who had citizens among the hostages. As the United States held no terrorists in its prisons, Haddad announced that the U.S. hostages would be released after all other countries had complied. In exchange for the release of the Swiss hostages the PFLP demanded that the Swiss government release several terrorists from Swiss prisons. A similar demand was made of the West German government. The British government was presented with a demand to promptly release Leila Khaled. Israel was required to release several Palestinian prisoners in exchange for the release of the Israeli and dual-nationality (where one nationality was Israeli) hostages.

The negotiations, conducted by the International Red Cross, started the day after the hijacking and dragged out for some time. The United States spent their political capital convincing the nations

307 Abu-Sharif and Mahnaimi 81.
308 Ibid, 82.
309 According to some of the reports it was the male operative who dropped the grenade.
310 Abu-Sharif and Mahnaimi 81.
311 Ibid. 82.
312 Ibid. 84.

involved to present a unified front, and agree to release their terrorist prisoners only on condition that all hostages, regardless of nationality, would be released as well.[313]

Two incidents took place during the negotiations. On the third day of the crisis, Haddad received a report from Beirut that a BOAC airliner out of Bombay was en route to Dawson. Haddad originally suspected that it was a rescue mission, but soon discovered that a Palestinian PFLP supporter had privately hijacked the plane after he heard about the arrest of the famous Leila Khaled.[314] However, Haddad was still concerned about the possibility of a rescue attempt, and worried that Jordan, heavily embarrassed by the crisis, would attempt to end it by force. Therefore, with the media in attendance, Haddad evacuated the guarded hostages and then blew up the planes.[315] The videos and photographs of this scene became some of the best known graphic symbols of the Palestinian international terrorist movement in particular and of international terrorism in general. This event epitomizes the whole strategic aim of the new PFLP strategy to force the world, at gunpoint, to pay attention to the Palestinian problem. Haddad's actions in Jordan gave him that attention in full.

The crisis ended formally on September 30th, with the western European nations exchanging imprisoned terrorists for their hostages. Even Israel agreed to release some Palestinian prisoners, although officially this release was claimed to be unrelated to the hijacking.[316] The tactical victories of the airplane operation, though, were quickly translated into strategic difficulties, sparking harsh reprisals from Jordan and a significant global backlash. The consequences were so severe they convinced Habash that it was necessary to curb the PFLP's international operations. Haddad, though, was unwilling to retreat. Ironically, Haddad's most innovative operation led to his departure from the PFLP, along with his special operations unit. This separation shifted the center of gravity from the PFLP to Haddad's splinter organization. However, the PFLP remained a presence among global extremists, albeit one less oriented towards terrorism.

PFLP-External Operations (PFLP-EO, a.k.a.: The Waddia Haddad Faction)

In addition to devising the international operations strategy, Haddad was the chief planner and senior commander of each operation even though he kept such a low a profile he remains almost an obscure figure even today. He also devised the training program for the PFLP's special operations unit — a training program he continued with his new offshoot and significantly upgraded. The first stage of training included standard military skills. During this initial stage, Haddad's handpicked officers singled out those recruits with the highest degree of intelligence, mental strength, physical stamina, and persistence. These recruits, after completing the entry-level regime, were selected for special operations training.[317] This advanced training program, wholly of Haddad's making, was strongly geared towards preparing the operatives to execute missions targeting airlines. It focused heavily on techniques designed to overcome both pre-flight and on-board security measures. In some cases, trainees even learned how to pilot airplanes—in case the pilots were injured or killed during the initial takeover, and the operatives had to land the plane themselves.[318] Haddad's personal involvement in the training process created strong bonds between himself and his operatives, with

313 Naphtali 43.
314 Abu-Sharif and Mahnaimi 84-85.
315 Ibid. 87.
316 *MIPT-TKB*
317 Ibid. 64.
318 Ibid. 64-65.

many of them idealizing him as a commander and as a human being. In many ways, they were more Haddad's people than PFLP operatives.

In order to further improve his unit's capabilities, Haddad took the unorthodox step of accepting non-Palestinian volunteers, who were often motivated by a combination of sympathy for the Palestinian cause and a desire to acquire the same skills for their own radical agendas. This decision not only lent the organization an international flavor that fit well with their nominal Marxism, but, more importantly, it offered a way to circumvent "racial" profiling. This tactic was tested in the 1970 hijacking of the El Al plane in Amsterdam; while the two Palestinian operatives were stopped by security, the other two operatives − a Nicaraguan and a Palestinian woman who had undergone plastic surgery − successfully boarded the plane. Among the first to qualify under Haddad were the future founders of the Baader-Meinhoff group. Over the years, Haddad cemented further relations with the West German June 2nd Movement (Bewegung 2. Juni), the Italian Red Brigades (Brigate Rosse), the Japanese Red Army, the Basque ETA (Euskadi Ta Askatasuna), the Turkish THKO (Türkiye Halk Kurtuluş Ordusu), the French Action Directe,[319] and the Provisional Irish Republican Army.[320] In addition, Haddad recruited foreign volunteers who were not members of known organizations but who expressed a willingness to fight for the Palestinian cause. The most notable of those operatives was the Venezuelan Ilich Ramírez Sánchez, better known as "Carlos."[321]

Haddad was a great believer in developing innovative technological tools for his special operations. He specifically recruited engineering and chemistry professionals from all over the Arab world.[322] Among the major fields of research in Haddad's organization was the development of tools to overcome the airport security measures. PFLP's engineers tried to develop various explosive devices that could pass through x-ray screening machines − a counter-innovation starting to appear in airports around the world −without raising suspicion.

Another development of Haddad's special unit was a liquid explosive that resembled red wine. For the initial test of this explosive, Haddad decided to use a South-African operative of Arab origin. The man was so enthusiastic to participate in special operations that he declared his willingness to carry out a suicide mission. Haddad agreed. This was probably the first time the PFLP planned to carry out a suicide attack, an unknown phenomenon at that time. The special explosive was poured into an ordinary Chianti bottle that was sealed with red wax. All the operative had to do was to remove the wrapping from the bottle, which should have made it explode. The operation failed after the operative hesitated and was caught by Israeli authorities.[323] In another case, a group of Haddad's operatives was caught while carrying explosives hidden inside ceramic artifacts and religious icons.[324]

Haddad's original ideas saw extensive deployment in the following years. One of the first to be carried out was the attempted assassination of Lord Joseph Sieff, president of Marks and Spencer and a known supporter of Israel. The assassination attempt was carried out in December 1973 and failed.[325] The attack is considered the first operation for "Carlos" and may have served as a test of

319 Ibid. 67.
320 Claire Sterling, *The Terror Network*, (London: Weidenfeld and Nicolson, 1981), pp. 158-159.
321 Abu-Sharif and Mahnaimi 71-72.
322 Abu-Sharif and Mahnaimi 73-74.
323 Ibid.
324 Interview with a former senior Israeli security official, Jerusalem, August 23rd, 2007.
325 *MIPT-TKB.*

his courage and loyalty.[326] In another noteworthy event, Haddad's group took over the Japanese embassy in Kuwait and successfully negotiated the release of embassy staff in exchange for two Palestinians and two members of the Japanese Red Army, who had collaborated on an attack in Singapore. It seems that Haddad went to this effort because the Japanese, able to travel easily across Europe, were turning from "operational contractors" into an integral part of Haddad's special unit.[327]

Subsequently, in order to disrupt the possibility of peace talks between Israel and the PLO, Haddad masterminded two attempts to shoot down El Al planes in France, at the behest of his Iraqi patrons. Both attempts failed. In the aftermath of the second, three operatives, under fire from Israeli security, withdrew into the airport terminal and captured several hostages. After negotiations conducted under the auspices of the Egyptian ambassador to France, they released the hostages and were allowed to leave the country. Many countries refused to allow the attackers to land in their territory, hoping to avoid the appearance of supporting the attack or jeopardizing their relations with France. Ultimately, Iraq was "forced" to allow the operatives to land, ironically because of a direct request from France.

Throughout the mid 1970s, Haddad invested heavily in concocting what some have described as "shock value" operations. For instance, Haddad compiled a hit list of hundreds of targets,[328] including names that had no connection to the Arab-Israeli conflict, but were sufficiently high profile to draw attention to the Palestinian struggle. In 1974, the organization set off a triple car bombing of the offices of three French newspapers that supported Israel. A fourth car bomb was discovered before it could be detonated.

In 1975, Iraq tasked Haddad with a special operation: storming OPEC headquarters in Vienna during a gathering of ministers from member states. The Iraqis gave Haddad free rein to plan the attack as he saw fit, but instructed him to kill the Saudi and Iranian oil ministers. Haddad devised a plan to take over the headquarters and kidnap the oil ministers, eventually releasing them in exchange for a plane to the Middle East. Each minister would be released only after he publicly denounced the possibility of dialog with Israel. This part of the plan was intended to get widespread media attention and to hide Iraq's involvement.

While Haddad was the man behind the plan, he decided to give the responsibility for executing it to "Carlos." Haddad selected operatives from members of the June 2nd Movement, since the Baader-Meinhof gang declined to participate and the Japanese were unsuitable for such a mission. The operatives included three Palestinians, two Germans and Carlos as their commander.[329] The mixed international background of perpetrators was not unusual, because Haddad was known to assign operatives from several countries to the same operation.[330] The involvement of the Palestinians was based on the assumption that they would be more determined executors, as well as Haddad's desire that the operation have a direct and clear linkage to the Palestinian issue. Haddad was directly involved in the training of the operatives for the planned OPEC operation. The Iraqis provided weapons and intelligence as they had for other operations in the past.[331]

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326 Yallop, *To the Ends of the Earth: The Hunt for the Jackal,* (London: Corgi Books, 1994), 343.
327 Ibid. 79.
328 Ibid. pp. 109-110.
329 Ibid. 380.
330 Abu-Sharif and Mahnaimi 67.
331 Yallop 381.

The storming of the OPEC building in December 1975 went as planned and without any special difficulties. Carlos identified himself to the 70 hostages using his full name and credited the operation to "The Arm of the Arab Revolution". The PLO was quick to denounce the attack and it was even condemned by the PFLP.[332] After intensive negotiation, the kidnappers' demands were met and they were allowed to leave with their hostages to Algeria. Against the direct orders of Haddad, Carlos accepted the Algerian president's offer to release all of the hostages without killing the two ministers as required by the Iraqis. In exchange, the kidnappers would get ransom from the relevant countries. According to one publication, Carlos claimed that he decided to take the offer because he thought that the large sum of money would help finance Haddad's future operations.[333]

Taking high-ranking ministers hostage in an operation including foreign nationals virtually guaranteed Haddad extensive media coverage — and a commensurate rise in the group's international profile. Further, they had fired a shot across the bow of oil-wealthy accomodationist Arab regimes, strongly incentivizing them to invest more heavily in resolving the Palestinian issue. The aftermath of the operation also worked in Haddad's favor: by cashiering Carlos for his insubordination, Haddad bolstered his image of uncompromising leadership.

Audacity and Innovation in Aerial Attacks

In 1976, Haddad launched yet another attempt to shoot down an Israeli plane and kill its passengers, targeting an El Al aircraft as it touched down in Nairobi, Kenya. For this attack, he put together a team combining experienced members of his organization and German operatives. The attempt was thwarted when Kenyan authorities, apparently acting on information provided by Israel, arrested the entire cell. The terrorists were transferred covertly to Israel for interrogation.

This failure did not dissuade Haddad from further attempts to attack aviation targets. In fact, the need to secure the release of the Nairobi cell only added additional incentive[334]. In July 1976, Haddad dispatched a second cell to hijack Air France flight 139 (Tel Aviv to Paris via Athens), carrying primarily Israeli passengers. This operation succeeded. The operatives forced the plane to land in Entebbe, Uganda, and demanded that the hostages be exchanged for imprisoned comrades—including the three arrested for the Kenya attacks. While the hijacking itself went according to the plan, the operation ended in failure when Israeli commandos raided the plane and rescued the passengers and crew. All of the kidnappers were killed during the rescue mission.

In 1977, Haddad was diagnosed with leukemia. Despite his illness, Haddad continued to develop operational plans, including a repeat of an Entebbe-type hijacking intended to secure the release of the Baader-Meinhof members. The special training for this operation was conducted in Iraq and personally supervised by Haddad. In October 1977, operatives hijacked Lufthansa flight 181 (Palma de Mallorca to Frankfurt) and diverted it to Mogadishu in another attempt to release the German prisoners. Again, Haddad failed after GSG-9, the German counter-terrorist unit, successfully rescued the passengers and crew.[335] Most of the kidnappers died during the German raid. Worth noting is the fact that the leader of the kidnappers was involved, several months earlier, in the killing

332 Ibid. 409.
333 Ibid. 407.
334 Interview with former Israeli security official, 29th August 2007.
335 Ibid.

of several North Yemen officials in London.[336] It is possible that Haddad planned this operation on behalf of the government of South Yemen, where he resided for most of the 1970's before to moving to Baghdad.

The Mogadishu operation was Haddad's third major failure, with a high cost in both funds and skilled operatives. This, combined with Haddad's deteriorating health, effectively spelled the end of the Haddad faction. Haddad died from leukemia in an East Berlin hospital on March 30, 1978 at the age of 48.

May 15 Organization (Abu-Ibrahim Faction)

Two factions emerged from the ruins of the Haddad group. One, the May 15 Organization, was founded in Iraq by Hussein Mohammad al Umari, AKA "Abu-Ibrahim". Al Umari, a Palestinian refugee raised in Lebanon and Syria, joined the PFLP because of his support for George Habash's ideas. He named his organization after the date that symbolized the birth of the State of Israel and the Palestinian catastrophe.[337] Al Umari fully embraced Haddad's flair for innovation and daring, along with "the Master's" belief that, in order to achieve the desired effect, it would be necessary to attack not only Israeli objectives but also American ones, and even those belonging to moderate Arab countries.[338] From an early stage, al Umari decided to focus his operations against airlines. But while Haddad was interested in hijacking planes, al Umari tried to blow them up while they were still airborne. Accordingly, he invested heavily in developing advanced explosives capabilities along with innovative tactics to circumvent the heightened security measures adopted in many of the world's airports.

One of the most famous products of al Umari's research was a suitcase with explosive material woven directly into the fabric.[339] Lacking any suspicious external marks, it was thought to be unlikely that, even if airport security personnel found the cases suspicious, they'd be able to identify the explosives. Each suitcase contained a relatively small amount of explosives, but it was more than enough to bring down an airliner in flight.[340] Invented while he was still a member of the Haddad faction, this device would become an al Umari trademark.

In 1982, the May 15 Organization fully deployed its next-generation abilities, dispatching Muhammad Rashid, the organization's top operations expert, on one of the most innovative attacks ever seen on the international stage. During June of that year, Rashid left Baghdad and, in accordance with al Umari's guidelines, stayed in Singapore as a regular tourist for a short period of time to avoid raising suspicion. After that, Rashid took his family with him on a Pan Am flight from Hong Kong to Tokyo. Al Umari correctly assumed that a man flying with his family would escape suspicion; authorities did not expect a terrorist to bring his own family with him during an attack. During the flight, Rashid took a concealed explosive device from his carry-on luggage and hid it inside his seat. The device was built with a barometric fuse that would detonate the bomb during the plane's next flight. After their arrival in Tokyo, Rashid and his family stayed a couple days in Japan

336 Ibid.
337 Yallop 40.
338 Ibid. 42.
339 Ibid. 74.
340 Steven Emerson and Christina Del Sesto, *Terrorist: the inside story of the highest-ranking Iraqi terrorist ever to defect to the West*, (New York: Villard Books, 1991), pp. 44-45, 90-93.

before returning to Baghdad.[341] Meanwhile, the Pan Am plane took off on flight 830 to Hawaii with 267 passengers aboard, most of them Japanese. Shortly before landing, the bomb exploded. The passenger sitting in Rashid's seat died instantly. 28 other passengers were injured. The bomb tore a wide hole into the fuselage and released the cabin's air pressure. Fortunately, the pilot was able to regain control and make an emergency landing, saving the passengers.[342] Two more attacks were launched in the following weeks, with bombs planted on a Pan Am flight from Miami to Rio de Janeiro and another on board a plane in a Tokyo airport. Fortunately, these bombs were found before detonation.

Japanese and American authorities quickly discovered that the explosion was a terrorist attack, but had difficulty finding suspects capable of such a sophisticated plan.[343] Eventually, Western intelligence agencies exposed al Umari's organization and launched an aggressive intelligence campaign against it.

Al Umari remained determined to target the aviation industry and to cause massive casualties among Americans, Israelis, and anyone who flew with them to and from Israel. In other words, he continued the original strategy of Haddad's organization while improving its methods. Al Umari continued to plan and execute innovative operations against the aviation system, even while he was being pursued by the West. In December 1983, al Umari sent a British woman to Israel with a suitcase – unknown to her – equipped with Semtex-type explosives and a barometric fuse that was supposed to detonate shortly after take-off.[344] The woman boarded an El Al plane leaving Tel-Aviv on its way to London, with 260 passengers aboard. However, the bomb, which went undetected by Israeli airline security, did not explode as planned. When the woman arrived in London, she claimed the suitcase and took it with her, still unaware of the explosives it contained. On the same day, security personnel in Italy noticed that a Palestinian did not board his scheduled flight to New York, even though he had already checked his luggage. This made security suspicious, so they removed the missing man's suitcase from the plane before take-off. When they inspected the suitcase, knowledge about May 15's bomb designs allowed them to discover the explosives and the barometric fuse. It appears that al Umari tried to carry out two, nearly simultaneous, major attacks.[345]

Al Umari later launched several other attacks, including an attempted bombing of an El Al flight from Berlin to Tel Aviv and a similar attempt against a Lufthansa aircraft. However, attention from Western intelligence agencies was inhibiting his organization's ability to operate. Eventually, Western intelligence discovered the link between al Umari's group and the Iraqi government. Western pressure and several botched operations led the Iraqis to drop their support of al Umari. By 1985, the May 15 Organization was no longer operational.

Conclusion

The PFLP pioneered strategic innovations starting in the late 1960's, adopting new patterns of behavior radically different from those seen before. These new behaviors perfectly fit the definition

341 Ibid. 53-54.
342 Ibid. 56.
343 Ibid. 59-60.
344 Ibid. 131.
345 Ibid. 132-133.

of terrorist innovation offered by Crenshaw[346] and serve as a useful proof-of-concept. A combination of external structural factors and managerial ambitions within the organization allowed the PFLP's commanders to develop a ground-breaking offensive policy and to expand its range of targets exponentially. Making the international public the target audience for their attacks – rather than the Israeli, Palestinian, and Arab publics as they had before – was a significant conceptual evolution in terrorist strategy.

This evolution resulted from the PFLP's belief that it could violently coerce the global community to dramatically change its attitude to the Israeli-Palestinian conflict and force the outside world to intervene on Palestinians' behalf. Through this new brand of attack, the PFLP hoped to induce the world to regard the Palestinians as a nation in exile, rather than refugees to be resettled in Arab countries, and to treat them accordingly.

The colossal defeat Israel handed Arab nations during the Six-Day War, along with the subsequent failure of guerrilla warfare in the newly occupied territories, caused the PFLP to construct a new paradigm, pursuing Palestinian nationalist goals within the broader vision of international revolution.

The longstanding partnership and great trust between PFLP leader George Habash and his operations chief, Waddia Haddad, became a central component in the PFLP's ability to develop a new and revolutionary terrorist strategy. These factors also allowed Haddad to implement this strategy with the full backing of the organization's leader and to receive the necessary resources to fully support it.

That the PFLP and Waddia Haddad were able to personally procure extensive training, funding, logistical support, and shelter from several Arab regimes, as well as the Soviet Union, significantly increased their ability to run a expansive global campaign for an extended period of time. Haddad's leadership style, his creativity, his deep personal involvement in planning and management, his dedicated terrorist unit, and his independent faction are what fostered the innovative tactical approach employed by the PFLP and its offshoots. For nearly a decade, terrorist attacks planned and executed on the international level were methodical, intensive, daring, and lethal, making international terrorism a permanent and significant factor on the international stage, and whose tactics were copied by Palestinian and other groups for years to come.

Choosing the aviation industry as the central target for attacks perfectly suited the goals of the organization. Hijacking airplanes was the first step. This was soon followed by a series of tactical innovations (defined by Crenshaw as "changes in method rather than strategic conceptualization... typically involv[ing] new weapons or targets... occur[ing] within strategies rather than replacing them"). Initially, attacks against airplanes used RPGs as airliners were landing or taking off. Next, the PFLP continued by planting bombs on planes, attacking planes and travelers on the ground, and finally attacking airline counters[347]. This tactical expansion was wholly organic and suited the main

[346] In her article *Innovation: Decision Points in the Trajectory of Terrorists,* Martha Crenshaw states that "Strategic innovation involves significant points of novelty in the historical development of campaigns of armed resistance, those shifts that change the fundamental pattern of terrorist challenges to political authority. Such transformations in the modes of armed struggle probably require a new conception of strategic effectiveness. That is, strategic innovation requires both a new goal and a new way of relating operations to that goal."

[347] Crenshaw, Martha. *Innovation: Decision Points in the Trajectory of Terrorism*. Prepared for the Conference on "Trajectories of Terrorist Violence in Europe," March 9-11, 2001, Minda de Gunzburg Center for European Studies, Harvard University, Cambridge, Massachusetts.

idea: putting this central, multi-national, highly lucrative branch of the global economy squarely in the organization's crosshairs. The attack on aviation guaranteed that media attention would be secured and that the economy of developed nations would suffer. Through this new approach, world leaders and the global community would take notice of the Palestinian issue.

The scope of the organization's strategy dynamically and continually expanded as its operations succeeded. Along with the initial motivation to move into the international arena, these operations were also dedicated to serving the goals of international revolution and the PFLP's Marxist-Leninist ideology. The organization's cooperation with foreign terrorist organizations was an expression of this ideology (although it also constituted payment for services rendered by these organizations). Terrorist attacks against Arab targets also expressed this spirit and served the goals of the so-called "revolutionary" Arab states which supported the PFLP against the "reactionary" Arab regimes. The motives for these attacks included securing the release of comrades who had been arrested while working with the organization.

This case study suggests a set of features that organizations must exhibit in order to be considered truly innovative. Beyond the simple use of innovative tactics, organizations must (almost always) possess some or all of the following features, which shape the character of their innovation:

- First, a state of distress which derives from a sense of marginality and an enduring lack of progress, causing frustration and leading towards a desire to drastically change the situation.
- Second, a determined, cohesive (or centralist) leadership, which supports and enables innovation.
- Third, a charismatic, entrepreneurial leadership, with high operational capabilities, that can inspire innovation.
- Fourth, successful operations based on innovative planning.
- Fifth, influence that outlasts the organization over the long run.

Many of the nations targeted by the PFLP's new strategy did not readily identify the revolution it represented, which contributed significantly to the spread of the PFLP's methods and the continued utility of terrorism today. One of the reasons for this slow reaction was the lack of understanding regarding the principles of international terrorism, the ideology in which these principles were rooted, and a widespread belief that giving in to the demands of terrorist organizations would placate them. This led other organizations around the world to adopt the PFLP strategy, imitating and improving upon its methods. Other countries, such as Israel, developed both defensive and offensive countermeasures against the sources of international terrorism to interdict and prevent attacks.

Along with the success of the PFLP and its influence on other Palestinian groups, its international operations created tensions within the organization itself, with its colleagues and competitors in the Palestinian camp, as well as with the nations who'd suffered from its attacks. All of these factors led the Haddad faction to break away from the main group and embark upon an independent career sponsored by patron states. Countermeasures enacted in response to Haddad's tactics foiled many of his operations, led to the imprisonment of his comrades and, eventually, the early death of this innovator and leader of international terrorist actions. For a number of years after his death, Haddad's successors enacted tactically innovative operations similar to those Haddad himseld had

launched, but were ultimately neutralized by a wide spread counter-terrorist campaign that included intelligence and political action against sponsoring states.

In retrospect, seen from a contemporary perspective, it can be said that locating innovative terrorist initiatives and their agents before disaster strikes is a difficult, complex challenge, which requires the ability to identify those groups or networks prone to strategic innovation.

Close surveillance of terrorist groups with a revolutionary agenda and a particularly destructive record, which display innovative tendencies and experiment with inventive tactics, will allow security forces to focus their efforts and isolate such groups from other organizations around the world. This can be done only through a deep understanding of the ideology, world view, inner discourse, and state of mind among the leaders such groups. Close analysis of these organizations' operational leaders has critical importance; this would allow security forces to isolate these organizations before, or shortly after, they begin their innovative campaign, ensuring that, even if they do succeed, they will not inspire others to copy their tactics, as happened with the PFLP.

It appears today that there are two potential areas in which certain terrorist networks are moving towards innovation. The first is CBRN operations – chemical, biological, radiological, and nuclear attacks. The second consists of operations against critical infrastructures (such as those which control mass transit systems, energy, and communications facilities), plus economic and trade hubs. As the dramatic 9/11 attacks have already proven, terrorists sometimes develop innovations that are relatively simple yet surprising in their tactical originality and daring, innovations that are considered "illogical" even though their success is obvious even to the unbelieving eyes of intelligence agencies.

One of the inescapable conclusions of the seven cases discussed in this workshop is that, despite their differing characteristics, the necessary preparations left a trail that could have been detected in advance, or at least understood in its systemic context after the fact, leading to a swift response to prevent future attacks. A lack of willingness to quickly and effectively confront the sources of international terrorism, and to eliminate innovative leaders from the arena, is what gives terrorist innovation enough breathing space to become routine. If an organization's methods are successful and demonstrate that imitation will generate results at a low cost while advancing the organization's agenda, innovation is likely to persist.

APPENDIX V: ROGELIO ALONSO, ETA'S ASSASSINATION OF LUIS CARRERO BLANCO AS A CASE STUDY IN TERRORIST INNOVATION

The Political and Social Context of Innovation in ETA's Evolutionary Cycle

On December 20th, 1973 Luis Carrero Blanco, President of the Spanish Government at the time, was murdered by the Basque terrorist group ETA (*Euskadi ta Askatasuna*, *Basque Homeland and Freedom*). Before analysing the preconditions, causes and preparatory behaviours of this terrorist attack I will provide a brief outline of ETA's background in order to offer a framework for the analysis of a very relevant innovation attack in ETA's history. Thus the following paragraphs will provide the political and social context in which ETA's innovation took place.

The ETA had been formed in 1958 and claimed its first killing in 1960. The ETA emerged in the context of General's Francisco Franco's dictatorship in Spain. This was a regime that prolonged itself from 1939 until 1975 and characterised by a democratic deficit that led some Basque nationalists to demand a violent response against the Spanish authorities. Up until the late 1950s nationalist grievances in the Basque Country had been mainly channelled by the Basque Nationalist Party (*Partido Nacionalista Vasco*, PNV), a party set up in 1895. However, in 1959 a group of nationalist youngsters, critical of PNV's approach towards Franco's dictatorship, set up a new organisation named ETA with the aim of increasing nationalist opposition against the regime.

It was not until 1968 that ETA deliberately took the decision to carry out assassination attacks as part of its terrorist campaign. In 1959, a year after ETA's formation, the terrorist group started planting small bombs in public places and symbolic places such as Vitoria, Bilbao and Santander as part of a campaign that could well be described as "armed propaganda". ETA's campaign was then restricted to small attacks complemented by defiant acts such as planting Basque flags (*Ikurriñas*) in lampposts and painting ETA's initials in the streets of the Basque country.

Although at that time ETA did not intend to cause any casualties, Begoña Urroz, a two year old girl, was killed on June 27th 1960 after an incendiary device that had been planted by ETA in San Sebastian's main train station went off that day. This first killing was not followed by a systematic assassination campaign by ETA, but a terrorist campaign limited to low level attacks against symbolic targets such as train stations.

ETA's decision to step up its campaign in 1968 was a result of the combination of several factors, mainly, a nationalist extremist ideology; external references of violent struggles; and Franco's repression together with the cycle of action-repression that triggered. These factors may be regarded as accelerants to escalating ETA's campaign, but not directly an accelerant to terrorist innovation like the murder of the President of the Spanish Government, which was more a result of certain conjectural factors and dynamics that will be analysed below.

A nationalist extremist ideology:

The historic tradition of the extremist ideology embraced by Basque nationalists became the basis on which the terrorist group would justify its evolution towards an intense campaign of killings. Influenced by leftist ideals and the international context at a time of global unrest and protest movements throughout the world, ETA constituted, above all, a radicalized expression of Basque

ethnic nationalism.[1] The nationalist ideology espoused by ETA, facilitated mobilization by enabling individuals to join together around a set of beliefs that contributed to consolidating violent ideas and attitudes.

Basque nationalism bears a tradition of violence, which operated as a societal and cultural facilitator for terrorism. The myths, legends, customs and habits related to this nationalist ideology sanctioned the use of violence against political adversaries as represented not only by the Spanish government but also by Basque citizens not considered nationalists. Consequently Basque nationalism generated a sub-culture of violence that introduced and reaffirmed absolutist convictions and the fanaticism around them, also providing moral and political justification for terrorist acts.

The escalation of violence was achieved by portraying its population of reference as a bellicose people who fiercely resisted any of the attempts made throughout centuries and even millennia to invade or conquer the territories they inhabited. Basque separatist terrorists thus tended to see themselves as contemporary *gudaris* or, translated from the Basque language, indigenous warriors, carrying on the same rebellious and non-compromising disposition of their ancestors.[2]

The fact that ETA had emerged from a more moderate formation like the PNV and ETA's need to differentiate itself from the PNV's more peaceful type of resistance carried until then, also encouraged ETA's activists to step up their violent tactics.

External references:

This legacy, in addition to the perception of other national liberation struggles that had been successfully fought around the world, provided a firm basis for the motivations some young people drew upon when deciding to join ETA. In the early sixties, the resort to terrorism was becoming a more attractive option for Basque nationalists who had learned how other groups' use of violence had proved useful. As a way of example, Irgun was seen by some ETA leaders as a reference, since attacks like the one against Jerusalem's King David Hotel in 1948 provided inspiration for a more symbolic target selection than the one carried until then. Irgun was depicted by ETA leaders as a small movement that only consisted of twenty or forty members that confronted a well armed and disciplined British Army. In the same line, another of ETA's leaders in its early days encouraged members to "take the head out of the sand and look around" so they could see how a "Free Ireland" had been achieved using violent means. [3]

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1 On the history of ETA, see Florencio Domínguez (1998) a, *De la negociación a la tregua: El final de ETA?* Madrid: Taurus; Florencio Domínguez (1998) b, *ETA: Estrategia Organizativa y Actuaciones 1978-1992*. Bilbao: Universidad del País Vasco; Antonio Elorza *et al* (2006), *La historia de ETA*. Madrid: Temas de Hoy; José María Garmendia (1979), *Historia de ETA. Volume I*. San Sebastián: Aramburu; José María Garmendia (1980), *Historia de ETA. Volume II*. San Sebastián: Aramburu; Patxo Unzueta (1988), *Los nietos de la ira. Nacionalismo y violencia en el País Vasco*. Madrid: El País-Aguilar.

2 "Political violence in a democratic state: Basque terrorism", Goldie Shabad and Francisco Llera, pp. 419-423, in Martha Crenshaw (ed.) (1995), *Terrorism in Context*. Pennsylvania: The Pennsylvania State University Press, pp. 410-469.

3 "ETA: Nacimiento, desarrollo y crisis (1959-1978)", José María Garmendia, pp. 99-100, in Antonio Elorza *et al* (2006), *La historia de ETA*, (Madrid: Temas de Hoy, 2006), pp. 77-102.

Franco's repression and the cycle of action-repression:

At the same time, the repression applied by Franco's dictatorship both in the Basque region and in other areas of the country, helped Basque nationalism to be seen by a sector of the population as an ideology under attack.[4] The experience and perception of injustice and alienation by the citizens of this region enhanced the appeal of Basque nationalism and the need to protect and strengthen it.

In the early 1960s the violent cycle of action-repression set the ground for an escalation like the one that would soon arrive. The police repression applied at the time did manage to considerably weaken the feeble infrastructure that ETA was trying to build. As a result of this repression, ETA's militancy diminished, but became a more radicalised one. It was in this context that ETA's leaders attempted to push their "revolutionary war" doctrine, as summarized by one of them:

> Let's assume that an organised minority carries psychological and material strikes against the State forcing the State to respond and violently repress the aggression. Let's assume that the organized minority manages to avoid the repression which falls instead upon the popular masses. Let's assume that the minority manages to provoke in the population a rebellious mood rather than fear so the population aids and support the minority against the State. This scenario would allow the action-repression cycle to repeat itself with even more intensity.[5]

However, ETA was very aware of the group's serious limitations, and continued restricting its campaign to two types of actions: attacks with explosives against symbols of Franco's military victory in the Civil War; and robberies aiming at obtaining much needed funds. Nonetheless, ETA's activists were increasingly receiving more sympathy by a Basque population that saw with a considerable degree of understanding the violence perpetrated against Franco's regime. This gradual shift encouraged ETA to go another step forward in the group's cycle of action-repression undertaking ETA's first deliberate assassinations.

The profile of the first casualties caused by ETA before the assassination of Carrero Blanco sheds light on the group's targeting selection before a major killing like the one of the President of the Spanish Government. As it can be seen below, the killings took place after ETA had set upon an assassination campaign but in the majority of these killings the targets were chosen as a result of a set of conjectural factors.

- José Antonio Pardines Arcay (June 7th, 1968). He was a member of the Spanish Civil Guard killed in Villabona (Basque Country) by two ETA members who were on their way to San Sebastian to prepare the murder of a prominent police officer –Melitón Manzanas-. José Antonio Pardines stopped the car driven by two ETA activists when he was managing the traffic. One of the ETA members shot Pardines dead when the terrorists realized that their movements had arisen the Civil Guard's suspicions.

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4 "Political violence in a democratic state: Basque terrorism", Goldie Shabad and Francisco Llera, pp. 419-423, in Martha Crenshaw (ed.) (1995), *Terrorism in Context*. Pennsylvania: The Pennsylvania State University Press, pp. 410-469.

5 "ETA: Nacimiento, desarrollo y crisis (1959-1978)", José María Garmendia, pp. 114-115, in Antonio Elorza *et al* (2006), *La historia de ETA*, (Madrid: Temas de Hoy, 2006), pp. 77-102.

- Melitón Manzanas González (August 2nd, 1968). He was a member of the Spanish Police who had been accused of being involved in torture and maltreatment of prisoners. His murder in Irun (Basque Country) was followed by the Government's introduction of the state of exception.

- Fermín Monasterio Pérez (April 9th, 1969), taxi driver. His killer was a member of ETA who was running away after being injured by the Police in a shoot out. The taxi driver refused to accept his killer's orders to drive him away after the shoot out with the Police and was shot dead in Arrigorriaga (Basque Country).

- Eloy García Cambra (August 29th, 1972), local police officer. He was patrolling a bus station in Galdacano (Basque Country) when a suspect caught his attention. The policeman was not aware of the fact that the suspect was a terrorist. Other terrorists also present at the scene, fearing that the policeman would discover them, decided to kill him.

- José Humberto Fouz Escudero, Jorge Juan García Carneiro and Fernando Quiroga Veiga (March 24th, 1973). The three youngsters were kidnapped in the French border town of San Juan de Luz and murdered by members of ETA who thought they were policemen.

In the aftermath of ETA's first killings, the authority's repression toughened rooting out most of ETA's leadership that would have to face a War Trial in December 1970. The "Consejo de Burgos", as this trial became known, provoked widespread solidarity among the Basque population helping ETA to increase its militancy. Such a response by the State would also provide increased legitimacy for the violence that ETA was perpetrating.

At the same time, 1971 saw an intensification of ETA's violence motivated by ETA's new and more militant leadership as represented by Eustakio Mendizabal (*Txixia*). *Txixia*, who died in April 1973 in a shoot out with the Police, was the name adopted by the cell in charge of killing Carrero Blanco in 1973. The organization wanted to refer to a prominent operation like this one with the name of one of its more militant and violent figures in order to honor him and to provide inspiration for new militants.

Internal and External Factors as Catalysts for Innovation

As will be elaborated in the following section, terrorist innovation like the one which is being analyzed here its better framed if Carrero is seen as a target of opportunity by the terrorist organization. When ETA first identified Admiral Carrero Blanco as a target, it did not intend to resort to a tactical and strategic innovation in the form of the assassination of such a prominent figure. The final outcome came about as a result of external factors that led the terrorist organization to change the tactic initially planned: the kidnapping of Carrero Blanco, the then Vice President of the Spanish Government. Both the plan to kidnap him and the later decision to kill him were determined by an important external factor: Carrero Blanco only became a target of the organization when an unidentified character that did not belong to ETA provided very useful information about his daily routines and his vulnerability.

At that time, Carrero was Vice President of the Spanish Government. However, on June 1973, soon after that information was revealed to ETA, he became President and saw his personal protection

increased. The strengthening of his personal protection added more difficulties to ETA's initial plans to kidnap him thus discouraging the terrorists. Previously, the attempt to kidnap him had also encountered some difficulties. ETA members had been preparing the kidnapping for several months and the organization had acquired a shop close to Real Madrid's football stadium where they planned to dig a hole where they would hide Carrero. However, one night there a robbery took place in the premises and the terrorists abandoned the shop fearing that the police would come to investigate the robbery and would also find them.

It was as a result of these factors that led ETA to kill Carrero Blanco instead of kidnapping him. Therefore, ETA's innovation in the form of the assassination of such a symbolic target was a direct result of several external factors and some coincidences.

At the end of 1972 an unidentified character met two ETA leaders -José Miguel Beñarán (*Argala*) and Ignacio Pérez Beogeguri (*Wilson*)- at Hotel Mindanao in the centre of Madrid. A man in a suit handed them in an envelope with information about Carrero's every day habit of going to Mass in the church of San Francisco the Borja, also in the centre of Madrid and only around one hundred meters away from the U.S. Embassy. Following this development, *Wilson*, *Argala* and another ETA member, Ignacio Múgica Arregui (*Ezkerra*), checked the information received and found out that Admiral Carrero Blanco did indeed follow a daily routine: he used to attend Mass every day at the same time accompanied with his bodyguard. While checking this routine, *Ezkerra* was able to confirm the Admirals vulnerability, since the terrorist operative managed to walk down the aisle close to Carrero Blanco when both went to receive Holy Communion. As a result of this situation, the leaders of ETA decided to plan the kidnapping of Carrero Blanco in order to demand the release of ETA prisoners held in Spanish prisons and the publication in the media of a statement produced by ETA praising the fight of the Basque people as well as its objectives.

Carrero was regarded as a key person within the State's apparatus, leading the ETA to believe that the regime would feel forced to negotiate the release of ETA's prisoners in return for the Vice president's freedom. Carrero was seen as a strong figure called to play a significant role during the Spanish transition after the recent death of the dictator, given his age and illness. At that stage, ETA only considered murdering Carrero if the regime did not consent to the release of the group's prisoners.[6]

Although the identity of the person who facilitated the information about Carrero's routine has not been revealed, it is widely believed that he was not a member of ETA, but a sympathizer who almost certainly belonged to left wing political groupings that shared with ETA their opposition to Franco's regime. At the end of 1971 *Argala* met in Madrid two important individuals that would facilitate ETA useful contacts: Alfonso Sastre – a play writer and leading member of the Spanish Communist Party (PCE, Partido Comunista de España) – and his partner – Eva Forest. Both would be instrumental in enhancing ETA's network of contacts at a time when the terrorist group had very little means and resources. It is believed that Eva Forest took part in arranging the meeting between *Wilson* and the person who provided ETA with Carrero's information.[7]

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6 Iker Casanova (2007), *ETA 1958-2008. Medio siglo de historia*. Tafalla: Txalaparta, p. 144.

7 "ETA reunió en Madrid a 30 militantes para matar a Carrero", Manuel Cerdán in *El Mundo*, December 20, 2003.

The intervention of this external factor was a key variable that made the terrorist innovation possible since ETA regarded itself as a small group that did not have the capacity to carry terrorist attacks in the country's capital away from the territory –the Basque Country- where they originated from. ETA had a limited presence in Madrid at the time and its operatives were very concerned about the possibility of being found. This concern constrained ETA's activities considerably discouraging them from planning a terrorist attack like the one they would finally perpetrate once they saw a window of opportunity as a result of the information facilitated to them.

It is important to emphasize the sequence of events that preceded Carrero's assassination since they allow countering the ad hoc interpretations, which years after some ETA members would use in order to justify and enhance Carrero's killing, which was nicknamed as "Operation Ogre". See for example how Eugenio Etxebeste (*Antxon*), who would not join ETA until time after the assassination, tried to put down Carrero's killing to a rational strategic and political calculus that never existed:

> Operation Ogre was a result of the strategic aim of undermining the dictatorship in order to build a democratic process in the Spanish state. Operation Ogre unequivocally represented and demonstrated the Basque Resistance firm willingness to contest with all the available means the genocidal regime.[8]

It has to be remembered that ETA's initial plan did not contemplate the killing of Carrero but his kidnapping and further release, throwing into question *Antxon*'s "strategic" rationale. One of ETA's leaders at the time of Carrero's assassination also disagreed with *Antxon*'s interpretation:

> Operation Ogre did not pretend to achieve anything of the things that were later said. ETA's objective was to kidnap Carrero in order to exchange him for our prisoners, but the initial project was abandoned because of technical difficulties. Anyway, that had nothing to do with a strategy towards democracy.[9]

Although ETA would try to present Carrero's assassination as an attack that triggered the demise of Franco's regime,[10] the truth is that the dictatorship was already in its latest hours as a result of other factors.[11] Similarly, the Head of the State's Security between 1965 and 1974 denied rumors that ETA had received assistance from external players interested in precipitating the end of Franco's dictatorship, and stated that "there was no black hand by the Americans", adding that security elements within the State's apparatus "did not turn a blind eye".[12] *Wilson* himself denied that the CIA had anything to do with the plot,[13] a rumor spread by sections of the Spanish Communist Party.

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8 Florencio Domínguez (1998) b, *ETA: Estrategia Organizativa y Actuaciones 1978-1992*. Bilbao: Universidad del País Vasco, p. 230.

9 "Un cadáver en el jardín", Jon Juaristi, p. 198, in J. Aranzadi, J. Juaristi and P. Unzueta (1994), *Auto de terminación*. Madrid: El País Aguilar, pp. 187-200.

10 In its *Zutabe 97*, September 02, ETA stated that the "political reflection about the attack" demonstrated the "capacity of influence and analysis" of the organization, boasting that all analysts throughout the world accepted that Carrero's operation contributed to move a step further towards democracy.

11 Florencio Domínguez (1998) b, *ETA: Estrategia Organizativa y Actuaciones 1978-1992*. Bilbao: Universidad del País Vasco, p. 230-231.

12 Florencio Domínguez (2006), *Josu Ternera. Una vida en ETA*. Madrid: La Esfera de los Libros, p. 39.

13 "Yo cené con el asesino de Carrero Blanco", Matías Antolín, *El Mundo*, May 16, 2006.

Speculation about the involvement of members of the State's apparatus emerged when *Wilson* revealed that the person who provided him with the information on Carrero's movement descended from an official car with the acronym PMM (*Parque Móvil de los Ministerios*) in the car plates that vehicles from the Spanish Ministries used to carry. Some press reports fed this speculation quoting sources from the secret services at that time who claimed that *Argala* had held meetings with an unknown character from the left linked to the U.S. Embassy in Madrid and the circle of Don Juan – the father of future King of Spain, Juan Carlos I, who was living in exile in Portugal.[14]

Nonetheless, it is widely believed that the contact was somebody who belonged to left wing groupings that shared with ETA the common objective of weakening the dictatorship. In fact, an activist in the Spanish Communist Party and member of the Communist Trade Union CCOO (*Commisiones Obreras*), Antonio Durán Velasco, nicknamed *The Tupamaro*, aided the cell responsible for Carrero's killing. *The Tupamaro* was the person who bought the flat where the members of the cell hid for some time.

ETA's Incentives to Innovate in its Terrorist Campaign

As it has already been noted, the circumstances surrounding the killing of Carrero make it reasonable to define him as a target of opportunity. This is not to say that ETA lacked the incentives to innovate in such a way as part of its terrorist campaign, since a successful spectacular against a prominent leader was always going to be a major strike by those who were challenging Franco's regime. The killing of Carrero was going to be interpreted by many members of ETA as a great success since it guaranteed the elimination of Franco's natural successor –in spite of the fact that the dictatorship could barely survive the death of the dictator, Carrero was seen as a possible obstacle in the way to democratization.[15] Therefore, a terrorist plot against Carrero Blanco was bound to generate a huge political impact. It has to be emphasized, that this was the outcome that would derive from a plot against Carrero,[16] but not the aim that led ETA in the first place to select Carrero as a target.

In other words, ETA believed that the assassination would have a political impact, but the group was not able to establish in advance with certainty all the political effects that such an action could have. Once it was accomplished, Carrero's assassination became an incentive in itself for the perpetuation of terrorism since the operation became an example of a successful spectacular that could and should be followed by others. Carrero's assassination became a major reference to ETA in the same way as other terrorist successes later on that contributed to neutralize the voices that would question the utility of violence demonstrating, on the contrary, its effectiveness.[17]

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14 "ETA reunió en Madrid a 30 militantes para matar a Carrero", Manuel Cerdán in *El Mundo*, December 20, 2003.

15 Teo Uriarte (2005), *Mirando atrás. De las filas de ETA a las listas del PSE*. Madrid: Ediciones B, 154-155.

16 The political justifications supplied by ETA in order to justify Carrero's assassination were put together by Eva Forest in a book that the terrorist organization asked her to write which was published under the pseudonym of Julen Agirre. Eva Forest (1993), *Operación Ogro*. Hondarribia: Hiru.

17 This was the case, for example, of ETA's campaign against the nuclear plant in Lemóniz. In 1977 ETA started a campaign against the construction of a nuclear plant in the Basque village of Lemóniz. For the next five years ETA carried over two hundred terrorist attacks against personnel and companies involved in the project. Five people were killed as a result of this campaign and in the end the Spanish and Basque Governments gave in to ETA's pressure and stopped the plant.

The spectacular attack amplified ETA's image at many levels – particularly abroad -; it would have been reasonable, in hindsight, for ETA to see the possibility of such a benefit as an incentive for the assassination of Carrero. However, ETA did not anticipate these gains since the terrorist group had not developed a coherent strategic mentality. Nonetheless, once the organization decided to kill such a prominent figure as a result of the chain of events previously described, the likelihood of a major political impact could have acted as an incentive for an innovative attack like this. This could be the case although it should not be underestimated that the opportunity cost of killing Carrero was probably a more powerful incentive. It has to be acknowledged that the killing could have had a negative impact too, since such a terrorist attack could have strengthened the "hardliners" within Franco's regime.[18]

As a former member of ETA in the early days of the organization put it, the assassination, together with other acts of defiance by ETA around that time favored "an emotional identification" with the group placing it as "the center of the nationalist universe". To this extent, from "the early seventies the degree of nationalist authenticity would be measured by everyone's attitude towards ETA".[19] Carrero's assassination was such an spectacular that the Basque Nationalist Party (PNV) did not want to accept that it had been carried by ETA,[20] organization that represented a direct competition to the hegemony of the nationalist constituency.

Nonetheless, as another member of ETA put it, the assassination of Carrero had more implications than the ones that the authors of the attack were probably thinking off.[21] In fact, Mario Onaindía was concerned that the assassination could have a counterproductive effect for ETA, since the attack against such a prominent figure could be interpreted as a serious provocation that would provide justification for tougher measures by the Franco regime when it was clearly at its weakest.[22] It was true that the attack would provide ETA with a revolutionary aura of positive effects for militants, sympathizers and potential recruits. However, the assassination could also have some negative consequences, as Onaindía feared.

In his view, the operational success could generate an euphoria within the organization convincing ETA of its historic relevance and their capacity for generating major changes through violence. This interpretation could lead to an escalation that would run counter to the evolution into democratic politics that ETA would have to embark upon in the short term given the Franco's regime decadency.[23] In the end, Carrero's assassination did contribute to deepening the internal tensions that had been building up inside ETA over the years in relation to the use of violence.[24] Carrero's assassination strengthened the hegemony of the so-called "militarists" but weakened other more political fronts that would end up gradually leaving the organization.[25]

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18 "El terrorismo revolucionario marxista-leninista en España", Lorenzo Castro, p. 44, en Juan Avilés (ed.) (2009), *Historia del presente. Terrorismo en la España democrática*, nº 14. Madrid: Eneida, pp. 39-56.

19 "El alma de Sabino Arana", Patxo Unzueta, p. 167, in J. Aranzadi, J. Juaristi and P. Unzueta (1994), *Auto de terminación*. Madrid: El País Aguilar, pp. 157-175.

20 Miren Salcedo (1996), *Militar en ETA. Historias de vida y muerte*. San Sebastián: R&B Editores, p. 165.

21 Mario Onaindía (2001), *El precio de la libertad. Memorias (1948-1977)*. Madrid: Espasa, p. 555.

22 Ibid.

23 Ibid, pp. 557, 559.

24 "Pasión, muerte y resurrección de ETA", José María Garmendia, pp. 133-168, in Antonio Elorza *et al* (2006), *La historia de ETA*. Madrid: Temas de Hoy, pp. 167-168.

25 "Consolidación y crecimiento de ETA", Gurutz Jáuregui, pp. 253-274, in Antonio Elorza *et al* (2006), *La historia de ETA*. Madrid: Temas de Hoy, p. 262. 0

According to a member of ETA at that time, the "euphoria" and "arrogance" that Carrero's assassination triggered among militants was to a great extent responsible for a major mistake like the terrorist attack perpetrated by ETA in Madrid on September 13, 1974.[26] ETA planted a bomb in a cafeteria nearby the offices of the Directorate for National Security in a very busy area of the center of Madrid killing thirteen people –all of them civilians- and injuring tens of people. This atrocity caused a split within the organization.[27]

The innovative dimension of the attack against Carrero is particularly evident when it comes to analyzing the methodology of the attack. Several were the incentives behind the terrorist decision to opt for the means finally chosen to carry the attack, as it will be now explained. *Wilson* argued that he had put forward to kill Carrero Blanco using a long distance rifle from a van when the President was leaving his home, emulating the killing of U.S. President John Fitzgerald Kennedy in 1963.[28] However, this method was abandoned since it implied more security risks for the members of the cell who opted instead for devising an original means of carrying the explosion.

Up until then ETA had only carried seven deliberate killings all of which had been perpetrated with guns. Explosives had been the main method used by ETA since the beginning of a campaign that had been constrained to symbolic targets with a low profile. As a way of example, in 1972 and 1973 ETA had used explosives to attack a monument built up to honor the founder of the Civil Guard, the newspapers *El Diario Vasco* and *Unidad*, a few discotheques, a social club in the Basque village of Lemona, the yacht club of the Basque village of Getxo, several business, bars and offices of unions set up by the regime. This type of attacks was part of a campaign, which had as its final aim "the destruction of the Spanish state apparatus in the Basque national territory", as stated in a 1969 strategy document elaborated by ETA.[29]

Therefore, the main focus of ETA's campaign at the time was "the Basque national territory" and the main targets of this campaign were the Civil Guard and the Spanish police, institutions that were considered as the "main force of imperialist repression" in this territory.[30] Consequently, the targeting of Carrero Blanco represented a significant innovation in terms of the location and profile of the target, but also vis-à-vis the amount of explosives used in his assassination as well as the methodology employed which had no precedents. Explosives had been previously used since plenty of them were available following a robbery of a mine perpetrated by ETA some months earlier, but never before had so many explosives been used in a single terrorist attack.

As with other aspects around Carrero's assassination, the method used to carry the attack was also determined by a conjectural factor and a certain degree of coincidence. After careful consideration of the possibilities for carrying the attack, the cell in charge of searching for the safest and most effective method came up with the idea of using a landmine explosive hidden underground that was going to be activated by a wire-cable. This was decided after one of the members of the cell found

26 Teo Uriarte (2005), *Mirando atrás. De las filas de ETA a las listas del PSE*. Madrid: Ediciones B, 154-155.

27 Paradoxically, a few years later the faction that took responsibility for the attack, ETA (pm), gave up "armed struggle" and turned into politics, whereas the faction that criticized the attack, ETA (m), would carry on with the terrorist campaign perpetrating similar attacks.

28 "Yo cené con el asesino de Carrero Blanco", Matías Antolín, *El Mundo*, May 16, 2006.

29 Florencio Domínguez (1998) b, *ETA: Estrategia Organizativa y Actuaciones 1978-1992*. Bilbao: Universidad del País Vasco, p. 231.

30 Ibid.

out that a basement nearby the church attended by Carrero was on rent. The cell rented the basement posing as sculptors in order to disguise the noise that they would make digging a tunnel from the rented premises to the road through which Carrero's car drove every day on his way to mass. The biggest amount of explosives used by ETA so far – around fifty kilos of dynamite – was placed underneath the road after digging a ten meters long tunnel with fifty centimeters height.

ETA had already resorted to a tunnel in a previous and successful operation. At the end of 1969 ten ETA prisoners, together with five more ordinary criminals held in Basauri's penitentiary escaped from the center after digging a tunnel. Although the prison was regarded as a "high security" location, the prisoners managed to escape after three months work on the underground tunnel. This was an important success for ETA that inspired other members to use such a tactic. When the group assessed how to carry their plan against Carrero, the previous experience acquired by the organization in Basauri provided them with inspiration.

A smaller amount of explosives were placed in the boot of a car that was parked by the terrorists on one side of the street with the intention of forcing Carrero's car to drive along the center of the road, precisely over the exact point where the explosives had been hidden underneath. By placing the car on that particular location the terrorists also hoped that the first explosion would trigger a second explosion increasing the damage and devastation – the second explosion of this second car never took place-. The terrorists also placed a mark on a wall to show them the right moment when Carrero's car would be driving through the exact point where the explosives laid underground.

On the day of the killing, December 20, the three terrorists that still remained in Madrid in order to carry the attack disguised as electricians so they could spread a long wire that would allow them to safely detonate the bomb from some distance. After the nine o'clock mass Carrero got on his car and drove through the street known as Claudio Coello where the explosives laid hidden. The huge explosion threw the very heavy car fifteen meters up jumping over the building to fall into an interior backyard of the building.

ETA had achieved a great spectacular as a result of a tactical and technical innovation. The method used by ETA anticipated the future resort to car bombs, means of perpetrating terrorist attack that at this moment in time was no available to ETA since the terrorist group lacked the technology to produce explosions through remote control.[31] In the absence of the technology that would be widely used later on, ETA came up with an innovative devise that allowed them to carry an audacious and successful terrorist attack.

The Structure of the Organization and Innovation

As it has been mentioned in a previous paragraph, the cell responsible for the preparation of Carrero's assassination was named *Txixia* after Eustakio Mendizabal. *Txixia* was the alias used by one of the more militant leaders of the organization who had been killed by the police on April 19, 1973. ETA's plan to kidnap Carrero was well on its way when *Txixia* died. Therefore, it was only after *Txixia*'s death that the organization decided to refer to the cell in that way in order to honor another of ETA's "martyrs" and with the intention of providing inspiration for other recruits.

[31] ETA's first killings with a car bomb took place in 1980. On November 27 three people were killed in Logroño following the explosion of a car bomb placed by ETA outside a bar that the terrorists believed was frequented by member of the security forces. The three casualties were civilians.

Once the plan to kidnap Carrero was abandoned, the members of the *Txixia* cell were the ones in charge of searching for the means of carrying the President's assassination. Some of them were prominent members of the group whereas others were less relevant operatives. When analyzing the role of ETA's leadership in the plot to kill Carrero, it has to be noted that the organization did have some kind of directorate or hierarchical structure, but it was not so clearly defined as it would be later on. This was the case because ETA was still in its early days. At that time *Txixia* was probably the most relevant leader of ETA, position he had reached as a result of his violent militancy and commitment.

Other members of ETA held some senior positions as can be inferred from the convening of the so called "Biltzar Ttipia" or "Small Assembly", which at the time was seen as some kind of Central Committee of ETA that gathered to discuss the kidnapping of Carrero Blanco.[32] Between twenty and thirty members of ETA gathered at that meeting in the spring of 1973 in the town of Getafe, in the outskirts of Madrid, location that was judged by ETA as safer than the Basque Country given the scarce attention paid by the police to the movements of the terrorist group outside the Basque region.

Many of those who directly or indirectly took part in the planning and perpetration of Carrero's assassination would later on become important leaders of the terrorist organization. Although the participation in an important operation like "Operation Ogre" constituted a significant asset for them, it can't be ignored that there is no direct cause-effect relation between both variables. Luck is an important factor that determines a terrorist fate within the organization since somebody will reach leadership positions if he or she manages to avoid detention. José Antonio Urrutikoetxea (*Josu Ternera*), Domingo Iturbe Abasolo (*Txomin*), Javier Larreategui Cuadra (*Atxulo*), *Argala* and *Wilson* and *Ezkerra* were some of the members of the cell who would become prominent figures within the group in the following years.

Both *Argala* and *Txomin* were probably two of the more charismatic leaders of the group at the time following the vacuum left by *Txixia*'s death. The decision to kill Carrero did not seem to be a decision taken by them with the aim of consolidating their leadership within the organization, but a decision reached by several members after considering how beneficial the murder could be in propaganda terms. The fact that the leadership opted for the murder of Carrero instead of kidnapping him meant that ETA prisoners were going to lose an opportunity to be released. Therefore, the murder of Carrero could be interpreted as counter to the prisoners desire to achieve an early release, as ETA was prepared to bargain initially. As it would become customary over the years, ETA's leadership decided to opt for that option irrespective of the prisoner's main interest.

Although some sections of the organization did not welcome Carrero's assassination for the reasons previously outlined, other members saw it as an important success. Thus such an attack became a relevant part of the group's "armed struggle" –a tactic which was described by ETA as a "catalyst" of the process of confrontation against the Spanish state-.[33] Nonetheless, ETA's internal documents reveal that the terrorist organization regarded the assassination as a "strong strike that was going to speed up the dismantling of the dictatorship", acknowledging at the same time that Carrero's disappearance was not in itself the definitive blow against the apparatus regime which ETA

32 Florencio Domínguez (2006), *Josu Ternera. Una vida en ETA*. Madrid: La Esfera de los Libros, p. 40.
33 *Zutik 69*, February 1978, p. 10.

acknowledged was going to survive for decades.[34] Therefore, Carrero's assassination was seen a positive development since it would weaken what ETA considered as "the conservative bourgeoisie" since the more "reformist bourgeoisie" would see how difficult the situation was to sustain when Franco's natural heir was out of the way.[35]

Accordingly, Carrero's assassination became a recurrent item constantly used by ETA's leadership in its propaganda with the view of stressing the usefulness of "armed struggle". In 1990 ETA's leadership praised Carrero's killing describing it as an attack that had nonetheless been condemned at the time by all the political players. ETA stressed the importance of such an attack drawing an "advantageous comparison" with international liberation struggles which were regarded as much more legitimate: "We cannot forget that Gandhi's struggle was not enough for India to achieve its independence. Without the efforts of nationalist armed organizations at the time India would have not achieved what the country finally achieved. In the same way, Carrero would have not disappeared had it not been for the sacrifices of ETA's militants".[36] In February 2001 ETA resorted to the killing of Carrero in order to neutralize criticism against the group by other nationalist players: "They confess that they have also cheered armed struggle at some point. Do you think there is a single patriot that has not cheered armed struggle on some occasion? Let's remember: Carrero Blanco..."[37]

As recently as July 2005 ETA was again referring to Carrero's assassination as "a major blow against the main Spanish political leaders" as part of "ETA's fight in order to guarantee the liberation of Euskal Herria".[38] In November 2005 another of ETA's internal documents described Carrero's killing as a key event that "announced the opening up of a new political phase" at a time when "Euskal Herria was at a crossroads".[39]

Throughout the years ETA's leadership has been keen to exploit Carrero's assassination aware as the terrorist group was of the positive impact that the killing of such a figure had abroad at a time when public opinion outside Spain was very critical of Franco's dictatorship. Such a killing strengthened ETA's self representation of its violence.

The Undetected Indicators of Innovation

The Spanish security forces –Police, Civil Guard and Central Service of Documentation (SECED) – and the political authorities at the time were absolutely unprepared for this type of innovation. First of all, they completely underestimated ETA's capacities and intentions. They regarded ETA as a small group whose support was reduced to the Basque Country and which had carried very few killings up until them, all of them far away from Madrid. Therefore, the Spanish security forces and authorities did not believe that ETA would manage to establish the infrastructure required in order to plan and perpetrate a terrorist attack in Madrid, let alone an assassination of a prominent figure such as Carrero Blanco. Although the head of SECED was a very close associate to Carrero who had recommended the Admiral to extreme precautions, he did not act accordingly. Carrero did not

34 Ibid, p. 22.
35 Ibid., p. 24.
36 Statement by ETA's leadership published in *Egin* on October 12, 1990.
37 *Zutabe* 89, February 2001.
38 *Zutabe* 108, July 2005.
39 *Zutabe* 109, November 2005.

change his routines even though information about the preparations for his kidnapping and that of his wife were conveyed to him by the head of the Civil Guard.

Secondly, the security forces at the time were still very unprofessional being as they were police forces at the service of the dictatorship that had grown at the heart of a dictatorial regime. The lack of coordination and poor working relationship between the different security agencies was dominant, weakening their role against an emerging threat like ETA. Their lack of strategic thinking was also evident, their understanding being that ETA was not a real threat to the regime but merely a problem contained to the Basque Country. Instead the main security concerns for the regime were basically students, priests and left wing trade unions. To this extent, two ETA leaders who attended a meeting in Madrid a few months before Carrero's killing were arrested in Madrid and released only hours after their arrest.[40]

It has been claimed that up to thirty ETA members were involved in Madrid in the preparation and perpetration of the terrorist attack that ended with Carrero's life. However, none of them was detected prior to the assassination. Spanish police was unable to detect a major meeting that took place in Getafe –in the outskirts of Madrid- that brought together senior members of ETA that belonged to a representative body of the group's leadership.[41] Not only was this lack of awareness evident in the security services and authorities, but also among society as a whole. The situation in the Basque Country was not a major concern for Spanish society, so it wouldn't be reasonable to expect a degree of alert that would have allowed the detection of the ETA activists by those citizens of Madrid who at some point must have had some contact with them during the preparation of the plot.

Several sources who at the time were members of the terrorist organization have acknowledged that prior to the assassination it was widely known inside ETA that an attack against Carrero was being prepared. As Teo Uriarte put it, himself and another inmate were two of the very few ETA prisoners in Cáceres jail who didn't know that the organization was plotting an attack against Carrero after abandoning plans to kidnap him. The work of the Spanish security services at that time was seriously flawed preventing them from developing a wide network of contacts and informers that would have enabled them to collect useful intelligence on ETA. The fact that so many people inside ETA knew about the planning of a plot against Carrero –albeit without specific details about it-, highlights the security services shortcomings and their inefficacy in gathering intelligence that would have prevented ETA's innovation.

It was due to these deficiencies that the security forces were also unable to follow the leads that could have taken them to the plot: although the Spanish security agencies were concerned about left wing groupings they failed to interpret that ETA was developing close contacts with these groups that would be extremely beneficial for their criminal purposes. Not only were these contacts providing ETA a platform to develop and strengthen their ideological stance, combining nationalist and left wing programmes, but they were also allowing ETA to open its mind to the huge potential that Madrid had as a target of ETA's violence. These contacts made Madrid a less hostile city for ETA.

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40 "ETA reunió en Madrid a 30 militantes para matar a Carrero", Manuel Cerdán in *El Mundo*, December 20, 2003.

41 Florencio Domínguez (2006), *Josu Ternera. Una vida en ETA*. Madrid: La Esfera de los Libros, p. 40.

Another indicator of the low consideration that ETA received at that time from a security point of view is the fact that Carrero's assassination took place at very short distance from the U.S. Embassy in the very center of Madrid. Furthermore, only a few days before the killing, U.S. Secretary of State Henry Kissinger had visited the country's capital. It would have been reasonable to expect an increased security that was, nonetheless, unable to detect the plot.

The likely effects that a terrorist attack against a prominent political figure could have, as summarized in the previous section, should have been considered by the security agencies and authorities. Had the security agencies and authorities applied a more thorough strategic thinking to their assessment of ETA's possible evolution, they should have been able to envisage the possibility of a qualitative shift in ETA's campaign. As it has been previously analyzed, the assassination of a prominent political figure like Carrero had the potential to enhance ETA's position. Therefore, the possibility of an attack that would provide the terrorist group with such a reward was an scenario that the security forces should have anticipated had their strategic thinking been more developed.

Even though ETA had not initially considered such an assassination, more acute security services would have been able to predict that an attack against a prominent political figure would attract massive international and national media attention as well as support, gains that ETA did achieve through the assassination of Carrero when it finally happen. The ground was already fertile for those goals in the aftermath of the Burgos trial when international public opinion had put enormous pressure on the Franco regime. Nine ETA members were sentenced to death in the 1970 Burgos trial before a military court. The trial triggered a wave of international and national pressure that would finally bear fruit, since the sentences were finally commuted.

Therefore, it can be argued that prior to Carrero's assassination several were the indicators already in presence that could have alerted the security forces about ETA's willingness to perpetrate a terrorist attack against him. As it has already been noted, some senior security figures had warned Carrero about the possibility of a terrorist attack, but he did not act on those warnings. At the same time, ETA's presence in Madrid also went undetected since ETA did not feature as a serious security concern for the State's security. Furthermore, other less evident indicators could have led security forces to consider the possibility of a qualitative shift in ETA's campaign had they exhibited a more strategically oriented mentality.

Conclusions: Lessons for the Future

The assassination in 1973 of Spanish President of Government, Luis Carrero offers some salient lessons for the future assessment of innovation in terrorism. Looking at it from the current international perspective, it should be noted that, from a terrorist point of view, the assassination of a leading political figure represents an attractive tactic that could constitute an interesting alternative to more indiscriminate and more lethal attacks like the ones usually perpetrated by jihadists. Nowadays indiscriminate and highly lethal violence by jihadist groups does entail political and social cost for those who use it, since this type of violence is not entirely supported by all Muslim and non Muslim constituencies throughout the world. It is of course true that active and passive support varies according to political and geographical contexts, indiscriminate and highly lethal terrorism sometimes receiving significant endorsement in certain sections of different societies. However, a more selective type of violence aimed at prominent political figures and authorities could prove more popular among certain sections of public opinion. This would be definitely the case for other

terrorists groups particularly concerned about high lethality and indiscrimination -for instance, ethno nationalist terrorist groups as well as right and left wing extremists or other violent actors-.

As the experience of Carrero's assassination indicates, the political impact that can be achieved through the killing of a top political leader is considerable. The international and national publicity than can provide the terrorist organization responsible for it is also significant, thus amplifying the group's relevance and the perception of its capacity to influence political affairs. Carrero's assassination was regarded by ETA as the group's major success throughout its history, the result being that ETA attempted to emulate a similar coup years later.

In 2001 ETA tried to kill José María Aznar, Spanish Prime Minister at the time, using SAM-7 surface to air missiles. Three different attempts at killing Aznar with this method followed a previous attack against him in April 1995, when a car bomb went off as the heavy armored car of the then leader of the opposition was driving through the streets of Madrid. The terrorist organization was aware of the impressive political impact that the assassination of the man called to become the new president of Spain in the forthcoming elections would have. A similar rationale was behind ETA's attempts at killing King Juan Carlos of Spain in 1997 when he attended the Guggenheim Museum in Bilbao and in 1995 when he was on holidays in Mallorca.

The relevance of symbolic targets like these is evident, and their assassinations would have inflicted grave psychological damage to the political system and to society at a whole. These distinctive features make it necessary to consider that assassinations of this sort will always be an ambition of terrorist groups. This acknowledgment requires to devising measures aimed at preventing the materialization of the terrorist's aims but also measures aimed at preparing for the consequences of this type of attacks should the terrorists be successful in their efforts. As part of this strategy, a constant assessment of the changing nature of the terrorist threat is required.

The spectacular nature of jihadist violence forces Islamists terrorists to constantly search for innovative attacks that will up the ante. In the aftermath of September 11, there seems to be a fixation with terrorist plots involving airplanes, but the likelihood of terrorist attacks against head of states and senior representatives of the state should not be underestimated given the benefits that this type of tactic could provide to terrorists. The example of Carrero's assassination demonstrates that security agencies must constantly assess the possibility of different innovations in the terrorist tactics even though some of these innovations may not appear as very probable.

Changes in the more traditional modus operandi of terrorist organizations do happen, since terrorists also rationalize what type of attacks may be more beneficial for them or easier to carry. Consequently, changes in terrorist tactics are not always of a quantitative nature, but also qualitative, changes that should be expected too in order to be able to anticipate them should they finally occur. Carrero's assassination represented a qualitative shift that ETA has tried to replicate ever since as a result of its very positive outcome for the organization. Successful terrorist attacks against high profile politicians and authorities enhance the group's standing among supporters and adversaries and they can become very useful incentives for new recruits and for members already in the group in need for reasons to reassure their militancy.

Successful spectaculars like Carrero's assassination demonstrate the terrorist's capacity and ability to carry attacks against harder targets as opposed to softer targets like transport systems and public places. Successful attacks against softer targets may be easier to perpetrate and may increase society's

feeling of vulnerability, but from the terrorist's point of view successful and even unsuccessful attacks against harder targets like the one analyzed constitute effective acts of defiance that can send shockwaves through the political system and society.

Terrorist adaptation to changing circumstances and environments has to be matched by the incessant and correct capacity of security agencies and authorities to adapt and evolve one step ahead of the terrorist's innovation. Carrero's assassination demonstrates some of the costs derived from the failure to do so. To this extent, efforts to increase security at airports given the terrorist's recent fixation with air plots should not lead us to underestimate other risks and threats. As a way of example, it may be revelatory of some questionable patterns that security at ports in Spain seems to be lower than that deployed at airports.

It should be emphasized the inability to guarantee total security in the very many spheres where protection has to be provided nowadays. Terrorists make the most of the inherent weaknesses of democratic security systems. It is nonetheless important to provide incentives in order to motivate the best possible functioning of security systems that unfortunately are not infallible. The constant need for imaginative risk assessments of the possible innovations that terrorists may resort to could act as one of those incentives in order to encourage the best possible functioning of security systems which are not flawless.

Carrero's assassination also demonstrates how innovation does not require particularly sophisticated weaponry since innovation can simply rely on the use of conventional methods employed in an innovative and imaginative way. Awareness vis-à-vis the terrorist threat among societies in general and authorities and security agencies in particular have obviously increased since the assassination of Carrero in 1973. Nonetheless, an increasing and responsible awareness among societies and institutions seems appropriate given the incessant desire of terrorists to innovate. I am referring to the type of responsible awareness that allows the public to be on alert without disproportionate alarm, thus facilitating effective reactions and responses against terrorist's willingness to innovate.

As a way of example, in December 2009 a passenger of the flight Amsterdam-Detroit prevented a Nigerian terrorist from detonating the explosives he was hiding underneath his underwear. In December 2001 Richard Reid managed to get on board a Paris to Miami flight with explosives hidden in his shoe. The security inspection carried by a private company at the airport of origin had detected indicators of a suspicious behavior when checking Reid and they recommended the company to refuse him from flying. A similar recommendation was issued next day after the suspect had also been questioned by French police. The airline allowed him on board since no evidence to confirm the suspicions could be found. It emerged that the suspicions had not been unfounded, but the security check failed to detect Reid's innovation because up until then it had not been common to hide explosives where he was hiding them.

When considering how previous mass effect attacks can inform future efforts to forecast innovation in terrorist methods of attack it is possible to conclude that terrorists will carry on attempting to perpetrate surprise attacks, since their chances of success increase with unpredictability. Anti terrorists efforts will be unable to foil every surprise attack planned but all of those involved in confronting terrorism must endeavor to reduce as much as possible the uncertainties by developing good strategic thinking. As this case study demonstrates, several factors stand out among the pillars of this strategic thinking: security agencies and authorities should never underestimate the terrorist

capacities and the terrorists' ability to shift their traditional modus operandi, as well as their capacity to develop a network of contacts that may enable tactical innovations.

APPENDIX VI: RICHARD ENGLISH, THE IRA'S ATTEMPTED MURDER OF PRIME MINISTER MARGARET THATCHER

On 15 September 1984 IRA man Patrick Magee and a colleague checked into the Grand Hotel in Brighton, Sussex, England. During their stay, Magee planted a Semtex bomb - which he had apparently made himself - in the bathroom of room 629.[42] This was within anticipated range of where UK Prime Minister Margaret Thatcher would sleep the following month during the Conservative Party's Annual Conference. Set on a long-delay timer, the bomb duly exploded at 2.54 am on Friday 12 October and it did so with terrible effect. Mrs. Thatcher survived ('Those who had sought to kill me had placed the bomb in the wrong place', as the Prime Minister herself later put it, but the bomb did kill five people (Anthony Berry, Muriel MacLean, Jeanne Shattock, Eric Taylor, Roberta Wakeham) and it injured over thirty others. It was 'a night of devastation which I shall never forget', as Thatcher's cabinet colleague Nigel Lawson later phrased it.[4344] Another cabinet minister, Norman Tebbit, was himself injured, while his wife Margaret was left permanently paralysed: 'Sinn Fein/IRA terrorists almost murdered us both and left her crippled.'[45] Patrick Magee was arrested in June 1985 in Glasgow and was to serve fourteen years (1985-99) in prison for his part in the Brighton attack. His bomb had been intended to kill most of the British cabinet (especially Thatcher herself), together with other leading Conservatives, and it formed part of the Provisional Irish Republican Army's long war of attrition against the UK state.

This paper will ask five central questions in relation to the IRA's Brighton bomb, before offering some wide-angled, concluding reflections. First, was the Brighton bomb, in fact, a Weapon of Mass Effect (WME)? Second, did Brighton embody innovation? Third, what were the preconditions necessary for this particular episode to have occurred? Fourth, what were the precise causes behind the Brighton attack? Fifth, were there preparatory behaviours which could have been noted and interpreted in such a way that the Brighton bomb might have been prevented?

Analysis

First, was the Brighton bomb, in fact, a Weapon of Mass Effect (WME)? Clearly not, in terms of the scale of damage caused, whether to buildings or to life and limb.[46] But in terms of its symbolic dimensions, and the likely impact had the bomb succeeded in killing the Prime Minister and members of her cabinet, I think we can safely assume that Brighton does qualify as a WME. Had Margaret Thatcher – then the unquestionably dominant force in UK politics and a figure of international stature – been murdered by Irish terrorists, then public and political shock and outrage and reaction would have been of the heaviest weight. The psychological damage inflicted, and the enormous rage generated, would between them have led to state repression of Irish republicanism, to the almost certainly Draconian extension of legal powers in the UK to allow for far greater freedom on the part of the authorities in dealing with terrorist suspects, to a likely re-militarization of aspects of the Ulster

42 Andrew Oppenheimer, *IRA: The Bombs and the Bullets. A History of Deadly Ingenuity*, (Dublin: Irish Academic Press, 2009), 262.
43 Margaret Thatcher, *The Downing Street Years*, (London: Harper Collins, 1993), 380.
44 Nigel Lawson, *The View from No. 11: Memoirs of a Tory Radical*, (London: Bantam Press, 1992), 307.
45 Norman Tebbit, *The Game Cook Recipes Inspired by a Conversation in my Butcher's Shop* (London: JR Books, 2009), 2
46 Gary McGladdery, *The Provisional IRA in England: The Bombing Campaign 1973-1997* (Dublin: Irish Academic Press, 2006), 127.

conflict (given the polarization and reprisals which would have ensued in Northern Ireland), and therefore to a probable escalation of violence as well as tension. In fact, the Brighton bomb did not prompt an escalation of violence from the IRA or in the Northern Ireland conflict as a whole. In the five years preceding 1984, the average annual number of people killed by the IRA was 62 and the average annual death toll from the conflict was 106; in the five years following 1984, the respective figures were 52 and 83 – so, if anything, a notable diminution in violence occurred.[47] But, had the Brighton bomb killed Margaret Thatcher and her cabinet, then escalation might reasonably have been expected. And even without the killing of its main target, the Brighton bomb was considered audacious, shocking and newsworthy in a manner highly unusual for IRA actions. Had the bomb succeeded, then the attack would have been an even higher species of WME, and I think we can count it under that label in any case.

Second, did Brighton embody innovation? How new was this attack in terms of the target and the method? In the early 1970s the IRA had sent a letter bomb to 10 Downing Street and had also apparently been drafting plans to try to kill the then inhabitant, Prime Minister Edward Heath, on a visit to Ireland. In December 1974 the Provisionals did bomb the home of Heath, who was by then the former Prime Minister.[48] In August 1977 the IRA had attempted to kill Queen Elizabeth II on her silver jubilee visit to Northern Ireland, at the New University of Ulster in Coleraine (an attack in which it is alleged that Patrick Magee was himself involved, already deploying a timer device.[49] In May 1981 the IRA again attempted, without success, to kill the woman whom they referred to as 'Queen Elizabrit', this time in the Shetland Islands.[50] On 27 August 1979 the Provisionals succeeded in killing the Queen's own cousin, Louis Mountbatten, a figure who was both personally close to the monarch and also symbolically at a very high level indeed of the British establishment (a great-grandson of Queen Victoria, no less).[51] Moreover, Mountbatten had long been considered a possible target by the IRA (not least because he had for years taken holidays in Ireland, where he was in fact killed). Three years earlier, in July 1976, the IRA had killed the UK Ambassador to the Republic of Ireland, Christopher Ewart-Biggs, in Dublin.

So high-profile political targets at the heart of the British establishment, and spectacular attacks, were not at all new as a means of trying to advance the IRA towards the realization of their objectives. If one broadens the matter out to incorporate other contemporary Irish republicans then the point is reinforced (with, for example, the Irish National Liberation Army's killing of leading Conservative politician Airey Neave with a car bomb within the precincts of Westminster in March 1979. Pre-echoes of Brighton were reasonably strong here, given both that Neave was a close friend of Margaret Thatcher and that the attack happened in England.) Yet again, the long pre-Provisional IRA history of militant Irish republicanism involved attacks planned and carried out on high-profile political figures, and Patrick Magee himself certainly saw the Provos as following directly in a long tradition of Irish republican resistance to English or British rule in Ireland.[5253] A further line of continuity is reflected in the fact that Magee's pseudonym, when checking into the

47 Richard English, *Armed Struggle: The History of the IRA* (New York: Oxford University Press, 2005), 379.
48 Philip Ziegler, *Edward Heath: The Authorized Biography*, (London: Harper Press, 2010), 485-6.
49 Oppenheimer, *IRA*, 262-3.
50 English, *Armed Struggle*, 219.
51 Timothy Knatchbull, *From A Clear Blue Sky: Surviving the Mountbatten Bomb* (London: Hutchinson, 2009), 17
52 Richard English, *Irish Freedom: The History of Nationalism in Ireland*, (London: Pan Macmillan, 2007), 213, 312.
53 Patrick Magee, *Gangsters or Guerrillas? Representatives of Irish Republicans in 'Troubles Fiction*,' (Belfast: Beyond the Pale, 2001), 9, 11.

Grand Hotel in Brighton, was Roy Walsh. Walsh had been an IRA volunteer involved in a previous Provo spectacular in England, the 1973 bombing of the Old Bailey in London.

And mention of that earlier campaign leads us to consider another aspect of innovation, or lack of innovation. That 1970s campaign in England was designed to have greater effect precisely through its location and the choice of establishment target. As one of the then London bombers, Marian Price, herself put it to me in interview: 'It doesn't seem to matter if it's Irish people dying', so the IRA's armed struggle could only succeed if it were possible to 'bring it to the heart of the British establishment'. Hence symbolic targets such as the Old Bailey ('the targets were carefully chosen') and, later, Thatcher and the Conservative Party Conference in 1984.[54] Indeed, it is vital to recognize that there was nothing new about the implied argument of the Brighton bomb. In 1984 as before and after, the Provisionals held that Northern Ireland was illegitimate and unfair and irreformable, that the only solution to the problem was an end to Irish partition, that it was necessary to use force to achieve this, and that bombs on high-profile English targets were politically appropriate as well as strategically effective. Indeed, the IRA's public argument in 1981 was essentially the same as that offered in 1989, despite the fact that Brighton fell centrally between these two dates.[55] So if innovation involves 'something newly introduced', 'a novel practice, method,' then it is hard to see Brighton *as it actually happened* in such terms.[56] The Provisional IRA had previously bombed England, bombed leading politicians and establishment figures, planned or attempted to kill those who were or had been UK Prime Minister, deployed bombs using timer devices, and utilized Active Service Units working in Britain. In contrast, had they actually killed Mrs. Thatcher, then dramatic innovation would unquestionably have been involved, as this would have been the first time that the IRA had killed a Prime Minister. But I think that a case can still be made for considering the Brighton bomb within the innovatory framework of this important workshop.

The real innovation of Brighton lay in its representing one more step in an ongoing IRA process of constant updating, rethinking and adapting *in pursuit of* new and ever more effective means of achieving their objectives. Indeed, if in this sense Brighton was innovative, then it was innovative in a manner that we need to acknowledge as enduringly characteristic of significant terrorist groups throughout history and the contemporary world: namely, the sense that all serious terrorist groups are always innovating in this precise sense of constant updating, rethinking and adapting *in pursuit of* new and ever more effective means of achieving their objectives. The changes can often be those of degree (as here, the most serious attack ever waged by the IRA on a serving UK Prime Minister) but this fine-tuning, this small shift in gears, can still potentially yield dramatically different scales of result. Hijacking planes for terrorist effect was not new in 2001; successfully flying them into symbolic buildings in New York City undoubtedly was. As in that (globally, far more significant) attack, so too at Brighton comparatively small changes in approach might have yielded considerably higher impact – after all, the IRA very nearly succeeded in killing Thatcher and her cabinet; and it was in their desire for that effect, coupled with the narrowness of their missing their central targets, that the IRA were innovative in 1984. It was, in effect, a would-be innovation which very nearly achieved its intended status.

Third, what were the preconditions necessary for this particular episode to have occurred? Clearly, such operations require certain organizational capacities (leadership, commitment, strategic and tactical decision-

54 English, *Armed Struggle*, 163.
55 English, *Armed Struggle*, 212, 263
56 Lesley Brown ed., Shorter Oxford Dictionary, (Oxford: Oxford University Press, 1980), 1077.

making, sustained planning, acquisition of material and intelligence) as well as key dimensions of individual and technical capability. Centrally, the role of someone like Patrick Magee himself was utterly crucial, hence the importance to the state of lengthy incarceration of such key operatives. Indeed, the main lesson from Northern Ireland regarding prisons is that it matters less how one designates terrorist prisoners once they have been incarcerated, than that large numbers of people engaged in terrorism should be credibly imprisoned for lengthy terms as part of a containment strategy. Magee himself was not very easily replaced. Highly intelligent, experienced in bomb-making and explosives, deeply committed to the IRA's cause and ingenious in his IRA career, he exhibited many of the qualities required for such major operations. These qualities remained evident later on too. Magee studied at undergraduate and postgraduate level while in jail after Brighton, and saw even that process as part of the republican struggle. Regarding IRA education in jail, he told me, 'You worked to be able to articulate better your political perspective, and I saw education as a means to an end'.[57] The book emerging from his PhD thesis represented another stage in his articulation of the IRA's political argument, and was based on his own version of jail struggle: 'The reading and research for this book began while I was in Maghaberry and was completed in the H-Blocks.'[58]

The technology required for the attack was comparatively simple and small-scale, given the easy availability of long-delay timers from video recorders, and this meant that the possibility of planting the bomb became greater, since it could be installed well before the Tories arrived for their Conference. The IRA did not have insuperable difficulty in procuring materials for their campaign by the 1980s, not least because of Libyan support. As a general reflection here, it might be noted that international relations of no directly immediate relevance to one struggle can yet have the most practical of effects upon it: the fact that the IRA and Colonel Gaddafi shared an enemy in Margaret Thatcher meant that the Provos received considerable practical help from the Libyan leader (including, it appears, the Semtex used at Brighton).[59]

Organizationally, what was required for innovation? The IRA exhibited a mixture of top-down authoritarianism with local-level leadership and autonomy.[60] As in previous IRA campaigns, small numbers of able, determined zealots could wage a sustained campaign against the UK state, changing the world (albeit not as they had intended). And this combination of high-level centralization with locally autonomous initiative probably maximized their capacity for sustained activity and varied local achievement and constant attempts at innovation. There are those who claim that for years the IRA leadership was scaling down the organization's armed struggle with a view to political engagement of a Sinn Féinish kind,[61] although this probably overstates both the completeness of control held by the Gerry Adams leadership and also the anticipatory consistency of purpose and single-minded planning for a political future on the part of Adams himself and those around him.[62] What is clear is that, well into the 1990s, the IRA was both able to carry out, and prepared to carry out, very major operations, including devastating ones in England, and that their

57 Patrick Magee, interviewed by the author, Belfast, 5 March 2002.
58 Magee, *Gangsters or Guerrillas?*, iv.
59 Oppenheimer, *IRA*, 120.
60 Ed Moloney, *A Secret History of the IRA* (London: Penguin, 2007).
61 For more information see, Moloney, *A Secret History of the IRA*; Anthony McIntyre, *Good Friday: The Death of Irish Republicanism*, (New York: Ausubo Press, 2008); Richard O'Rawe, *Blanketmen: An Untold Story of the H-Block Hunger Strike*, (Dublin: New Island, 2005).
62 English, *Armed Struggle*.

organization was therefore able to move fast enough in response to state counter-terrorism to ensure the continuation of their campaign, albeit at lower level than they would have preferred. [63]

Likewise, finance was not a great problem, both because particular terrorist campaigns were comparatively inexpensive, and also because the IRA had by the 1980s developed a sufficiently strong foundation of financial backing and infrastructure. These terrorist entrepreneurs therefore possessed the commitment, the technology, the finance, the organizational suppleness, the personnel and the materials to engage in the would-be innovative attack of Brighton.

Fourth, what were the precise causes behind the Brighton attack? There were two main ones. There was the fundamental, political-ideological case which drove and justified the IRA's war, namely that an illegitimate, unjust denial of Irish national self-determination by the British state in creating and sustaining partition, had to be countered by a Clausewitzean struggle which would make the war more painful for London that it would be for London to grant the IRA what they sought (namely, British withdrawal from the North, and therefore a united Ireland). In this sense, Brighton fitted the same pattern as very many other IRA attacks, and the underlying republican theology remained unchanged before and after the bombing. At the root of such theology was a conviction regarding the justness, efficacy, necessity and unavoidability of violence in pursuit of republican goals. Force was essential. 'There was nothing else I could have done', Patrick Magee told me: 'At one time that was all we *could* do, that was the only avenue open to us, was to engage in armed struggle.'[64] And he and his colleagues were confident that their violence would, in the end, yield victory. Immediately after Brighton, an IRA spokesperson outlined the organization's thinking starkly: 'Our objective ... is to wear down their political resolve ... Britain clearly, after fifteen years, cannot defeat us, so her occupation of Ireland is going to keep on costing her dearly until she quits. They would have said "we lost Airey Neave, Lord Mountbatten, Margaret Thatcher etc. – is it worth it?."'[65]

But there was also a Thatcher-specific cause behind the Brighton attack. The Prime Minister was held not only to be (in general) a committed opponent of Irish republicanism but also (in particular) the person most responsible for the painful deaths of ten republican hunger strikers in jail in 1981. Even before the end of the hunger strike, the IRA had decided to try to kill Margaret Thatcher, and so revenge, hitting back, combined here with Clausewitzean strategy in their long war. There is no doubt about the level of hatred that republicans felt towards the Conservative leader ('that unctuous, self-righteous fucker', in Danny Morrison's rich phraseology, 'the biggest bastard we have ever known').[66] During the 1981 hunger strike itself IRA prisoners had been angry that their comrades on the outside had not escalated their violence in response to the prison war, with more major strikes against the enemy. When Patrick Magee was sent to England in 1983 with a view to bombing military targets, he was himself clear that the war had to be taken to England; and when he attacked Mrs Thatcher at Brighton there was a revanchist element to the IRA's thinking too, with the IRA's Fanonist rage being directed at a personal target with extreme, focused anger. In this sense, the causes for the Brighton attack were necessarily both internal (the IRA's argument and politics and strategy) and externally, contingently generated (UK government policy towards the prisons, presided over by one particular Prime Minister). Vital here is the frequent pattern that counter-terrorist policies can stimulate and provoke that which they are supposed to extirpate: the

63 English, *Armed Struggle,* 278-9, 292.
64 Magee, Author Interview, 2002
65 *An Phoblacht/Republican News* 18 October 1984.
66 English, *Armed Struggle*, 207.

attempt to undermine the IRA by casting their prisoners as criminals generated a hunger strike, Thatcher's attitude towards which partly prompted Brighton.

Fifth, were there preparatory behaviours which could have been noted and interpreted in such a way that the Brighton bomb might have been prevented? Put another way, are there lessons from this episode for contemporary counter-terrorism, in regard to observable behaviours on the part of a terrorist organization once it has decided upon an innovation? My answer is that, while no counter-terrorist surveillance can be uniformly successful, the Northern Irish experience suggests that much (perhaps most?) terrorist activity can be contained if police-led, intelligence-driven counter-measures are adopted. A wealth of evidence now exists suggesting that the UK state had managed, not to defeat the IRA, but to put a ceiling on the level of their activities, such that many of their planned attacks were thwarted.[67] This did not mean that every operation could be prevented, and nor were there signs which could always been identified in each case. But there were patterns of behaviour by the state which could ensure that terrorist behaviour was at least substantially mapped. As one ex-Royal Ulster Constabulary (RUC) Special Branch officer with extensive anti-IRA experience put it to me regarding the Provos by the end of the Northern Ireland Troubles, 'They were being contained. ... It became stalemate.'[68] How was this kind of result achieved? Partly through the very extensive use of bugs (the importance of such devices, in the words of one who planted many of them, being 'massive'. It was absolutely crucial to it).[69] But the turning of people into informers and agents was at least as vital, as was the calm pursuit of normal police procedures regarding evidence and prevention. Fingerprint evidence was what facilitated the conviction of Patrick Magee (just as police work and painstaking professionalism regarding forensic evidence helped to convict Lord Mountbatten's central killer and another key IRA bomb-maker, Thomas McMahon);[70] and it is possible that more thorough police professionalism prior to the Brighton bomb might even have prevented it. It appears that the Sussex police (the people responsible for the security of the Conservative Conference in Brighton) did not take warnings of an IRA threat to political figures as seriously as they might have done, and that their resulting casualness regarding security precautions made the IRA's job more manageable.[71] There were no preparatory behaviours in this case, which meant that the authorities would necessarily have anticipated and prevented Brighton. But there are some clear lessons none the less. Professional, police-led counter-terrorism can, even against as ingenious an opponent as the IRA, contain most of the terrorist organization's activity; and calm, careful attention to warnings can prevent many attacks from occurring in the first place, provided that the state's intelligence operation is extensive and robust.

Conclusion

What, then, are the most important lessons of Brighton for contemporary counter-terrorism? I have argued elsewhere that our response to terrorism should be based on seven inter-linked

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67 For more information please see Jack Holland and Susan Phoenix, *Phoenix: Policing the Shadows* (London: Hodder and Stoughton, 1996); Earmon Collins, *Killing Rage* (London: Granta, 1997); Martin McGartland, *Fifty Dean Men Walking* (London: Blake, 1998); Sean O'Callaghan, *The Informer*, (London: Transworld, 1998); Ed Moloney, *A Secret History of the IRA* (London: Penguin, 2007) and *Voices From the Grave: Two Men's War in Ireland* (London: Faber and Faber, 2010).

68 Ex-RUC Special Branch Officer, interviewed by the author, County Down, Northern Ireland, 23 February 2010

69 Former RUC Headquarters Mobile Support Unit Officer, interviewed by the author, Belfast, 25 March 2010

70 Knatchbull, *From a Clear Blue Sky*.

71 McGladdery, *The Provisional IRA in England*, 126.

principles: learn to live with it;[72] where possible, address underlying root problems and causes; avoid the over-militarization of response; recognize that intelligence is the most vital element in successful counter-terrorism; respect orthodox legal frameworks and adhere to the democratically-established rule of law; coordinate security-related, financial, and technological preventative measures; and maintain strong credibility in counter-terrorist argument. In this current Conclusion I will suggest that the specific case of the Brighton bomb reinforces these broad points, and serves as a valuable way of demonstrating their lastingly high importance. Learn to live with it. Brighton might have been prevented, had greater care been taken in preparing security for the Conservatives' Conference, but it painfully demonstrated that, despite the state's already deep penetration into the IRA, it is impossible to prevent all terrorist attacks. Even now, five years after the Provisional IRA formally ended their armed struggle, other Irish republicans continue a violent campaign (albeit at lower level) while fatal loyalist violence remains a problem too in Northern Ireland. So we need to admit that even high-level counter-terrorism will have serious limits to what it can achieve, and that even those terrorist groups whose campaigns will eventually end may take many years before they reach that point (there were ten years between Brighton and the first IRA ceasefire and another eleven before the Provos formally ended their campaign).

As we live with terrorism, however, we can take telling comfort from the fact that even an attack like Brighton – still one of the IRA's most spectacular efforts – did not derail the state (or even the Conservative Party Conference, which continued defiantly despite the bomb). We have to live with terrorism, but states can adapt, endure and survive. Contrary to the IRA's argument, bombs in Britain did not actually prompt British people to demand that their government give the IRA what they wanted; in fact, Northern Ireland rarely became a powerful issue in British politics at all.[73] (As elsewhere, spectacular, violent operations frequently *failed*, in fact, to generate popular support for those who carried them out.)[74] Moreover, when the conflict did end, the emergent deal was far closer to what the British had argued for all along than it was to what the IRA had been killing and dying for, and this again is a reassuring lesson from Brighton. Contrary to Alan Dershowitz's argument, it is in fact vital that, where possible, we address the underlying root problems and causes behind terrorism.[75] But we can take comfort that it is sometimes possible (as in Northern Ireland) to address these problems to the satisfaction of the vast majority of people from the terrorists' supposed constituency on a basis far short of what the terrorists themselves demand. Margaret Thatcher claimed that, 'Terrorism is the calculated use of violence – and the threat of it - to achieve political ends. In the case of the IRA those ends are the coercion of the majority of the people of Northern Ireland, who have demonstrated their wish to remain within the United Kingdom, into an all-Ireland state.'[76] The IRA ended their campaign without achieving this central goal and, in that sense, they – and their violence in Brighton in 1984 - markedly failed.[77] Moreover, this follows a wide pattern. In her extensive research on the ending of terrorist campaigns, Audrey Cronin has concluded that, 'Terrorist campaigns rarely achieve their initial goals', that 'Instances of success are rare, especially when judged against a group's stated strategic aims' and that 'Very few terror groups

72 Richard English, *Terrorism: How to Respond* (Oxford: Oxford University Press, 2009).
73 English, *Armed Struggle*, 357; McGladdery, *The Provisional IRA*.
74 Jose Marie Moyano, Argentina's Last Patrol: Armed Struggle, 1969-1979 (New Haven: Yale University Press, 1995), 1.
75 Alan M. Dershowitz, *Why Terrorism Works: Understanding the Threat, Responding to the Challenge* (New Haven: Yale University Press, 2002).
76 Thatcher, *The Downing Street Years*, 383.
77 Rogelio Alonso, *The IRA and Armed Struggle* (London: Routledge, 2007); English, *Armed Struggle, Irish Freedom*, *Terrorism: How to Respond*.

achieve their stated strategic aims.'[78] Her assessment of 450 terrorist groups' campaigns resulted in her judging that 87.1% had achieved none of their strategic aims, that 6.4% had achieved a limited result, that 2.0% had achieved a substantial component of their aims, and that only 4.4% had succeeded in the 'full achievement of [the] group's primary stated aims.'[79]

Before terrorist campaigns end (and in pursuit of that ending), there is a need for states to avoid the over-militarization of response, for them to recognize that intelligence is the most vital element in successful counter-terrorism, for them to respect orthodox legal frameworks and adhere to the democratically-established rule of law, and for them to coordinate security-related, financial, and technological preventative measures. How does Brighton fit in here? Police primacy has emerged in the twenty-first century as an important element in counter-terrorism and counter-insurgency,[80] just as it was in the late twentieth,[81] and it is important to recognize here, as noted, that it was careful, traditional police work which led to Patrick Magee's capture and that MI5 cooperated closely with Special Branch in tracing him: police-led professionalism, cooperation between different wings of the state and adherence to methodical, normal practice ensured Magee's capture, conviction and lengthy incarceration and these should be exemplars for the appropriate response to much terrorism across the world.[82] Indeed, I think the point can be broadened. Magee himself claimed that 'the Brighton bombing destroyed the notion of containment': 'Until Brighton we were not being taken seriously by the British political establishment. We were trapped in the acceptable level of violence strategy and it's important to remember that the only way we could have lost the war was to be trapped in indefinitely fighting it.'[83] Magee has also argued that this bombing decisively pushed the British government towards negotiations with the IRA, and ultimately towards the 1990s peace process itself: the Brighton bomb gave the IRA 'more political leverage'; 'after Brighton, anything was possible and the British for the first time began to look very differently at us.'[84] After Brighton, 'I think there was a recognition that we weren't going to go away ... We had to get that message across. If they thought they could continue to contain the struggle or perhaps in some long term defeat it then of course they were going to go in for that. So the British establishment *had* to understand that we were there for the long haul and we weren't going to go away.'[85] In fact, the British had recognized long before Brighton both the IRA's lengthy commitment and also the impossibility of militarily defeating them. Indeed, the IRA had themselves recognized that long before Brighton the British had acknowledged the IRA to be unbeatable. In the wake of their killing of Lord Mountbatten in 1979 the Provos had stressed that, 'The British Army acknowledge that after ten years of war it cannot defeat us.'[86] Moreover, despite Magee's claims about bursting out of containment, containment is *exactly* what ensued during the following years as the British state managed, not to defeat, but to put a ceiling on the level of activity of the IRA. And this – the stalemate thwarting of the Provos – was a necessary foundation for a peace process which ended the IRA's campaign far short of what Magee's Brighton bomb had been intended to achieve.

78 Audrey K. Cronin, *Ending Terrorism: Lessons for Defeating al-Qaida* (Abingdon: Routledge, 2008), 26, 35, 37.
79 Audrey K. Cronin, How Terrorism Ends: Understanding the Decline and Demise of Terrorist Campaigns (Princeton: Princeton University Press, 2009), 215-16.
80 Seth G. Jones, Counterinsurgency in Afghanistan (Santa Monica: Rand, 2008).
81 Stefan Aust, Baader-Meinhof: The Inside Story of the RAF (New York: Oxford University Press, 2009).
82 Adam Roberts, "The 'War on Terror' in Historical Perspective," *Survival* 47:2 (2005): 109.
83 McGladdery, *The Provisional IRA in England*, 131, 133.
84 Patrick Magee, quoted in *Guardian*, 28 August 2000.
85 Magee, author interview.
86 *An Phoblacht/Republican News* 1 September 1979.

Intelligence-led police work, the avoidance of transgression against normal legal practice, and successful cooperation between different wings of the counter-terrorist community contributed towards the thwarting of a serious and ingenious terrorist opponent. This, rather than the bomber's more self-comforting interpretation, is the true practical lesson from Brighton. Again, we may have to live with terrorism (indeed, we all of us regrettably will), but as we do so we can contain and minimize the threat if we follow this above pattern of behaviour, rather than adopting unrealistic notions of extirpating terrorist groups, relying primarily on inappropriate military mechanisms of response, or adopting Draconian and unnecessary extensions of legal power.[87] Finally, the state needs to maintain strong credibility in counter-terrorist argument. Brighton is particularly telling here, given that the origin of the Thatcher-specific cause of the IRA's bombing lay in the prison protest culminating in the hunger strikes, and that this involved a self-damaging, *in*credible argument by the state. Effectively, the UK government of Labour and then of Thatcher's Conservatives presented the IRA as being criminal and therefore illegitimate, rather than political and – by implication – legitimate. Hence the struggle in the jails over whether IRA and other paramilitary prisoners should conform to normal prison rules rather than being treated – as they had been before and eventually were to be again – as a special category of inmate. It was, of course, perfectly reasonable for the state to try to delegitimize their IRA opponent. The trouble was that many who would not support the IRA's violence would (and, in voting for hunger striker Bobby Sands in 1981, temporarily did) support the IRA against Margaret Thatcher in an argument about whether the IRA were political or merely criminal.

By denying the political dimension to the IRA's war, the state lost credibility among a crucial constituency – those within the nationalist North who were inclined not to support the IRA – because it established an implausible dichotomy. (A perfectly reasonable alternative existed: namely to admit, yes, that the IRA were political, but to stress that not all politically motivated groups use legitimate methods.) The key point is that here, as so often in fighting terrorism, there is in fact no need to exaggerate the villainy of one's opponents or to misrepresent their arguments and character, since a calm, patient, accurate depiction of reality will work much better. Patrick Magee and his Brighton bomb are illuminating here. It is *not* true, as Magee has claimed, that there was no other way but the bomb by means of which Irish nationalists could pursue their rights and goals. Most Irish nationalists – in Northern Ireland, Ireland, internationally – overwhelmingly did not support the IRA's violence but preferred to adopt constitutional methods instead.[88] More tellingly still, even the IRA itself eventually came to recognize that more could be gained in terms of progress and momentum by giving up the kind of violence practiced at Brighton and opting for a more constitutional approach.[89] In part, at least, this was because the IRA's argument all along had been less credible than that of the UK state, and that the Provo leadership came to recognize important aspects of this (regarding the true nature of political attitudes in London and in the Irish Republic; regarding economic realities and their implications for Irish unity; regarding the fact that the main obstacles to Irish unification lay in Ulster not in England; and so on), and to change their strategy as a consequence. The IRA's violence could not, as they had proclaimed, protect the Catholics of the North, affect a British withdrawal, bring socialism to Ireland or lay the foundation for a post-sectarian society. It is arguable, in fact, that in each of these cases the IRA's violence actually moved them further from their ostensible goals rather than closer to them.

87 English, *Terrorism*.
88 English, *Irish Freedom*, 382-3.
89 English, *Armed Struggle*.

So the argument behind Brighton, and the subsequent claims made by some Provos about its effects, exemplify a gratifyingly important point: that terrorists' arguments are very frequently (from Andreas Baader to Ayman al-Zawahiri) internally incoherent and quite implausible on any serious reading. Despite the IRA's claims to the contrary, Brighton actually changed comparatively little, and the central reason for this was that the political argument on which it rested was so flawed. Magee clearly held that Britain was 'the problem' in Northern Ireland and also that republican violence and struggle would yield victory;[90] moreover, these views were widely shared by his IRA comrades during the Provos' lengthy campaign. But, in fact, the major obstacles to Irish unity lay not in England but in Ireland, and that remains the case today: recent opinion poll evidence, that a mere 18% of the people of Northern Ireland favour Irish unity as the best long-term policy for the North, strongly reinforces the point.[91] Crucially, history shows that the IRA's violence did not win them their main goals, and that their analysis was seriously flawed: though it is a rarely made point, the central lesson from the IRA's would-be innovation in Brighton in 1984 was in fact to emphasize the lack of credibility in their overall argument and strategy.

90 Magee, *Gangsters or Guerillas*, 2, 39, 66.
91 "Irish Political Studies Data Yearbook," *Irish Political Studies*, 25:2 (June 2010), 256.

APPENDIX VII: ADAM DOLNICK, AUM SHINRIKYO'S PATH TO INNOVATION

Aum Shinrikyo (Aum Supreme Truth) was a Japanese apocalyptic cult that operated in 1987-1995, gaining worldwide notoriety after its 1995 sarin gassing of the Tokyo subway, which became the deadliest terrorist attack with nonconventional agents to date. Aum's violent activities, however, went much deeper than this one alarming incident. Between 1989 and 1995, the group perpetrated a number of assassinations of internal and external enemies as well as at least 20 attempts to release chemical and biological substances, killing a total of around 80 people. The importance of Aum Shinrikyo stems not only from the fact that it was the first organization to use an actual warfare agent for terrorist purposes, but also from its unique desire to indiscriminately kill anyone not belonging to the group. Armed by a cosmic doomsday ideology consisting of a millennial mix of Hinduism, Christianity, Tibetan Buddhism and the prophecies of Nostradamus, Aum set out to "destroy the world in order to save it." With a completely unquestioned authority of its leader, extreme brainwashing practices, 40,000 strong membership, extremely innovative approach to terror technology, and up to $1 billion and more than 20 university trained scientists at its disposal, in the realm of terrorist organizations Aum constitutes a truly unique phenomenon.

HISTORY OF OPERATIONAL PROGRESSION

The historical progression of Aum's armed operations can be divided into several distinct periods, which essentially follow the path of events that were groundbreaking for the group. The first period marks the selective use of violence against internal opposition and external threats at the individual level. Aum first appeared in 1984, when Chizuo Matsumoto formed a religious cult called the Aum Shinsen no Kai (Circle of Divine Wizards) and set up a commercial enterprise called the Aum Corporation.[92] Matsumoto had gained countrywide notoriety after a picture of him "levitating" in a lotus position was published in an obscure but widely read magazine the "Twilight Zone," resulting in his ability to attract hundreds of recruits. By 1987, claiming do have experienced a series of enlightening visions along with receiving a personal message from God asking him to "lead God's Army," Matsumoto changed his own name to Shoko Asahara and renamed the cult to Aum Shinrikyo.[93] Interestingly, according to a former Aum member, the group's belief system prior to this moment was not religious at all.[94] At a May 1987 Aum seminar, Asahara made the first of his many doomsday prophesies: "Between 1999-2003 a nuclear war is sure to break out. I Asahara have mentioned the outbreak of a nuclear war for the first time. We have only fifteen years before it."[95] Importantly, at this point Asahara still demonstrated a great level of constructive optimism, by suggesting the war could be averted if the world was run by "Buddhas" or his disciples. Implicitly, the only hope for the world's savior was the global spread of the training system of Aum.[96]

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92 Karmon, Ely, "The Anti-Semitism of Japan's Aum Shinrikyo: a Dangerous Revival," Internet. Available at: http://www.ict.org.il/articles/aum_antisemitism.htm (accessed on 1/9/04)

93 Lewis, James R., *The Encyclopedia of Sects, Cults and New Religions*, (New York: Prometheus Books, 1998) p. 68

94 Kaplan, David E. and Marshal, Andrew, *The Cult at the End of the World* (New York: Crown Publishers, Inc., 1996) p. 15

95 Ibid. p 16

96 Lewis, op. cit., p. 68

In the early stages of its existence, Aum engaged in a number of illegal activities including fraud and violent punishments of the "impure" among its 1,500 disciples, but had not resorted to deliberate killings. This status changed in late 1988, when a follower died during a "spiritual exercise" consisting of prolonged hanging by the legs upside down, followed by the immersion into extremely cold water.[97] In an attempt to cover up this accident, Aum crossed the threshold of murder for the first time with the strangulation of Shuji Taguchi, the victim's friend who refused to keep the incident quiet. From this point on there was no turning back and a rapid proliferation of assassinations followed. From a psychological perspective, more killings were not only a tool used to cover up the earlier ones, but also served as a mechanism through which the group could retrospectively legitimize its earlier acts of violence by getting into a habit of killing.[98] Overall, it is estimated that throughout the 7 years of its violent campaign, Aum had murdered up to 80 individuals, consisting mainly of the cult's "rogue" members, as well as external figures posing a threat to the group such as overly inquisitive relatives of members, a lawyer, a journalist, and a leader of a rival cult. The operational methods included strangulation or exposure of the victims to substances such as potassium chloride, hydrogen cyanide, VX, phosgene, sarin, and "truth serums" like barbiturate thiopental. One noteworthy aspect of the *modus operandi* used in all of the pre-1995 killings is the fact none of them had involved the shedding of blood.

The second operational phase began in 1990, and was characterized by the organization's attempts to procure and use biological agents. This stage was essentially triggered by the outcome of the national elections in which Aum competed for some 25 seats in the Japanese Diet.[99] The seriousness of the cult's ambitions can be documented not only on the aggressive nature of its campaign, but also on the $7 million investment made toward this effort.[100] But, despite Asahara's predictions that he would achieve the greatest victory ever, the final count in his own district showed only 1,783 pro-Aum votes -- a shockingly low number given that over 1,800 of the 500,000 eligible voters in the district were the cult's members.[101] Inside Aum, the humiliation of defeat was felt very deeply, as were the resulting financial and membership losses. In addition, the cult had been faced by a number of complaints regarding its compound near Mount Fuji, which lead to a launch of an investigation for land fraud. A combination of these events convinced Asahara about the existence of a global conspiracy against Aum, which made it no longer possible to change the system from within -- the situation now required much more drastic measures. Asahara began speaking of the Armageddon more often than ever, also predicting an increasingly immediate date for the event to occur. It was at this point when Asahara started talking to his most loyal followers about the need to prepare for a war in which millions would parish, and in which Aum would need the greatest of weapons to prevail. A newly formed research team headed by molecular biologist Seichi Endo conducted a survey of literature inquiring into the possibilities for such weapons, finally selecting the world's most toxic biological substance as the agent of choice.[102] Only several weeks later, Aum sent three trucks equipped with spraying devices to disperse botulinum toxin mist through the streets of Tokyo. Designated targets included the U.S. Navy bases in Yokohama and Yokosuka, the Narita airport, the Diet, and the

97 Lifton, Robert J., *Destroying the World to Save It,* (New York: Owl Books, 1999) p. 37

98 Ibid. p. 209

99 Daly, Sara., *Aum Shinrikyo, Al Qaeda, and the Kinshasa Reactor: Implications of Three Case Studies for Combating Nuclear Terrorism* (Santa Monica: The Rand Corporation, 2005) p. 6

100 Cameron, Gavin, "Multi-track Microproliferation: Lessons from Aum Shinrikyo and Al Qaida," *Studies in Conflict and Terrorism*, Vol. 22, No.4 (1999)

101 Kaplan and Marshal , op. cit., p. 47

102 Miller, Judith, *Germs: Biological Weapons and America's Secret War,* (New York: Touchstone, 2002) p. 160

Imperial Palace.[103] Although only Asahara's closest circle was aware of the attacks, the group did attempt to save the clueless Aum members by organizing a conference on the Ishigaki Island during the time of the attack.[104] But to Asahara's great disappointment, the attack went completely unnoticed, failing to produce a single casualty.

But Asahara overcame the disappointment much sooner than one might expect. The diversionary conference managed to spark the beginning of a new wave, in which the cult was able to attract hundreds of new recruits and to generate a large amount of revenue. For the next two years Aum was financially more prosperous the ever, and the coming Armageddon was put on the backburner. This situation began changing only in 1992, when a Japanese tourist died after being infected with the Ebola virus on his trip to Zaire. The incident was widely covered in the Japanese press and apparently sparked Asahara's great interest -- only four months after the first news of the incident, the guru and 40 core followers set off for the "African Salvation Tour."[105] During their trip to Zaire, the delegation visited six hospitals, three of which had treated Ebola victims.[106] And even though Aum's Ebola weapons program had never really gone past a very preliminary stage, an interest in the incurable, highly contagious, and extremely lethal (90 per cent lethality) hemorrhagic fever is truly alarming.[107]

By early 1993, Asahara was back on track in his apocalyptic prophecies. The Armageddon was coming for sure and its date had gradually grown closer and closer, with the final year being designated as 1996. The form of the event had also become more concrete: Japan would be obliterated by an American attack with nuclear weapons.[108] In light of these predictions, Asahara began speaking for the first time about the need for the cult to restructure and arm itself in front of an audience that extended beyond his most trusted circle. In accordance with Asahara's Armageddon survival recipe of creating an alternative society armed with top-notch technology and knowledge of the future, Aum's scientific committee met again to decide on what weapons to pursue.[109] Some argued for the continuation of efforts in the realm of biological agents, other suggestions ranged from technologies such as lasers, particle beams and nuclear bombs to conventional arms and explosives. Aum would to some extent pursue all of these, but the greatest attention was devoted to the suggestion of Masami Tsuchiya who talked about an extremely lethal and easy to produce Nazi nerve gas. Aum's sarin program had been born.

In the meantime, the organization continued to work on its biological weapons program, and also launched an effort to build a conventional army with the plan to manufacture 1,000 AK-74 rifles by 1995.[110] The one problem the cult was facing on this front was the lack of manpower to form a respectable armed force. In order to attract further recruits, Aum leadership decided to expand its

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103 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001), Internet, available at http://cns.miis.edu/pubs/reports/aum_chrn.htm. (Accessed on 12/12/02)

104 Broad, William J., "Sowing Death: A Special Report; How Japan Germ Terror Alerted World," *The New York Times* (26 May 1998).

105 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001), Internet, available at http://cns.miis.edu/pubs/reports/aum_chrn.htm. (Accessed on 12/12/02)

106 Cameron , op. cit., p. 295

107 Smithson, Amy E. and Anne-Levy, Leslie, *Ataxia: The Chemical and Biological Terrorism Threat and the US Response*, Stimson Center Report No. 35 (2000) p. 77

108 Overseas Security Advisory Council, "Aum Shinrikyo," Internet: Available at http://www.ds-osac.org/Groups/group.cfm?contentID=1276 (accessed on 06/03/2005)

109 Kaplan and Marshal , op. cit., p. 85

110 Karmon, Ely, "The Anti-Semitism of Japan's Aum Shinrikyo: a Dangerous Revival," Internet. Available at: http://www.ict.org.il/articles/aum_antisemitism.htm (accessed on 1/9/04)

influence by taking action that would prove Asahara's dark prophesies. Designed to coincide with Prince Naruhito's wedding, the 9 June 1993 attack consisted of the spraying of botulinum toxin in Tokyo from a car equipped with a spraying device.[111] Again, the attack went unnoticed as it failed to harm a single person. Asahara was furious. What nobody knew at the time was that Aum had been using a harmless nonvirulet strain of the agent.

In order to win the guru back, Endo's biological weapons team worked around the clock for the next thee weeks on another plan, this time utilizing *bacillus anthracis* -- the causative agent of anthrax-- as the weapon of choice. Then on 28 June 1993, Aum Shinrikyo began spraying the agent from the roof of its Kameido compound in Tokyo's Koto ward, using a sprayer device equipped with a fan.[112] But even though the group spread the deadly bacterium for a period of four days, the only fatalities included a couple of small birds and plants in the immediate area around the compound.[113] Within the next five weeks Aum would attempt to disperse *bacillus anthracis* on two more occasions, again spraying the agent from the roof of its compound, and then using a sprayer truck to for its release near the legislative building in central Tokyo.[114] But in accordance with the earlier pattern, both attacks were unsuccessful due to the fact that Aum used only a harmless veterinary vaccine strain of *bacillus anthracis*. After exploring agents ranging from Ebola through botulinum toxin, *bacillus anthracis* and poisonous mushroom toxins to Q-fever, Aum's biological weapons program had failed completely.

In the mean time, the preparations for the transition to the next operational phase characterized by the use of chemical agents, was well under way, and by October 1993 the cult's chemical weapons development facility, the Satian 7, was nearly complete. But chemical weapons production would prove to be more challenging than the organization had anticipated, and not only did numerous accidents and leeks take a toll on the scientists' health, even more importantly the team failed to produce any usable results. Increasingly impatient, Asahara sought to boost morale by creating a greater sense of urgency within the cult's ranks. Seemingly no longer preoccupied by the American nuclear attack on Japan, Asahara now accused the Japanese government of working in conjunction with the Americans to eliminate Aum with sarin nerve agent. Asahara claimed to have been attacked on numerous occasions, predicting the eminence of his own death.[115] "The hour of my death had been foretold….I repeat, there is a possibility that Aum Shinrikyo might cease to exist. The believers must take action," he proclaimed.[116] "There is no choice but terrorism from now on."[117] Frightened by the prospect of Aum's destruction and the guru's death, the cult's scientists had finally reached their goal a month later, successfully producing their first batch of sarin. The key question remained: would it prove effective?

In the spring of 1994, Aum decided to test the agent in two assassination attempts against Daisaku Ikeda, the leader of the rival cult *Soka Gakkai*.[118] On the first occasion, the sprayer mounted in the

111 "Aum Planned Attack on Imperial Family," Mainichi Daily News (11 September 1995)
112 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001), Internet, available at http://cns.miis.edu/pubs/reports/aum_chrn.htm. (Accessed on 12/12/02)
113 "Aum Released Anthrax in Tokyo in 1993: Police," Japan Economic Newswire (25 July 1995).
114 Broad, op. cit.,
115 Parachini, John, "Comparing Motives and Outcomes of Mass Casualty Terrorism Involving Conventional and Unconventional Weapons," *Studies in Conflict and Terrorism*, Vol. 24 No. 5 (2001)
116 Kaplan and Marshal, op. cit., p. 125
117 Lifton, op. cit.,p. 170
118 "Aum Suspected of Trying to Murder Buddhist Leader: Report," Agence France Presse (20 May 1995)

back of a truck failed to function properly; during the second attempt an accidental leak almost killed the Aum's security chief. And while it was clear from this accident that the agent was potent, a more reliable test was needed before the next operation could be launched. Only after the successful gassing of 29 sheep sprayed with sarin from a twin-engine plane at the Aum ranch in the Australian outback, the cult felt it was ready.[119] But unlike many of its earlier attacks involving the release of chemical or biological agents, Aum's next operation would have a very specific purpose: the elimination of three judges who were expected to hand out an unfavorable ruling in a land dispute lawsuit involving Aum's Matsumoto branch.[120] On 27 June 1994, six Aum members armed with an atomizer, makeshift gasmasks, 30 large batteries, and 44 pounds of sarin, departed in a specially customized van for Matsumoto.[121] The delivery system was based on the manual dripping of the agent on the heater in order to achieve vaporization, and then using a fan to blow the gas out of a small window in the truck's side with a fan system.[122] However, since the equipment weighted over 1,000 pounds the vehicle could only travel at the top speed of 30 miles per hour, resulting in the arrival of the attack team at the Matsumoto courthouse only after the judges had already left the building. Determined to succeed in their mission, the team then moved to the residential area where the judges were known to live. After injecting themselves with an antidote, the attackers then spread sarin out of the van for a period of ten minutes. Despite the fact that the targeted judges were "only" hospitalized, the attack was a relative success: in total, seven people were killed, 144 were seriously injured, and 126 more reported to hospitals complaining of symptoms.[123] Even more importantly, the police were completely sidetracked, arresting an innocent farmer as the alleged perpetrator, attributing the deaths to an assumed accident during production of an illegal fertilizer.

But two weeks after the attack, Satian 7 was hit by an accidental chlorine leak, and the police arriving at the scene found tanks labeled "sulfuric acid" and caustic soda. A similar accident occurred once again a week later, but incredibly, the police again turned the other way.[124] After dozens of lawsuits, complaints, suspicions of murder, land fraud, medical malpractice, kidnapping and even an insider's anonymous letter pointing the finger at Aum as the perpetrator of the Matsumoto attack, the cult had literally gotten away with murder. But what the police would not do, the media did instead. On New Years' Day of 1995, Japan's largest newspaper printed a front-page story directly implicating Aum in sarin production, also making the critical link between the cult and the Matsumoto attack. Aum, had to act quickly. Satian 7 was turned into a chapel and with the exception of three pounds of sarin precursor methylphosphon acid dimethyl which one of the doctors buried nearby, $30 million worth of chemical weapons research was destroyed.[125] During the subsequent meeting with the press, Aum let the media representatives tour their facilities, explaining that they were constantly being attacked by state powers with chemical weapons sprayed on them from helicopters and small planes. Many were unconvinced. But before any further action against the cult could be taken, Aum was again saved by what appeared to be a divine intervention: on 17 January, Japan was struck by the Great Hanshin Earthquake in which over 5,500 people would parish. Not only did this event provide the

119 Daly, op. cit., p. 18
120 Kimura Ray, *Aum Shinrikyo: Japan's Unholy Sect*, (North Charleston SC, BookSurge Publishing 2002) p. 58
121 Croddy, Eric, *Chemical and Biological Warfare: A Comprehensive Survey for the Concerned Citizen*, (New York: Copernicus Books, 2002) p. 65
122 Kaplan, David E., "Aum Shinrikyo (1995) in Tucker, Jonathan B., *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons*, (Cambridge, Mass: MIT Press, 2000) p. 218
123 "Asahara Ordered 1994 Sarin Attack, Aum Biologist Says," Japan Economic Newswire (14 January 1999).
124 Olson, Kyle B., "Aum Shinrikyo: Once and Future Threat?" Internet. Available at: http://www.cdc.gov/ncidod/EID/vol5no4/olson.htm (accessed on 1/8/05)
125 Interview with Jeff Penrose, former Head of Intelligence of the Australian Federal Police, 15/10/04

group with more breathing room, it also served as a key "proof" of the accuracy of Asahara's doomsday prophesies. Aum grew more arrogant than ever, launching at least four successive assassinations against the cult's dissidents and their family members. But a note left behind by one of the victims stating: "If I disappear, I was abducted by the Aum Shinrikyo sect," provided the final piece of the puzzle needed by the police to take action, and the date for a simultaneous raid of Aum's compounds was officially set for 21 March.[126]

After learning of the police plans from its members inside the National Police Agency, Aum transitioned to the fourth operational phase characterized by the cult's attempts to use any available means to avert the investigation. Armed action was needed, but the group no longer possessed sarin, the only attack tool that the group had a positive experience with. Further, chemical agents had recently been discussed too much in the news and were thus unsuitable for an attack that was supposed to divert attention away from Aum. The leadership thus considered all sorts of other options, ranging from blinding police investigators with a laser beam to the use of a truck bomb. But in the end, Aum would opt for biological agents. On 15 March 1995, members of the cult placed three brief cases equipped to spray botulinum toxin near the ticket barriers of Tokyo's Kasumigaseki subway station.[127] The devices had a 12-volt battery powering a mechanism that used ultrasonic triggers to be set off by the vibration of an arriving train, vaporizing the agent in a vinyl chloride tube followed by the dissemination of the vapor by a small electric fan. Only one of the three devices that were placed in different locations of the station operated correctly.[128] But this time around, there was another factor that would render the attack unsuccessful: perhaps struck by a guilty conscience, an unknown Aum member apparently substituted the botulinum toxin for water, causing the device disperse only harmless steam.

Following another failure, the cult was in trouble. Only several days remained until the planned police raid, which needed to be averted at all costs. As there was no more room for failure, Aum decided to revert back to the only agent it had success with in a large scale attack, and the three pounds of sarin precursor that were buried near Satian 7 weeks before were recovered. On 20 March 1995, just one day before the planned police raid, five trains on three different subway lines in Tokyo were attacked with sarin after attackers pierced plastic bags filled with the agent by the means of sharpened umbrella tips.[129] The target selection was of significance: All of the trains met at the Kasumigaseki station which was among the deepest in Japan, and which Asahara had spoken of in the past as the best location for the survival of a nuclear strike.[130] In addition, Kasumigaseki was the closest satiation to most government agencies including the police headquarters.[131] The timing of the attack was designed to hit just after 8 AM when the trains would be full of policemen arriving for the 8:30 shift change.[132] Overall, 159 ounces of 30 per cent pure sarin were used, although only 8 of the 11 plastic bags were pierced successfully. The end result of the largest nonconventional terrorist attack in history was 12 people dead, 1,039 injured and an additional 400 people worried well. Then in order to

126 Ibid.
127 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001), Internet, available at http://cns.miis.edu/pubs/reports/aum_chrn.htm. (Accessed on 12/12/02)
128 "Sect Intended to Release Lethal Bacteria," Mainichi Daily News (13 June 1995)
129 Kimura, op. cit., p. 95
130 Daly, op. cit., p. 8
131 Kimura, op. cit., p. 95
132 Smithson and Anne-Levy, op. cit., *p.* 87

rid itself from suspicion of involvement, Aum members also firebombed its own headquarters, leaving an anti-Aum leaflet signed by a rival group at the scene.[133]

But despite all of these efforts, the attack succeeded in postponing the police raids by a mere 24 hours. Soon thereafter, hundreds of top members were arrested and the group was effectively deprived of its leadership. Still, Aum was not about to give in easily. On 30 March, a masked man on a bicycle shot Takaji Kunimatsu, Director General of the National Police and the head of the Aum investigation, four times.[134] Then on 23 April, Aum's chief scientist Hideo Murai was stabbed in the stomach several times in front of television cameras by a Korean hit man tied to the Hane-gumi gang of the Yakuza, presumably because he knew too much about Aum's activities. This incident was followed by another chemical attack designed to cause maximum casualties -- on the evening of 5 May 1995, two transparent vinyl bags, one of which was on fire were found and extinguished in the men's restroom of the Shinjuku subway station.[135] One of the bags contained 1.5 liters of diluted sulfuric acid while the other contained 2 liters of powdered sodium cyanide. The two chemicals, when combined, produce a highly lethal hydrogen cyanide gas. The mixing of the two chemicals was to be achieved by the means of fire, triggered by an incendiary system consisting of two condoms placed inside each other and filled with sodium chlorate and sulfuric acid, respectively. The sulfuric acid eats through the latex and combined with the sodium chlorate to produce fire.[136] Ten days after this attack, an Aum parcel bomb intended for the Tokyo governor Yukio Aoshima exploded in the hands of his secretary. Then during a period of 24 hours, at least four additional hydrogen cyanide attacks took place, all of them failing to produce a single casualty. Aum was apparently losing steam. But despite the shocking details that transpired during trials, the Aum Shinrikyo sect refused to die. By 1997 Aum had succeeded in doubling the number of its branches in Japan, attracting some new 2,700 followers with some 700 full-time renunciants.[137] Then in January 2000, several of the new leaders made public apologies for the cult's activities under Asahara, renounced violence and changed the group's name to "*Aleph*." But, even today's Aleph is driven by an ideology that has not changed, with leaders employing many of the same mind control practices used under Asahara.[138]

Due to its science fiction like fascination with modern technology, almost exclusive reliance on non-bloody weapons, truly indiscriminate targeting logic, and highly ambitious *modus operandi,* Aum Shinrikyo remains by far the most technologically innovative terrorist organization in history. The reasons behind Aum's strikingly hi-tech approach to innovation will be explored in further detail in the upcoming section.

PRECONDITIONS

Preconditions are those characteristics of terrorist organizations and of the environment in which they operate which make innovation more or less likely. Among this group of factors are the following variables.

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133 Kaplan and Marshal, op. cit., p. 242

134 Edward F. Mickolus, *Terrorism, 1992-1995: A Chronology of Events and a Selectively Annotated Bibliography*, (Westport, CT: Greenwood Press, 1997) p. 794

135 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001), Internet, available at http://cns.miis.edu/pubs/reports/aum_chrn.htm. (Accessed on 12/12/02)

136 Talmadge, Eric, "Tokyo Narrowly Escapes Another Toxic Gas Attack," Associated Press (6 May 1995).

137 Olson, Kyle B., "Aum Shinrikyo: Once and Future Threat?" Internet. Available at: http://www.cdc.gov/ncidod/EID/vol5no4/olson.htm (accessed on 1/8/05)

138 Ibid.

Leadership and organizational requirements

With regards to the hypothesis that highly structured and highly cohesive groups led by an undisputed leader are likely to demonstrate a greater capability to innovate successfully than loosely knit or heavily factionalized groups that experience strong internal pressures, but will only have the opportunity to do so under the condition that the decision to trigger the innovation process is made at the highest level, the "group dynamics" variable demonstrates a high level of relevance in this case.

While most terrorist groups are led by charismatic leaders, Asahara's God-like position within Aum was a truly exceptional phenomenon that can be traced back to his childhood, when he as a bigger and stronger boy with partial vision acquired the habit of controlling his fully blind classmates. Always high on political ambition, he also ran for school president on a number of occasions, but being a hated bully, he never succeeded. Asahara would later use the stories of his life-long rejections as a recruitment tool designed to attract followers with similarly humiliating experiences. Another interesting feature from Asahara's childhood was his love for drama. Not only did he passionately act in several school plays, Asahara even wrote one about the flawless and powerful character of Prince Ganji, a role he designated for himself.[139] All of these experiences would come in handy later on. Above all, the closed environment of the school of the blind provided Asahara with a model of governance and exploitation, where his sense for intimidation, drama and money-making schemes would aid him in gaining unquestionable control. Another useful experience from this perspective was Asahara's membership in *Agonshu*, one of Japan's most successful new religions. Even though he would later despise the teachings of the cult, Asahara in fact adopted many of the religious and organizational principles.[140] Within Aum itself, Asahara then assumed the role of the guru, whose status was elevated to that of a divine being. His position was secured by a number of typical cultish mind control mechanisms, including repeated brainwashing accompanied by extremely painful "karma purification" exercises, sleep and oxygen deprivation, sexual abstinence, Spartan living conditions, application of hallucinogenic drugs such as LSD and various "truth serums," solitary confinement, and the drinking of guru's blood or dirty bathwater. Fascinatingly, Asahara was even able to make money on these practices: a small vial of his blood was sold to followers for $10,000, a liter of his dirty bathwater for $1,000, and the rental of a Perfect Salvation Initiation (PSI) headset, which sent electric shocks to one's skull in order to synchronize the individual's brainwaves with the guru's, cost over $10,000 per month. Amazingly, these headsets are used by the reformed *Aleph* members to this day.[141]

Aum's leadership structure itself was modeled after the Japanese executive branch, reflecting the cult's governing ambitions in the post Armageddon world. So for instance, Asahara was the "Holy Monk Emperor," Aum's lawyer Yoshinobu Aoyoma was the "Minister of Justice," biological weapons expert Seichi Endo was the "Minister of Health and Welfare," spymaster Yoshishiro Inoue was the "Minister of Intelligence," security chief Tomomitsu Niimi was the "Minister of Internal Affairs," Aum's second in command, Hideo Murai, was the "Minister of Science and Technology," and his greatest competitor Kiyohide Hayakawa was the "Minister of Construction."[142] Fascinatingly, Aum would pursue Asahara's unrealistic science-fiction weaponry and childishly utopian

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139 Lifton, op. cit., p. 15
140 Ibid. p. 18
141 Olson, Kyle B., "Aum Shinrikyo: Once and Future Threat?" Internet. Available at: http://www.cdc.gov/ncidod/EID/vol5no4/olson.htm (accessed on 1/8/05)
142 Cameron, op. cit., p. 250

technological ideas despite the fact that most of these people were accomplished scientists, whom one might expect to bring in a more sobering perspective. This only underscores Asahara's absolute and undisputable position within the group. In essence, Asahara would suggest a wild visionary project to his ministers, who responded with an absolute commitment to that project.[143] The unsurprising lack of success on most of their endeavors then became a source of deep shame, which Asahara would use to strengthen their commitment even more. What is incredible is that despite the fact that the unrealistically grandiose nature of Asahara's demands was the main source of their failure, the scientists themselves would enthusiastically join in on that utopian grandiosity always striving to please the guru.

In this sense, the correlation of Aum decision making dynamics with the demonstrated level of technological innovation is twofold. On the one hand, the absolute authority of a megalomaniac cult leader who was very keen on inventing unique operational methods combined with the scientific background of his closest aides to form a strong and decisive force behind Aum's innovative tendencies. On the other hand, the absolute obsession of Aum scientists with Asahara provided for a lack of scientific freedom, which effectively inhibited Aum's success with even relatively simple technologies. The most important lesson thus may be that a strong authority of an innovation prone leader is helpful in providing the impetus behind a group's decision to innovate, but if this authority boils over to a cult of personality it can turn into an obstruction to the success of this process -- the scientists' desire to please the guru can become stronger than their rational scientific judgment.

Openness to new ideas

With regards to this variable, it has been hypothesized that organizations that are in a regular contact with modern technologies, possess a positive attitude toward physical and operational risk, and embrace democratic elements in their decision-making process, are more likely to demonstrate a high level of innovation than ideologically conservative, socially secluded, risk-averse, and autocratically-ruled groups. Aum's case seems to confirm only some aspects of this hypothesis.

At the first level, it has been hypothesized that closed organizations with no contact with the outside world would be less aware of the technological possibilities, making them less motivated and less capable of innovation. However, Aum demonstrated a high level of innovation despite being one of the most closed off groups ever. The reason behind this surprising outcome may lie in the fact that the group functioned in one of the world's most technologically advanced societies. Further, Aum's well-trained scientists had a high level of awareness of developments in their respective disciplines through scientific literature. In addition to Aum's library which included over 300 books on biochemistry alone, Aum had also infiltrated a number of companies including Japan's largest defense contractor, and downloaded large amounts of classified data pertaining to technologies such as lasers and their use for uranium enrichment.[144] So while the cult had little contact with the outside world, the awareness of its scientific team about the possibilities, along with their ability to identify the sources of necessary data and the ways to gain access to them, made Aum even more innovative than was the case of many much more open groups.

At the second level it has been asserted that the leadership would have to be open to suggestions from below in order to facilitate innovation, also requiring the perception among individual members

[143] Rosenau, op. cit., p. 290
[144] Kaplan and Marshal, op. cit., p. 151, 206

that they can freely put forward their proposals for adopting new methods. Despite its innovative practices, however, Aum again did not possess this attribute – the cult's members were highly controlled, dissent was not tolerated, and individuality was completely suppressed. On the other hand, since all of the decisions were taken at the top level where the attitude toward innovation was positive, the input from brainstorming sessions involving ordinary members was essentially not needed to facilitate the innovation process.

At the final level of this variable -- the approach to risk taking -- Aum's case has demonstrated a positive record. On the one hand, the Satian 7 facility contained state of the art safety equipment which included hatchways for sealing off laboratories, ventilation, a decontamination chamber, and regulations for the staff to wear gas masks and full body suits for protection. On the other hand, only buckets were used to secure the leeks of lethal compounds, making it difficult to argue that work inside the facility was anywhere near safe. Asahara also knew this very well, as documented by the question he would pose to new workers at the plant: "Are you prepared to risk your life for this work?" In addition he invented a reward mechanism to make the risk worthwhile, by stating that work at the plant is worth "40 days of religious training in a solitary cell" and declaring that afterwards, the worker would be "transferred into a higher rank."[145] In the end, Aum researchers inevitably showed a great deal of risk taking with regard to the physical risks of handling lethal agents without appropriate training, sometimes resulting in accidents where even some of the cult's key figures were severely injured, in some cases surviving only due to a quick application of an antidote. A similar observation can be made with regards to the cult's risk taking attitude toward the possibility of operational failure. In this respect, Aum showed a reasonable willingness to accept failure during its operations, as documented by the fact that these failures were not enough to persuade the cult to switch to sufficiently less challenging weapons technologies that would have a greater probability of success. On the other hand, the nature of the technology Aum was using made failures relatively acceptable - unlike a malfunctioning explosive device, a failed attack using a colorless, odorless and tasteless agent will go unnoticed, mitigating many of the security and image risks normally associated with a lack of success during an operation.

Overall, the influence of this factor seems mixed. On the one hand, some of the hypotheses associated with this variable do not hold, as Aum had a high level of relevant technological awareness despite being a totalistic closed cult, where innovative ideas could not be easily put forward and where there was little contact with the outside world. On the other hand, Aum did have a positive attitude toward risk taking on both fronts of physical risks associated with the handling of lethal technologies, as well as the operational risks of repeated failure, making the "openness to new ideas" variable relevant from this perspective.

Resources

Aum seems to directly confirm the hypothesis that large organizations with hefty budgets, outside sponsors, and highly qualified membership are more likely to demonstrate an inclination toward innovation with respect to both motivation and capability, than smaller groups with limited financial and logistical resources. In fact Aum's resources are among the most important variables in terms of influencing the cult's innovative patterns. With its estimated budget of $1 billion, the cult ranks as the most materially resourceful terrorist group in history, remaining unchallenged to this day. In order to comprehend how a religious cult could amass such enormous funds, one needs to understand the

[145] Kaplan and Marshal, op. cit., p. 132

extent of Aum's entrepreneurial activity, as well as the fact that the cult also enjoyed tax breaks granted to religious organizations, and access to a large body of volunteer labor. On the whole, Aum's capital originated from both legal and illegal sources. On the legal side, the cult owned a number of legitimate companies mainly in the computer industry, but also several restaurants, fitness and yoga clubs, babysitting and dating services, real estate companies, a doughnut chain, a casino, a tea plantation in Sri Lanka, an export-import company in Taiwan, and a sheep ranch in Australia, to name a few.[146] On the illegal side Aum was a major player in the production of illicit drugs such as mescaline and LSD – in fact, it is estimated that nearly half of all LSD seized in the world since 1990 was made by Aum.[147] In addition, Aum used extortion of its "Astral Hospital" patients and their family members as a source of revenue, as well as a murder for insurance fraud schemes. In such cases, individuals with life-insurance policies would be persuaded to designate Aum as the sole beneficiary, and after their "mysterious" death Aum would collect. From this scheme alone, Aum was allegedly able to earn more than $5 million.[148] While both legitimate and illegitimate activities had brought in a large amount of money to Aum's treasury, no business was as lucrative as the cult's own recruits. For example, a pre-condition of becoming an Aum member was a series of initiations which would end up costing each recruit more than $50,000. In addition, all of the group's 1,400 renunciants had to donate all of their possessions to the cult. Overall, it has been estimated that Aum was able to obtain over $140 million from the life savings of its core members, while bringing in another $10 million annually in donations.[149]

At the level of human resources, Aum also possessed a capability unparalleled by any other terrorist organization. Among the cult were some 26 university-trained scientists, including medical doctors, veterinarians, microbiologists, and chemists.[150] The group always sough to recruit more – in 1992, for instance, Aum paid nearly $10,000 for a database containing personal information of 30,000 graduating students.[151] Besides its scientific team, Aum had recruited over 50 retired and active Japanese Defense Forces members, who trained other recruits in the operation of firearms. Aum was also able to recruit members from a number of other critical organizations, ranging from the National Police Agency and the Japanese judiciary to the *yakuza*.

In terms of size, the cult had a huge membership base of over 40,000 individuals, which made Aum the largest terrorist group of the twentieth century. At the same time, only a core group of some 1,400 were full-time *shukke,* or renunciants who gave up earthly life and lived in Aum's compounds, and the number of members grew even smaller when it came to involvement in terrorist violence. Overall, only few individuals closest to the guru were apparently aware of the group's terror activities; in fact almost none of the regular Aum members believed that the cult was behind any of the violent attacks that it had been accused of perpetrating. This is an interesting aspect that puts Aum in a sharp contrast with other terrorist organizations, most of which recruit its members precisely on the promise of involvement in the violent struggle for the respective cause. But Aum did not have violent activity on its overt agenda and thus cannot be treated as a large violent organization – for the

146 Cameron, op. cit., p. 284
147 Kaplan and Marshal, op. cit., p. 163
148 Ibid. p. 171
149 Cameron, op. cit., p. 284
150 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001), Internet, available at http://cns.miis.edu/pubs/reports/aum_chrn.htm. (Accessed on 12/12/02)
151 Kaplan and Marshal, op. cit., p. 91

purposes of operational analysis, Aum was only a small inner circle of decision makers and perpetrators around Asahara.

In sum, the level of Aum's resources, both material and human, allowed the organization to invest an unparalleled amount of money into acquiring a superior weapons capability. For instance, the group was willing to invest $400,000 into the purchase of a green light laser, $500,000 into a lens grinder, and $36,000 into two drone aircraft (which were crashed during the first training), not to mention the amazing $30 million invested into the sarin program alone.[152] All of these investments were undertaken under the optimistic assumption that the cult's human resources could make a good use of them in the pursuit of the Armageddon. This underscores the interconnectivity between material and human resources – only the simultaneous presence of both could provide Aum with the confidence that investments into either area would eventually pay dividends. On the other hand, the assertion that innovativeness of a group would positively correlate with its size also cannot be confirmed, given the fact that terrorist activity was in the knowledge of only a select few, making Aum's unprecedented overall size less relevant than originally hypothesized.

CAUSES

Causes are those factors that directly influence the group's decision to innovate. These may include new security environments, factional competitors, or a new strategic direction that requires an escalation in the violence.

Internal to the terrorist organization

Ideology and strategy

Aum's ideology and strategic outlook played a significant role in triggering the group's innovative tendencies, in the sense that the cult's operational preferences corresponded directly to the ideological predisposition to embracing high technology, as well as the group's strategic emphasis on mass destruction.

Aum embraced a "cosmically scientific" belief system, which could be described as an apocalyptic mix of prophetic cultic practices incorporating a wide array of writings such as the predictions of Nostradamus combined with the Book of Revelation, imagery from Hindu and Buddhist texts, as well as science fiction elements from the novels by Isaac Asimov written in the 1940s.[153] Also included was a bit of Japanese nationalism, anti-American and anti-Jewish sentiments, Shiva, Old and New Testaments, Jesus, nuclear holocaust and the Tibetan book of the dead. But perhaps the most dominant feature of Aum's value system was that the role of ideology itself was only secondary to the worship of Asahara, a man who on many occasions declared himself to be Christ and the last messiah of the century. In this sense the leader's status was elevated from a human being to a God, whose "suggestions" and "recommendations" translated into divine orders. Asahara's position as a prophet and his megalomaniac and paranoid personality constituted one of the reasons why the cult's objectives were blurred, inconsistent, and rapidly shifting over time. So what did Aum actually want?

[152] Cameron, op. cit., p. 294, Smithson and Anne-Levy, op. cit., *p.* 75, 81
[153] Cameron, op. cit.,

Since his childhood, Asahara was an extremely power hungry and controlling individual, who had proclaimed ambitions to someday become the Japanese prime minister. From this perspective, it is easy to see Aum's political ambitions, also apparent by the cult's participation in nationwide elections prior to its turn to violence. But over time, Asahara became more and more conspiratorial and paranoid, shifting from just predicting the Armageddon to actively bringing it about. Armageddon had thus seemingly become Aum's top objective. As Lifton points out, for Asahara the event developed into more than a controlling power tool -- it became also a reflection of his inner desires.[154] Asahara's abundant self pity and sense of unjust victimization along with the unfulfilled political ambitions, combined for a deep hatred for the rest of the world that always seemed to conspire against him. An apocalyptic event in which everyone but people who worshiped him as God would parish, had a very gratifying personal revenge component to it. Further, Asahara had over time also become a prisoner of his own apocalyptic prophesies – since they were concrete and totalistic in nature, he had little choice but to ensure their fulfillment in order to maintain credibility. So in essence, a great deal of Aum violent activity was driven by the need to legitimize and "scientifically" prove its own religious principles. The need to do so by the means of high technology corresponded directly to the "cosmically scientific" images in the cult's ideology, as well as to the personal megalomaniac ambitions of Asahara who looked for any means that would enable him to be remembered forever.

Strategically speaking, however, Aum's desire to bring about the Armageddon was less than a self-fulfilling prophesy -- it represented merely one of the means through which the cult tried achieve its top objective: the attainment of power. In the beginning of its campaign Asahara had a recipe for savior from the Armageddon – the proliferation of Aum communes or "Lotus Villages." These villages would only be possible if there are no other people than Aum believers, who would essentially become his clones.[155] The only path to savior was thus the attainment of political power, which would allow the spread of Aum's teachings to as may individuals as possible. But following the failure do so in the 1990 elections, Aum had given up on the political process and its focus had shifted to violent means. One of the first options Aum considered was the possibility of taking over the country through an armed coup. On what was to be called the "X-day," Aum planned to send its troops to take control of Tokyo and then the rest of Japan, aided by Japanese gangsters and Russian troops.[156] For such an endeavor Aum needed an army equipped with conventional arms and battlefield gear, explaining the cult's attempted purchase of such equipment in Russia. But having realized its lack of preparedness for such a large operation, Aum's focus shifted more and more toward bringing about the apocalypse as a means to rid the world of everyone who was not an Aum member, and thus achieving majority. For triggering such an event, Aum needed the most destructive technology it could find. From this perspective the attraction to weapons of mass destruction again made perfect sense, as these weapons provided the only possible means that could, in theory at least, make the bringing about of the Armageddon feasible; traditional terrorist weaponry simply could not get the job done. It should thus come as no surprise that the organization attempted to buy a nuclear warhead, procured chemical and biological weapons and dreamt about fantastic super-powerful lasers and seismological devices. These choices correlate highly with the group's ideological objectives, and the strategic preferences for achieving those objectives. And while there can be serious doubts about

154 Lifton, op. cit., p. 64

155 Rosenau, William, "Aum Shinrikyo's Biological Weapons Program: Why Did it Fail?" *Studies in Conflict and Terrorism*, Vol. 24, No. 4 (2001)

156 Kaplan and Marshal, op. cit., p. 155-6

the rationality of Aum's utopian strategic thought, once one adopts the basic premises of the cult's belief system, its approach to technological innovation makes perfect sense.

Targeting logic

In light of the hypothesis that highly indiscriminate and highly lethal targeting logic of a group would be associated with higher levels of innovation, this factor seems to correlate with Aum's innovative tendencies quite strongly. After all, among terrorist organizations it would be impossible to find a more indiscriminate and mass-casualty motivated, and at the same time a more technologically innovative organization than this apocalyptic cult. In order to understand the importance of Aum's unique targeting logic as a key determinant of its weapons selection process, one needs to comprehend the principles of the group's distinctive methods of legitimization of such violence.

In the need to justify the killing of people inside an organization that had a strong aversion to causing the death of any living creatures, Asahara adopted a twisted version of the Tibetan tantric Buddhist concept of "*poa*." The principle is quite simple - the guru initiates violence, the disciples carry it out and its recipients benefit from it.[157] As in most terrorist attacks, the use of violence in this scenario is essentially altruistic, with the critical difference that the constituency in this case are not the sympathizers and the supporters on whose behalf the perpetrators claim to act, but rather the victims themselves. This is a critical distinction that makes Aum so unique. For the cult, the victims were not necessarily seen as an enemy whom one kills in hate or for symbolic value, but rather poor human beings that are going to be saved by being "poaed" -- the act of merciful killing will provide them with the opportunity for a more favorable rebirth on a higher spiritual plane in their next life. Under such circumstances, indiscriminately killing thousands of people is psychologically much easier than doing so as a part of a purely political strategy. This was especially true in Aum, where the violent act also included a self-sacrificial element, in the sense that the one who killed took the victim's bad karma onto himself.[158] No less important was the role of semantics – it might be hard for the cultists to carry out a pejorative act of "killing" or "murder," but if the victims are merely "saved" or "poaed" there can be no remorseful sentiment attached to such a noble undertaking.[159] In this way, Aum was able to accept its truly distinct targeting logic.

Overall, Aum's example seems to confirm the hypothesis that the more indiscriminate and more deadly targeting logic of the group under scrutiny, the greater the organization's propensity to innovation. Quite simply, Aum's desire to kill everyone but its own members in a short period of time helps in explaining the need for weapons capable of mass killing. Further, the unusually totalistic lack of discrimination in targeting mitigates any of the unattractive aspects of such weapons, making high technology mass destruction warfare the logical weapon of choice.

Attachment to weaponry

Another important variable with regards to Aum's approach to technological innovation appears to be the emotional/expressive "attachment to particular weaponry." For Asahara, the most important thing in life was his own grandiosity and uniqueness. His megalomania extended to all spheres of

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157 Jurgensmeyer, Mark, *Terror in the Mind of God: The Global Rise of Religious Violence*, (London: University of California Press, 2000) p. 114

158 Ibid. p .66

159 Kimura, op. cit., p. 56

Aum's grand plan including ideology and organization, but nowhere was it more apparent than in the area of weapons selection. First, there was the idea of acquiring nuclear weapons, which is not surprising considering the fact that Aum existed in the cultural context of the only country in the world that has been traumatized by direct experience of nuclear annihilation. Asahara was obsessed with Hiroshima in particular, and he used the city's name as the word to describe the event that would mark the end of the world. But Asahara's ambition went even beyond existing technologies; the guru frequently spoke of acquiring weapons that would make "atomic and hydrogen bombs look like toys." He was especially fascinated by futuristic arms that could kill on a large scale in order to provide an empirical "proof" of the accuracy of his own apocalyptic prophesies. In this category were plasma weapons, or the applications of microwave radiation of 4000 degrees Celsius which Asahara claimed could evaporate people without causing any destruction to a city, and super-powerful lasers which he claimed actually represented the "large sword" referenced in the Book of Revelation.[160] The final type of technology Asahara was truly longing for were seismological weapons that "could split the earth as a boy could split an apple."[161] In the pursuit of these arms, Asahara held a meeting with Nikolai Basov, the Nobel Prize winner for research on laser technology, and also sent a research team to Belgrade to collect information about the seismological research conducted by the brilliant Croatian scientist Nicola Tesla.[162]

The reality, however, was merciless and Asahara would have to manage with much less grandiose technologies, opting for the "poor man's nuclear bomb"-- chemical and biological agents. But besides their practicality stemming from the fact that their precursors were readily available and their weaponization required a seemingly attainable level of expertise, there appear to be additional expressive reasons behind this choice. For instance, Asahara reportedly had a deep admiration for Hitler and to a lesser extent Saddam Hussein.[163] Not only did the war machines of both of these leaders produce sarin; the Iraqi stockpiles also included mustard, VX, and *bacillus anthracis*, and the Nazis possessed phosgene and hydrogen cyanide (Cyclon-B). It should come as no surprise that Aum attempted to produce every single one of these agents. There is another fascinating hypothesis about the reasons behind Aum's selection of chemical and biological agents as the weapons of choice. Looking at the pattern of Aum's violent activity, virtually all of the cult's attacks used technologies that produced casualties without shedding blood.[164] This suggests a possible link between Aum and the already discussed *Thuggees,* the Indian Kali worshippers who believed that if they do not shed blood, their victims will go to paradise and thus used strangulation as its main operational method. According to David Rapoport, there is a possible association between the non-bloody killing methodology used by both groups, based on the fact that Shiva worshiped by Aum in Hindu mythology represents the consort of Kali, the goddess revered by the *Thuggees.*[165]

Overall, Aum's fascination with technological grandiosity and apocalyptically destructive weaponry was the most important driving force behind the cult's extremely innovative tendencies. This non-rational obsessive component extended even to the level of individual chemical agents, which the

160 Ibid p. 191
161 Kaplan and Marshal, op. cit., p. 225
162 Daly, op. cit., p. 14; Cameron, op. cit.,
163 Parachini, op. cit., p. 398
164 The only exceptions were the three 1995 assassinations using a gun, a knife and a parcel bomb, respectively. All of these incidents, however, took place during the desperate post-Tokyo subway attack stage, when Aum's leadership no longer had the luxury of clear strategic planning.
165 Rapoport David C., "Terrorism and the Weapons of the Apocalypse," *National Security Studies Quarterly*, Vol. 6, No.3 (1999) p.58

group called by nicknames such as Magic, Witch or Sally.[166] Particularly interesting was Aum's relationship with sarin. While clearly not the agent of choice until late 1993 following the failures with botulinum toxin and *bacillus anthracis*, the group's success with this agent in the Matsumoto attack transformed it into a worshiped entity. Consider these two poems from a 1994 pamphlet that was found at Aum's headquarters. Clearly, for Aum sarin meant more than a means to an end:

"Song of Sarin, the Magician"
"It came from Nazi Germany,
a little dangerous chemical weapon,
Sarin Sarin --,
If you inhale the mysterious vapor,
you will fall with bloody vomit from your mouth,
Sarin--, Sarin--, Sarin--, the chemical weapon.

"Song of Sarin, the Brave"
"In the peaceful night of Matsumoto City
People can be killed, even with our own hands,
The place is full of dead bodies all over,
There! Inhale Sarin, Sarin,
Prepare Sarin! Prepare Sarin!
Immediately poisonous gas weapons will fill the place.
Spray! Spray! Sarin, the Brave, Sarin.

External to the terrorist organization

Countermeasures

At the level of specific countermeasures as a possible trigger to the innovation process resulting from the need to overcome the barriers to the group's established tactics, there seems to be little relevance of this variable as a driving force behind Aum's decision to innovate. Since Aum's tactics were never effectively countered by target hardening, detection technology or other preventive countermeasures, the group was never forced to adapt to a new operational reality through the process of innovation. The reason behind this unusual dynamic has to do with the aforementioned fact that unlike other terrorist organizations, whose involvement in violence constitutes an overt act, Aum did not project the image of a violent entity and was never linked to violence before 1995. Further, given the nature of the technology selected by the cult and due to the absence of precedents in terms of terrorist attacks with such technology, most Aum attacks went completely unnoticed hence never triggering efforts by the government to employ countermeasures. As a result, it is clear that the reasons behind Aum's innovative practices lay outside the scope of this variable.

Relationship with other organizations

The hypothesis that competition among groups with similar ideologies and ambitions in the same operational theater would be associated with a higher level of innovation than in the case of indifference or cooperation among such groups seems to be confirmed in this case study. At the

[166] Kaplan and Marshal, op. cit., p. 121

same time, the fact that Aum's competition with other groups was an ideological and not an operational one, this factor contributes little to the explanation of Aum's extremely innovative tendencies.

Since its founding in 1987, Aum had displayed animosity toward every single one of the hundreds of various Japanese sects and cults, which is not surprising given the absolute nature of Aum's teachings claiming the monopoly on the "Supreme Truth" (*Shinrikyo*). Further, since the pool of cult prone individuals is limited, everyone who joined a rival group effectively deprived Aum of thousands of dollars in potential revenue. Aum's animosity toward other organizations transpired in various ways. For instance, Asahara would publicly despise and ridicule *Agonshu* -- the cult he was formerly a member of -- and used it to demonstrate how religious faith can be useless and even harmful. In another case Aum took on a the Institute for Research into Human Happiness with an abortive assassination of its leader Ryuho Okawa, also attempting to frame the rival cult as the perpetrator of the Tokyo subway attack by leaving a hate note signed by the group at the scene of the firebombing attack against its own headquarters. And finally, on at least two occasions Aum attempted to assassinate Daisaku Ikeda, the leader of Japan's largest cult, *Soka Gakkai*.[167] As we can see from these examples, the rivalry between Aum and other Japanese sects was fierce, which could lend itself to the hypothesis that Aum's extreme innovational drive could have been triggered by competition and the need to ostensibly differentiate itself from the others. But upon a closer look, such a hypothesis is only partially correct. On the one hand, Aum's ambition and drive to be unique did contribute to its innovative tendencies. On the other hand, none of the cults that Aum competed with were violent organizations, so Aum's uniqueness was already secured by the use of violence per se. As a result, there was little need for the cult to initiate tactical or technological differentiation at the level of terrorist operations as a means to differentiate itself, making it difficult to attribute the reasons behind Aum's innovativeness to this factor.

PREPARATORY BEHAVIOURS

Once the group has decided it wishes to innovate, there may be activities that the group needs to undertake in preparation, observable behaviors or conducts. In answering the question whether it would have been possible for counterterrorism specialists to observe and connect together the developments that made innovation possible, and what indicators would have enabled security specialists to anticipate the trajectory of innovation, two particular variables are relevant.

Dynamics of the struggle

Defined as the distinction between guerilla vs. urban warfare and high vs. low frequency of engagement, the "dynamics of the struggle" is one of the factors that show a mixed record in terms of determining Aum's innovation patterns. On the one hand, hidden behind the veil of a registered religious organization and in possession of several large pieces of land, Aum was effectively free to conduct whatever experiments it wanted without the fear of detection and intervention. From this angle, Aum resembled a guerilla group in that it was confident that it would not be challenged on its own turf, as demonstrated by the fact that the cult launched two of its most audacious attacks directly from the roof of its compound. Aum's growing confidence that it could get away with literally anything strengthened the audacity of its plans. Despite the fact that hundreds of complaints and

[167] Lifton, op. cit., p. 40

lawsuits had been filed against the group, all the evidence of Aum's fraudulent moneymaking schemes, presence of underage children in its compounds, repeated abnormal changes to the natural environment near its facilities, traces of chemical compounds detected at the site, and anonymous informant reports implicating Aum in the Matsumoto attack, the Japanese police had not taken any offensive steps against the group for a number of years. This can be ascribed to a number of reasons, including Aum's aggressive intimidation practices and media campaigns, immediate lawsuits against anyone who stood in the way, politically costly claims of religious persecution, and the fact that prior to 1995 the production of poison gas was not illegal. Taking into consideration that its innovative tendencies required dangerous experimental research, Aum could hardly ask for a more favorable security environment.

On the other hand, Aum's struggle dynamics also resembled those of an urban guerilla group, in the sense that following the accidental leaks from the Satian 7 facility the state authority's unrestricted access to Aum territory ultimately led to the cult's downfall. So in essence, Aum's ability to operate on its own turf with the freedom of a guerilla group combined with the vulnerability to state intervention of an urban terror group. As a result, Aum did not have much more breathing space than many other much less innovative organizations, making it impossible to attribute the group's proneness to innovation to this variable. In addition, since Aum did not participate in any sort of a reciprocal armed conflict with the adversary, it is clearly not possible to attribute its extreme innovative practices to the need of achieving comparative advantage on the battlefield.

Nature of the technology

The hypothesis associated with this variable is rather simple: the less challenging the weapons technologies that are the object of innovation, the greater the chances for success in this process. This inevitably brings us to the need to define "success." Not surprisingly, in Aum's case there has been little agreement on this issue. The assessments have ranged from labeling the group's activity a brilliant success that clearly proves the capability of modern day terrorists to use weapons of mass destruction, to cynical observations that in terms of cost-per-casualty ratio Aum was the least successful terror group in history. Objectively speaking, by far the most ominous aspect of Aum's activity was the question of how far the organization was willing to go in its quest to achieve a chemical and biological weapons capability. On the other hand, Aum's capabilities have certainly been blow out of proportion by the media, which never grasped the distinction between acquiring chemical or biological agents (which is easy), and transforming them into an effective weapon capable of producing mass fatalities (the most challenging task). In this light it would be difficult to judge Aum's endeavors as anywhere near successful - given the organization's goal of bringing about the Armageddon, the cult' achievements were absolutely pathetic.

On the practical level of the nature of the technology, Aum combined brilliance with childish amateurism. Aum's botulinum toxin, for instance, failed to kill even rats during tests, and still the group proceeded to use it. The anthrax program consisted only of a harmless veterinary strain of *bacillus anthracis* dispersed by an inefficient delivery system with clogging problems, as documented by the testimonies of neighbors who reported seeing jellyfish-like material in the street.[168] Despite reports of the contrary, Aum never obtained Ebola, nor did it possess any equipment to grow it. Similarly, the cult never acquired Q fever, but only diagnostic kits for the disease.[169] Aum's tabun,

[168] Rosenau, op. cit., p. 294
[169] Smithson and Anne-Levy, op. cit., *p.* 77

mustard, phosgene, and soman programs did exist, but none of the agents was ever produced in sizable quantities.[170] In this sense, the sophistication of the technology that Aum was looking into directly correlated with Aum's lack of success. Aum did have specialists who understood the theoretical formulas acquired from open source literature, but clearly lacked the tacit knowledge associated with chemical and biological weapons production, not to mention safety regulations.

To sum up, in its efforts to bring about the Armageddon Aum explored many hi-tech options, including futuristic technologies that have yet to be invented. And while Aum's efforts are to some extent laughable, it was only the extremely sophisticated nature of the technology at hand that stood in the cult's way of causing a much greater carnage. Just imagine the level of casualties Aum could have inflicted had it invested its resources, passion and expertise into the production of more simple technologies, such as truck bombs. In this sense, Aum's lack of success correlates closely with the "nature of the technology" variable.

CONCLUSION

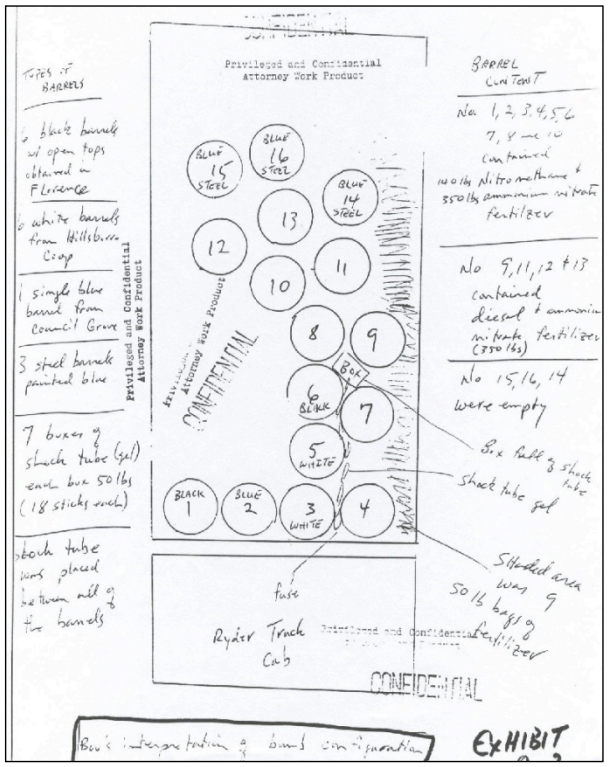
Aum Shinrikyo serves as a prime example how a cult of disciplined devotees led by a megalomaniac leader can approach a terror campaign with unparalleled grandiosity and optimism. Constituting by far the most notorious group in terms of involvement with CBRN, Aum serves in many ways as the prototype of a "superterrorist" organization for the future. However, there are several characteristics that make Aum absolutely unique, as evidenced by the fact that even 15 years after the Tokyo subway gassings we have yet to witness another comparable incident anywhere in the world.

As observed throughout this chapter, several variables in particular have served as the key underlying factors responsible for Aum's uniquely innovative tendencies. The first such factor was the cult's distinctive ideology, which provided a highly effective means for justifying mass-casualties, as well as providing an inherent attraction to the adoption of high-technology weapons. In combination with the strategic objective of bringing about the end of the world, the group naturally looked for weaponry that was perceived as capable of delivering such massive destruction. Unlike most terrorist organizations which generally rely on attracting popular support from some segments of the population the grievances of which they claim to represent, Aum was not interested in popularity but instead strove to recreate the world from scratch. Consequently, the group did not pursue the means to carry out merely symbolic acts of violence that would spread fear and mobilize the population; the group's ambition was to acquire technologies that would enable the destruction of the world in order to save it. Another decisive factor behind Aum's extreme innovativeness was the attachment to using weapons that would kill without shedding blood as a part of the justification for creating mass casualties, as well as the group's inherent fascination of with various poisons, lasers, seismological, and plasma weapons. In combination with Asahara's megalomania, his uncontested position within the cult, and the group's unusually high tolerance for risk taking, the above factors combined for a lethal matrix that triggered the decisive motivational push toward innovation. The group was then further aided by an absolutely unparalleled level of human and material resources, which allowed Aum to come closer to reaching the dreaded overlap between the motivation and the capability to bring about mass destruction than any other group in history. And finally, the fact that Aum had the privileged status of a religious organization gave it enough breathing room within Japanese society to freely conduct their experiments and even actual attacks without being detected by the authorities.

[170] Ibid. p. 81

APPENDIX VIII: MARK HAMM, TIMOTHY McVEIGH & THE OKLAHOMA CITY BOMBING

Before questions on Innovations in Weapons of Mass Effect Terrorism can be addressed in the Oklahoma City bombing case, it is first necessary to describe the weapon used there. The following description is based on three sources: (1) spoken admissions of Timothy McVeigh made during an interview with his defense team in May 1995 at the El Reno federal prison in Oklahoma, and journalist Lou Michel's April 1999 interview with McVeigh at the federal Administrative Maximum Facility in Florence, Colorado; (2) a sketch of the bomb provided by McVeigh to his lawyers during the 1995 interview (presented below); and (3) interviews with two mining officials familiar with the construction of an ammonium-nitrate fertilizer bomb, also known as the ANFO bomb.[171]



In the cargo hold of McVeigh's rented Ryder truck were 13 large plastic barrels of various colors (six white, six black, and one blue). Near the rear of the cargo area were three empty blue steel barrels. McVeigh told his attorneys that the empty barrels "were placed at the rear of the truck to act as decoys." This was perhaps a ruse intended to confuse investigators when they later tried to understand what was used to contain the bomb mixture (plastic or steel), suggesting that a good deal of forethought went into the bomb's construction. Also in the back were composite materials that had been stored for months in a rental locker in Herrington, Kansas: 108 bags of high-grade ammonium nitrate fertilizer weighing 50 pounds each, a quantity of diesel fuel, and three 55-gallon drums of liquid nitro-methane. Beside these materials sat two sets of nonelectrical Primadet blasting caps and 350 pounds of Tovex Blasterite Gell, what McVeigh called "sausages" which had been transported to Kansas from a storage unit in Kingman, Arizona.

McVeigh indicated that the 13 plastic barrels were nailed onto the floor of the truck (holding them in place) in the shape of a J, or a shape charge—which would direct the force of the blast laterally at the ground floor of the Oklahoma City federal building—as reflected in McVeigh's sketch. The J configuration also served to distribute the load to prevent an axle from breaking or even worse, flipping the truck over. Using plastic buckets and a bathroom scale, McVeigh poured 350 pounds of ammonium nitrate into the barrels, and then 140 pounds of nitro-methane was pumped in on top. (It is assumed that mixing paddles were then used to stir the concoction.) After mixing nine barrels, however, McVeigh discovered that the supply of nitro-methane had been exhausted, so diesel fuel

171 Mark S. Hamm, *In Bad Company: America's Terrorist Underground* (Boston: Northeastern University Press, 2002); Lou Michel and Dan Herbeck, *American Terrorist: Timothy McVeigh and the Oklahoma City Bombing* (New York: Regan Books, 2001).

was added to the mixture in the remaining four barrels to complete the task. Suggesting that the operation was not so well-planned after all, McVeigh said the bomb was built in a hurried fashion. "The mixture in the diesel barrels was not mixed well," he said. "There was not time." McVeigh further explained that "*they*" (he and his accomplice or accomplices) found themselves with nine extra bags of fertilizer, which were left unopened and stacked along the driver's seat side of the cargo hold.

McVeigh stated that the Tovex sausages were placed in and around the plastic barrels to act as "boosters" for the bomb. McVeigh said that he walked around the configuration, using his knife to pierce the sausages so that the blasting caps could be inserted. These blasting caps were crucial to the bomb. Once inserted into the Tovex, they would need to fire with millisecond precision in order for the weapon to work. Finally, the blasting caps were connected to two time-delayed fuses running into the truck's cab through a predrilled hole. All told, the bomb weighed roughly 7,000 pounds. Experts believe that at least one experienced bomb builder—a skilled "blaster"—was needed to ignite the rounds of blasting caps with the precision required to detonate the configuration of barrels. Termed "fusing the rounds," this was the most difficult step in the terrorist innovation witnessed in Oklahoma City.

Question 1: What factors internal and external to the terrorist organization motivated tactical or/and strategic innovation? What were the incentives to innovate?

McVeigh has been described as both a lone-wolf terrorist who had nominal help from Terry Nichols, and a domestic terrorist involved in a wider conspiracy. Whatever the case, few would dispute the fact that McVeigh was profoundly influenced by the American radical right of the early 1990s. This movement would come to shape the tactical and strategic innovation in Oklahoma City on April 19, 1995. It would also provide McVeigh with the incentive to innovate by promising him a lauded place in movement history.

The history of the Oklahoma City bombing can be traced to an Arkansas-based survivalist group known as the Covenant, the Sword and the Arm of the Lord (CSA), founded by Christian Identity pastor James Ellison in the late 1970s and active until Ellison's arrest and imprisonment following an FBI siege on his compound that began on April 19, 1985. In 1980, Ellison attracted to his flock a burly 49-year-old racist with financial problems named Richard Wayne Snell, later diagnosed by a court-appointed psychiatrist as suffering from a "paranoid personality disorder" that manifested itself in a conspiratorial view of history.[172] In 1982, after years of personal and professional setbacks, Snell came into conflict with the IRS over back taxes. Snell was served an arrest warrant and hauled into court by the IRS, where they obtained an order to seize his personal property. A combined IRS and FBI task force raided Snell's property and impounded his home, land, and vehicles. Snell would never forget the agents who had humiliated him. Nor would he forget where they worked—at the Alfred P. Murrah Federal Building in Oklahoma City.

Snell made his debut as an American terrorist on November 2, 1983, when he and two other CSA members attempted to bomb a natural gas pipeline near Texarkana, Arkansas, believing that the pipeline was the major feeder from the gas fields of the Gulf of Mexico to metropolitan Chicago, with its cold winters and vast black and Hispanic populations. The dynamite dented the pipe but

[172] Mark S. Hamm, *Terrorism as Crime: From Oklahoma City to Al-Qaeda and Beyond* (New York: New York University Press, 2007).

failed to rupture it. Then on November 11, Snell robbed a pawnshop in Texarkana, killing the shop's owner, assuming him to be Jewish (he was not).

Around this time, Snell took a step toward avenging his personal hatred of the federal government. Consistent with a plot described in William Pierce's 1978 novel, *The Turner Diaries* (in which a terrorist organization called "The Order" destroys FBI headquarters in Virginia with a 5,000 pound ANFO bomb), Snell's plan called for a Weapon of Mass Effect—something that had never been seen in America before. According to court documents, Snell came to James Ellison and asked him if "in his opinion…it [would] be practical to blow up a federal building in Oklahoma City." This discussion evolved into a plan to park a truck in front of the Murrah Building and blow it up with rockets detonated by a timer. Snell and Ellison subsequently traveled to Oklahoma City where, posing as maintenance workers, they entered the Murrah Building and assessed what it would take to destroy it (Thomas and Smothers, 1995). After casing the building, Ellison designed a remote-controlled bomb and asked CSA's weapons expert—Kent Yates, a Vietnam War veteran with explosives training—to assemble it for him. In December 1983, Yates went to work on the device. In one of his first test runs, however, a rocket blew up in Yates's hands, burning them severely, thereby ending CSA's plot to bomb the Murrah Building.[173]

On the morning of June 30, 1984, Snell was involved in a spectacular shootout with an Arkansas state trooper. Snell killed the officer with four shots to the mid-section and was apprehended that afternoon in a second police shootout that left Snell seriously wounded with multiple gunshot wounds. In 1985 Snell was found guilty of capital murder and condemned to death at the Arkansas State Prison under executive order of then-Governor Bill Clinton. In February 1988, Snell was taken from death row under heavy security to Fort Smith, Arkansas, where along with Ellison and members of the CSA and the Order he was tried for sedition.

During the course of James Ellison's testimony at the Fort Smith sedition trial, he revealed details about Snell's 1983 plan to bomb the Murrah Building. The story was picked up by the Associated Press and relayed to newspapers nationwide, including one in the small town of Decker, Michigan, where the article was read by a disgruntled farmer named James Nichols, Terry's brother, who stored it in his tool shed for later reference.[174] [175]

This history is important for understanding internal organizational factors leading to the innovation. Equally important are a set of interrelated external factors that served to galvanize the radical right during the early 1990s, making the movement more focused and more belligerent. First came the 1992 siege at Ruby Ridge, Idaho, resulting in the deaths of Randy Weaver's wife, his 14-year-old son, and their Labrador retriever. Within the hard right, the outpouring of sympathy for the Weaver family was rivaled only by the movement's contempt for federal law enforcement. McVeigh was firmly in this grain. In September 1993, McVeigh caught the attention of an undercover Phoenix police officer at a gun show in Memorial Stadium, who reported that on McVeigh's table were copies of *The Turner Diaries* and a "Wanted" poster for FBI agent Lon Horiuchi, the sharpshooter who had killed Vickie Weaver a year earlier at Ruby Ridge while holding her baby.[176]

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173 Kerry Noble, *Tabernacle of Hate: Why They Bombed Oklahoma City* (Prescott, Ontario, Canada: Voyageur, 1998).

174 Mark S. Hamm, *Apocalypse in Oklahoma: Waco and Ruby Ridge Revenged* (Boston: Northeastern University Press, 1997).

175 The yellowed article about Snell's plot was seized by FBI agents in their raid of James Nichols's farmhouse after the bombing in Oklahoma City.

176 Hamm, *Apocalypse in Oklahoma.*

The second influence was Waco and it had a staggering effect on the radical right, instantly creating the American anti-government militia movement. McVeigh's sympathy for the Branch Dividians is well-documented. He traveled to Waco to protest the siege in March 1993; he openly wept as images of the burning compound flashed across the television screen during a stay at the Nichols farm in Decker on April 19, 1993; and he took revenge against the government's actions at Waco by bombing the Oklahoma City federal building on April 19, 1995 because he thought high-ranking ATF and FBI officials had offices there. And then there was Richard Snell.

In 1995, Snell would emerge as the grand old man of the radical right. From his death row cell Snell was publishing a newsletter, *The Seekers*, deploring the federal government's actions at Waco and Ruby Ridge. On March 9, Snell's death row appeals ran out and Arkansas Governor Jim Guy Tucker ordered that the execution be carried out one month from the next working day: April 19, 1995. As a result of this decision, Richard Wayne Snell—originator of the plan to bomb the Oklahoma City federal building and now about to die by an executive order signed by none other than Bill Clinton, universally reviled in the militia movement for the bloodbath at Waco—became a martyr of the radical right.

The upcoming execution caused a flurry of activity within the militia movement. Especially important was John Trochmann, founder of the Militia of Montana, who urged readers of his *Taking Aim* newsletter to notice of the date set for Snell's execution. "If this date does not ring a bell for you," he wrote, "maybe this will jog your memory."

> *1. April 19, 1775: Lexington burned*
> *2. April 19, 1943: Warsaw burned*
> *3. April 19, 1992: The feds attempted to raid Randy Weaver*
> *4. April 19, 1993: The Branch Dividians burned*
> *5. April 19, 1995: Richard Snell will be executed unless we act now!!*[177]

Death penalty scholars refer to the "brutalization effect" of capital punishment. This means that the death penalty, instead of deterring future murders, causes homicide rates to increase in the immediate periods before and after an execution. But no one has ever contemplated the brutalization effect on political criminals.

At 9 P.M., April 19, 1995—as rescue workers were pulling dead bodies from the wreckage of the Murrah Building—the execution team led Snell to the death chamber, strapped him to a gurney, hooked him up to the lethal injection machine, and killed him.

Question 2: What were the leadership and organizational requirements for innovation? Did top leaders within the organization drive innovation or did aspiring terrorist entrepreneurs outside of the leadership hierarchy drive it? Did the structure of the organization shape in any way the pace of innovation or receptivity to it?

By most accounts, McVeigh was not affiliated with any organization. There is certainly no evidence that he ever met Snell, Ellison or anyone else at the CSA encampment. To be sure, McVeigh designed his plan to bomb the Murrah Building in September 1994, months before Snell's execution

[177] Hamm, *Apocalypse in Oklahoma*, 31.

date was announced. Yet as the preceding history suggests, McVeigh's innovation was likely inspired by Snell in the sense that McVeigh completed an act of "unfinished business" for the most extreme elements of the radical right. In so doing, McVeigh became a terrorist entrepreneur for the radical right, driven by both the movement's mythology and McVeigh's personal desire for recognition within the movement. Waco, Ruby Ridge, Snell's plot and execution, and the legend of April 19—it all came together in a perfect storm giving Timothy McVeigh the once-in-a-lifetime opportunity to make a symbolic statement of historic proportions: An act of violence that would actually trip the switch necessary for a second American Revolution. McVeigh's innovation had more to do with an angry, bellicose social movement than it did with any specific organization. But that does not mean that organization was unimportant.

McVeigh's innovation emerged from the tradition of leaderless resistance, white supremacist Louis Beam's vision of a heroic freedom fighter acting as an independent agent. Under this model, freedom fighters operate in phantom cells, without any central control or direction; hence, a person active in one cell would have almost no knowledge of individuals who are active in other cells. Like the fictional Earl Turner of *The Turner Diaries*, the new American revolutionary would be a man with no family or friends. He would lead a grim existence, void of love, and harbor a bitter hatred for his government. Aided by one or two others, such a man could wreak profound havoc upon the enemy if he followed several crucial precepts: the avoidance of conspiracy plots among cell members; the rejection of "feebleminded malcontents"; and camouflage—that is, the ability to blend into the public eye.

The leaderless resistance model is useful for understanding McVeigh's relationships with other movement figures. At the many gun shows he attended between 1992 and late 1994 (80 by his count), at Elohim City, the Christian Identity enclave in Muldrow, Oklahoma, where McVeigh was a visitor (Snell was buried there on April 20, 1995), and at the various militia meetings he attended in the Midwest, McVeigh was known by the alias "Tim Tuttle." Those who knew McVeigh didn't really know him at all, and vise-versa. This anonymity, a mainstay of leaderless resistance which operates on a "need to know" basis, may answer an even more fundamental question: Who actually designed and built the WME used in Oklahoma City? It is unlikely that McVeigh had the skill to do this, at least not by himself.

In his interview with Lou Michel, McVeigh claimed that he learned to make bombs in the army. Yet interviews with McVeigh's commanding officers in Iraq, Fort Benning, Georgia (where McVeigh went through boot camp) and at Fort Riley, Kansas, (where McVeigh was stationed before his deployment to the Persian Gulf), all indicate that McVeigh had no explosives training whatsoever.[178] McVeigh told his lawyers a different story: That he learned techniques of bomb building from *The Turner Diaries* which makes reference to the *Homemade C4* manual published by Paladin Press, which McVeigh also read.[179] Yet neither book says anything about fusing the rounds of an ANFO bomb. Terry Nichols would later confess that McVeigh was primarily responsible for building the bomb, and that in addition to the *Homemade C4* manual, McVeigh had read other books on explosives as well. Even so, there is little forensic evidence supporting the claim that McVeigh built the weapon. Lab tests conducted after the bombing indicated that McVeigh's clothing and boots contained no evidence of ammonium nitrate, nitro-methane, fuel oil, or blasting caps: No evidence despite the fact that McVeigh wore these boots and clothing on April 18 when he mixed 7,000 pounds of toxic

178 Andrew Gumbel, Author interview, 10 June 2010.
179 Hamm, *In Bad Company*.

chemicals and explosives. The only explosive residue the experts found were traces of PETN (the chemical compound in Tovex) in McVeigh's pants pockets, and on his knife and ear plugs.

Question 3: When and in what context did innovation occur in the evolutionary cycle of the terrorist group? Were there any particular accelerants of innovation such as technological change, social and/or political contexts, ideological shifts, state sponsorships or/and security countermeasures?

In the case of Oklahoma City, there was no "terrorist group"—that being the whole point of leaderless resistance—although some researchers suspect that McVeigh was actively assisted by a paramilitary gang out of Elohim City involved in an unprecedented string bank robberies as well as a 1992 assassination attempt on the life of President George H.W. Bush. Whatever one thinks about this theory, there is little doubt that the sieges at Waco and Ruby Ridge, combined with the FBI's reluctance to admit wrongdoing in those tragic confrontations, fueled a virulent hatred of the federal government that unified previously isolated voices within the extreme radical right movement. As a result, the scores of clandestine paramilitary cells that flourished in the aftermath of Waco and Ruby Ridge formed a loosely knit underground network with a shared goal to violently overthrow the U.S. government. The terrorist innovation in Oklahoma City was born of that discontent.

Question 4: Was the catalyst for innovation more a result of pressures internal or external to the terrorist organization?

The primary catalyst for Oklahoma City—and arguably the catalyst for all right-wing terrorism in America—can be traced to internal pressure. More than one scholar has noted that American terrorism is premised on a pipedream which manifests itself in a fantastic showcasing of imagery and style. This is what makes American terrorists unique. Islamic jihadists would never dream of using appearances or panache to make ironic statements about their violence. They are too fatalistic for that. American terrorists are just the opposite. They present themselves to the world as entertainers, thereby turning terrorism into high theater.

One needs only to make a cursory review of McVeigh's pre-bombing behavior to appreciate this phenomenon. On Monday, April 17—some forty hours before the attack—McVeigh rented the Ryder truck that would carry the innovation. He did so by using a bogus driver's license for one Robert Kling of Redfield, South Dakota. "Kling's" license had been issued on April 19, 1993; and his date of birth was listed as April 19, 1970.[180] Evidence suggests that, on the morning of April 19, 1995, McVeigh was deeply interested in creating a mythology that would outlive him. He approached the Murrah Building in the bomb-laden Ryder truck dressed in an outfit that showcased his intentions. McVeigh wore a white T-shirt with these words from a Thomas Jefferson speech printed on the back: *The tree of liberty must be refreshed from time to time by the blood of tyrants and patriots.* Emblazoned across the front was a picture of Abraham Lincoln above the inscription *Sic Semper Tyrannis* (Thus always to tyrants). That was the line uttered by the famous stage actor John Wilkes Booth after he assassinated President Lincoln at Ford's Theater. In the truck's cab, McVeigh had a collection of anti-government documents sealed inside a white envelope. If he were to be captured or killed after the bombing, McVeigh hoped that the documents would be leaked to the media, and his beliefs would therefore be broadcast to the world. Among those items was a copy of *The Turner Diaries* with a number of underlined passages, including: "The real value of our attacks today lies in

[180] Hamm, *Apocalypse in Oklahoma.*

the psychological impact not in the immediate casualties." Explaining the emotional drive behind such an inflated sense of self-worth, a Drug Enforcement Administration agent later told me that, on the morning of April 19, McVeigh was tweaking on crystal methamphetamine.

With these signifiers, McVeigh reached for the same star that has attracted American terrorists from John Wilkes Booth and Jesse James to Robert Mathews of the Order: *celebrity*. For McVeigh, the need to be famous was so strong that it trumped his ideology, his purpose and his mission. This craving for attention was the true motivating factor behind the terrorist innovation in Oklahoma City.

Question 5: Looking back, would it have been possible for counterterrorism specialists to observe and connect together the developments that made innovation possible? What indicators would have enabled security specialists to anticipate the trajectory of innovation?

Armed with 20/20 hindsight, one event stands out in the trajectory of innovation as a missed opportunity for law enforcement.[181] In late September 1994, McVeigh and Terry Nichols started gathering materials for their innovation. Most were purchased without question in farm supply stores around central Kansas as a routine activity common to the community. Yet McVeigh and Nichols were unable to buy the high-powered explosives. So they stole them.

At the time, Nichols was working as a farm hand at the Hayhook Ranch in Marion, Kansas. His wife had recently left him, taking their child, leaving Nichols alone and depressed in a small house near the ranch. Experiencing financial problems as well, Nichols spent most of his free time listening to the bitter anti-government rhetoric on talk radio. He had also developed a local reputation for his extremism. Back on March 16, Nichols had filed an affidavit with the Marion County attorney formally renouncing his U.S. citizenship. The affidavit was signed by Nichols and two witnesses. At the bottom of the document, Nichols listed 30 recipients of the affidavit, including President Clinton, FBI Director Louis Freeh, the Director of the Kansas Highway Patrol, and Marion County Sheriff Edward Davis.[182] The attorney placed the affidavit in what he called his "weirdoes file" and forgot about it. Nichols's employer, Hayhook owner Jim Donahue, also took notice of Nichols's unusual political views. "He began quoting Thomas Jefferson," Donahue recalled, "something about the responsibility of patriots to fight the government."

McVeigh arrived at the Hayhook Ranch on or about September 26 and moved into the house with Nichols. Over the next two days they bought the fertilizer and other material from the farm stores and stored them in a Harrington rental unit. On September 30, Nichols quit his job at the Hayhook, telling Jim Donahue that he was "going on the road with McVeigh."

On October 3, McVeigh and Nichols broke into the Martin Marietta Rock Quarry 12 miles from the Hayhook Ranch and stole 299 Tovex sausages, 99 roles of Primadet nonelectrical blasting caps, and 544 electrical blasting caps. It is important to note three facts here. First, these explosives were extremely dangerous and their theft should have been a top law-enforcement priority. It was not. Second, the crime should have set off alarm bells in the FBI's counter-terrorism division. A decade earlier, for example, West Germany's Red Army Faction broke into a Belgium stone quarry and stole

[181] The following account is based on Hamm, *Apocalypse in Oklahoma*, 179-185, and Opening Statement by Prosecutor Joseph Hartzler, April 24, 1997, *USA v. Timothy James McVeigh*.

[182] Affidavit of Terry Lynn Nichols, March 16, 1994. Accessed at http://www.lectlaw.com/files/cas35.htm

a cache of explosive later used in a bombing.[183] And third, when it came to common criminality, McVeigh and Nichols were amateurs. Not surprisingly, they would make a mistake.

To enter the Quarry, McVeigh and Nichols used a battery-powered Makita drill to open five padlocks on the Quarry gate. One of these padlocks they left behind after the burglary. During his investigation of the theft, Marion County Sheriff Ed Davis found the padlock and stored it as evidence. He would provide the padlock to the FBI *after* the Oklahoma City bombing, once a connection was made between the theft and the innovation. What might have happened had Sheriff Davis pursued his investigation, not with more vigor, but with the minimal level of competence expected of law enforcement?

Marion, Kansas, is a small, insulated farming town with a population of only 2,000. The majority of its residents are local people, raising families or enjoying retirement. Everyone knows everyone. Single males in their twenties, especially those from out of town, are a demographic anomaly. Two single males from out of town living in the same house are rarer still. Crime in Marion is almost nonexistent. When a crime does occur, police focus their investigation on the anomalies—single guys in their twenties from out of town. And like all small towns, everyone in Marion knows everyone else's business. Terry Nichols's business as an anti-government zealot was not only well known to the citizens of Marion, it was well known to local law enforcement, including Sheriff Davis who was now responsible for investigating the Quarry theft. Remarkably, Nichols was never considered a suspect.

It doesn't take Sherlock Holmes to figure out that Sheriff Davis should have questioned Nichols about the Quarry break in. Upon learning that Nichols had fled the Hayhook, Davis could have opened an investigation into the whereabouts of Terry Lynn Nichols and this "McVeigh" fellow that was staying with him around the time of the burglary. It is also painfully obvious that Davis should have examined the padlock for fingerprints, which may well have appeared in the dusting process. In order to break the padlock, either McVeigh or Nichols had to use their hands to insert a series of drill bits into the lock until they could find a match between their chosen bit and the lock's impression. This is time-consuming, close-quarter work that does not lend itself to the wearing of gloves for concealing fingerprints. As army vets, the fingerprints of both Nichols and McVeigh would have been on file in their military dossiers.

Question 6: Looking forward, what does our case tell us about how innovation in terrorism takes place and how might it inform future efforts to forecast emergent advances in terrorist methods of attack, especially the use of WME?

A proper investigation of the burglary could have brought the terrorist innovation to ground. It would not have been that difficult to find McVeigh and Nichols at this point. After the burglary, McVeigh and Nichols drove to Kingman where they hid the explosives in a storage unit on October 4. McVeigh then checked into a seedy motel on Route 66 while Nichols drove to Las Vegas where he stayed with his first-ex wife, Lana Padilla, a real estate agent whose name and address were listed in the yellow pages.

The upshot of this case study is that terrorists are not "criminal masterminds." Their organizations are full of contradictions, inconsistencies, and weaknesses. When investigators concentrate on

[183] Hans Josef Horchem, "The Decline of the Red Army Faction," *Terrorism & Political Violence* 2 (1991).

common crimes committed by these groups, they may preempt larger, more sophisticated events. Terrorism thrives in places where law enforcement fails to do so. This represents a significant departure from most terrorism studies which tend to emphasize broader factors such as global politics, religious movements, and a host of grievances associated with ethnic and nationalistic strife. Other studies explore the personal pathologies of terrorists as well as the social pulls and pressures that influence the organizational dynamics of terrorist groups. Very quickly, terrorism can become an overwhelming subject for anyone charged with combating it.

I am suggesting an entirely different approach by arguing that terrorism is first and foremost a criminal matter. Although the criminal methods used by terrorist groups range from the highly sophisticated to the most basic, they all serve a common purpose: the crimes provide *logistical* support for terrorism. That is, crimes are committed to provide terrorists with material, money, safe havens, travel and other resources. Far from being mere accouterments strapped onto the terrorist's agenda, these crimes are the lifeblood of terrorist groups. Without the burglary of explosives from the Quarry in Marion, Kansas, there would have been no Weapon of Mass Effect in Oklahoma City.

APPENDIX IX: ASSAF MOGHADDAM, TERRORIST INNOVATION: THE CASE OF 9/11

I: 9/11 AS A WME EVENT

In 2006, the Homeland Security Advisory Council defined Weapons of Mass Effect (WME) as weapons "capable of inflicting grave destructive, psychological and/or economic damage."[184] A DTRA study outlined six dimensions of a terrorist attack, any one of which would result in mass effect.[185] The juxtaposition of these six dimensions with the impact of the terrorist attacks on the U.S. homeland of September 11, 2001, in Table 1 below, leaves no doubt that the effects of 9/11 cover all six dimensions.

Table 1: 9/11 as a WME Event

Dimensions of a WME Event	Effects of 9/11 Attacks
At least 1,000 fatalities	2,976 fatalities
Devastation in excess of 1 square mile in an urban setting	Over 1.07 square mile of office space damaged or destroyed in New York alone[186]
Damage or destruction to at least one critical facility, be it a power plant, government center, transportation hub or control system	Destruction of critical financial infrastructure (World Trade Center) and damage to a government center (Pentagon)
Loss of at least $10 billion to the U.S. economy	Estimates ranging from $35-500 billion[187]
A significant interruption in services, industries or quality-of-life functions	Nation-wide shutdown of U.S. airspace lasted from September 11 to September 14, 2001
A manifest "degree of terrorism"—a qualitative, subjective but nevertheless present psychological and/or emotional impact on the population	Significant evidence of post-traumatic stress disorder recorded among by-standers and spectators of the 9/11 events[188]

184 Homeland Security Advisory Council, "Weapons of Mass Effect Task Force on Preventing the Entry of Weapons of Mass Effect into the United States," 10 January 2006, 10. Available at http://www.dhs.gov/xlibrary/assets/hsac_wme-report_20060110.pdf, last accessed 1 July 2010.

185 William C. Yengst, "Part 5: Next Generation Weapons of Mass Effects," in Lewis A. Dunn, et.al., *Next Generation Weapons of Mass Destruction and Weapons of Mass Effect Terrorism*, DTRA Report, January 2008, 4-5.

186 According to a 2002 report of the NYC State Comptroller's office, 30 million square feet (1.07 square miles) of office space was damaged in New York alone, including 13 million square feet of Class A office space. This figure does not include "other space, such as the Marriott Hotel at 3 World Trade Center, retail stores, or nearby areas that were covered with ash, suffered broken windows, and had to be evacuated to permit repair of the damage." William C. Thompson, Jr., "One Year Later: The Fiscal Impact of 9/11 on New York City," September 2, 2002, 3-4.

187 The true financial impact of the 9/11 attacks is incalculable, but is clearly far higher than the $10 billion set by the HSAC to define a WME attack. The NYC Comptroller's Office has set the immediate financial impact on New York City alone, in terms of property damage and deaths of individuals in the buildings and on the ground, including those who died in the rescue effort, at $30.5 billion. Thompson, "One Year Later," 2. The Royal Institute of International Affairs estimated the total financial damage of the 9/11 attacks at $500 billion. A recent study by the National Center for Risk and Economic Analysis of Terrorist Events (CREATE) estimates that the impact of the September 11 attacks on the U.S. economy ranged from between $35-109 billion. "News Release: Study Finds Economic Impacts of 9/11 Attacks Less Than Previously Estimated," University of Southern California, 9 July 2009. Available at http://www.usc.edu/uscnews/newsroom/news_release.php?id=593, last accessed 1 July 2010.

188 M.W. Otto, et.al., "Posttraumatic Stress Disorder Symptoms Following Media Exposure to Tragic Events: Impact of 9/11 on Children at Risk for Anxiety Disorders," *Journal of Anxiety Disorders* 21 (2007); G.A.

II: 9/11 – THE INNOVATION OF 9/11

The 9/11 attacks were clearly highly consequential, but were they also an innovative act of terrorism? According to Adam Dolnik, innovation entails the "introduction of a new method or technology or the improvement of an already existing capability." He includes in his definition situations in which "a terrorist organization develops or discovers a new technology or tactic of which it was previously unaware (radical innovation), as well as situations where the group improves in the use of technology or tactic it already possesses (incremental innovation) … In the broader context of terrorism, innovation should therefore be understood as the use or preparations to use a tactic and/or technology that had not been adopted by any other terrorist organization prior to that moment."[189] Dolnik adds that incremental innovation—i.e., the improvement in the use of traditional tactics by terrorist organizations—appears to have been more significant in advancing tactics and technologies.[190] He also cites an emerging trend of a growing "emphasis of modern terrorism on technologically crude modes of attack, as documented by the global rise of suicide bombings."[191]

Martha Crenshaw defines innovation as the "adoption of new patterns of behavior"[192] and further distinguishes between strategic, tactical, and organizational innovation. Strategic innovations involve the development of new innovations required to implement new strategic objectives of the group. Tactical innovations entail significant shifts in technologies and techniques of terrorism without a concomitant change in objectives, while organizational innovation involves novel ways of group organization or inventive methods to reach new recruits. The 9/11 attacks would arguably fall somewhere between strategic and tactical innovations.[193]

Precursors of the 9/11 Attacks

It is safe to assume that to many who watched the images of the planes' impact on the North and South Towers of the World Trade Center on 9/11, the tactic of hijacking an airplane and subsequently crashing it on a target on the ground seemed novel, but Al-Qaeda's seemingly ingenious idea was not entirely without precedent. Dolnik counts no less than 22 occasions between 1973 and 2001 when individuals or organizations entertained ideas to fly aircraft into buildings.[194] In

Bonanno, et.al., "Psychological Resilience After Disaster: New York City in the Aftermath of the September 11th Terrorist Attack," *Psychological Science* 17 (2006); S. Galea, et.al., "Psychological Sequelae of the September 11 Terrorist Attacks in New York City," *New England Journal of Medicine* 346 (2002); W. E. Schlenger, et.al., "Psychological Reactions to Terrorist Attacks: Findings from the National Study of Americans' Reactions to September 11," *Journal of the American Medical Association* 5 (2002); R. Zimering, et.al., "Posttraumatic Stress Disorder in Disaster Relief Workers Following Direct and Indirect Trauma Exposure to Ground Zero," *Journal of Traumatic Stress* 19 (2006).

189 Adam Dolnik, *Understanding Terrorist Innovation: Technology, Tactics, and Global Trends (Oxon, UK: Routledge, 2007)*, 6.

190 Ibid., 56.

191 Dolnik, *Understanding Terrorist Innovation*, 57.

192 Martha Crenshaw, "Innovation: Decision Points in the Trajectory of Terrorism," Paper Presented at the Conference "Trajectories of Terrorist Violence in Europe," Harvard University, March 2001, 3.

193 The 9/11 attacks do not seem to fall squarely in the category of strategic innovation because these attacks were not the first attacks underscoring Al-Qaeda's strategic shift toward targeting the "far enemy," which occurred in the mid-1990s. The attacks on the U.S. embassies in Kenya and Tanzania in August 1998 were far more strategically "innovative" in that regard. That said, the dramatic and spectacular success of the 9/11 attacks had a far greater impact in clarifying Al-Qaeda's new strategic shift towards targeting the West than the embassy bombings had, making them much more strategically successful than the embassy bombings.

194 Dolnik, *Understanding Terrorist Innovation*, 39-40.

December 1994, for example, an Algerian terror cell associated with the Armed Islamic Group (GIA) hijacked a French plane en route from Algeria to Marseille and intended to crash it into the Eiffel Tower. Another idea, according to a Philippine interrogation report, was concocted in 1995 by Abdul Hakim Murad (aka Ahmed Saeed), an Associate of Khaled Sheikh Mohammed and Ramzi Youssef, who planned on crashing a plane into the CIA headquarters at Langley, Virginia, apparently by hijacking a commercial aircraft.[195]

Of the various schemes to hijack aircraft into buildings, only two appear to have come to fruition. In 1976, a Japanese man wearing a kamikaze headband crashed his Piper Cherokee into the home of a Japanese crime leader, but failed to kill him. In the second instance, in 1994, a depressive and suicidal man, Frank Eugene Corder, attempted to crash a Cessna 150 into the South Lawn of the White House, dying in the process.[196] Unlike the 9/11 attacks, however, neither of these attacks were acts of terrorism, but instead were acts of individuals seemingly in despair. In addition, neither of these two attacks involved multiple hijackings of aircraft. In fact, multiple hijackings had rarely been carried out in the three decades prior to 9/11 and, according to the 9/11 Commission Report, never in the United States.[197] In those instances, however, the airplanes were not crashed into buildings[198]—making the 9/11 attacks in part innovative because the idea to hijack *multiple* airliners *and crash them into buildings*, even if possibly entertained prior to 9/11, had never been successfully implemented prior to September 2001.

Key Innovations of the 9/11 Attacks

From a purely technical standpoint then, the innovation of the September 11 attacks lies in their being the first *successfully executed attacks* in which *multiple airliners* were *hijacked* and subsequently *crashed into buildings*. But to focus exclusively on this purely technical aspect of the innovation of 9/11 would not do justice to their most significant innovative characteristics, which are two-fold. The first of these innovations, which incorporates the technical aspect of the innovation described above, is that the 9/11 attacks were truly innovative by combining a number of existing terrorist tactics, namely coordinated airline hijacking, hostage-taking, suicide attacks, and improvised explosive devices. As Dolnik rightly argues, the 9/11 attacks stand out in the annals of terrorism history because the planners "combined the most beneficial elements that the realm of terror tactics has to offer: the incident consisted of *synchronized* skyjacking achieved by the use of *primitive weaponry* involving a large number of *hostages*, in order to achieve a *stand-off* attack capability via the *suicide delivery* of planes which served as large *explosive* devices."[199] The importance of this point lies not so much in the mere fact that multiple tactics were used, but rather that the tactics that were combined are among the most lethal and fear-inducing tactics in the terrorists' arsenal—with suicide bombings being perhaps

195 National Commission on Terrorist Attacks Upon the United States, "The 9/11 Commission Report, 1st ed. (New York: Norton, 2004), 491, fn 33 [henceforth, *9/11 Commission Report*]; see also Yoram Schweitzer and Shaul Shay, *The Globalization of Terror: The Challenge of Al-Qaida and the Response of the International Community* (New Brunswick and London: Transaction Publishers, 2003), 137.

196 Dolnik, *Understanding Terrorist Innovation*, 38.

197 The 9/11 Commission Report falsely states that there were no multiple hijackings of aircraft in the three decades prior to 9/11. See *9/11 Commission Report*, 10. In fact, however, Sandinistas hijacked three Venezuelan airliners on December 7, 1981.

198 Between September 6-9, 1970, the Popular Front for the Liberation of Palestine (PFLP) hijacked a total of four airliners, but did not crash them into buildings. One of the planes was blown up after landing in Cairo, while the other three planes were blown up after being landed in Amman.

199 Dolnik, *Understanding Terrorist Innovation*, 53. All italicized portions related to this book are adopted from the source.

the most fatal and menacing among them.[200] Except for the additional use of weapons of mass destruction, it is difficult to fathom another attack that could combine so many of the most fear-inducing tactics of terrorism.

The second innovation of the 9/11 attacks lies in the enormous scale of both the planning and the impact of the attacks. Although the 9/11 attacks may not have been the most grandiose plots ever hatched—Ramzi Youssef's 1993 attack against the World Trade Center, for example, was designed to collapse the North Tower onto the South Tower, thereby instantly killing tens of thousands of people—they are arguably the most megalomaniacal plots to have ever succeeded. Interestingly, however, the characteristics of the 9/11 attacks were relatively basic, even similar to most other ordinary acts of terrorism. What makes these attacks stand out, however, is that due to a combination of unique factors both within the organization's control (the determination and skill of the planners and perpetrators and their unique choices of targets and their location) and beyond its control (e.g., instant transmission of images due to era of globalization and a modicum of luck prior to and during the attacks), the quality of execution of the attacks and their impact far exceeds that of any other terrorist attack in history. Herein lies the second main innovation of the 9/11 attacks: although these attacks had all the basic ingredients of a classic terrorist attack—fear, the attempt to influence a larger audience, asymmetric battles, theatricalities, and so forth—it is the spectacularly successful execution of this megalomaniacal plan, so ingenious in its simplicity, that rendered this attack truly innovative. A disaggregation of the 9/11 attacks into its various elements will further illustrate this point.

As far as the target location is concerned, for instance, by choosing to strike the United States in New York and Washington, D.C., Al-Qaeda picked the most important cities in the United States—the financial and political capitals, respectively, of the United States. One of the reasons for the colossal impact of the strike was that they posed the "most powerful blow at the center of gravity of [their] enemy," as Therese Delpech remarked.[201] Attacks against the financial, political, and military power centers matter a great deal because the dense and interwoven economic, technological, and communication systems of the United States and other Western nations renders them more vulnerable than before to acts of terrorism by groups and individuals who are empowered by more easily available technologies—a trend that can result in what Thomas Homer-Dixon has labeled "complex terrorism."[202]

For a variety of reasons, the 9/11 attacks had an impact that went far beyond the United States. By dealing a powerful blow to the capital of the United States as well as the self-described 'capital of the world', New York, the 9/11 attacks also had an international, even global impact on perceptions of international security. They provoked U.S. led wars in Afghanistan and Iraq that continue to this day, thus ushered in what some described as a new era in global politics. As Charles Kegley put it, "in a single flash the world was forced to confront grim new realities. Instantaneously, those absent towers became the symbol for the shapelessness of an apparent new world disorder; where once

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200 Due to space reasons, it is impossible here to list the effects of each of these tactics. For a good overview, see ibid., 26-57.

201 Therese Delpech, "The Imbalance of Terror," in Gus Martin, ed., *The New Era of Terrorism: Selected Readings* (Thousand Oaks, CA: Sage, 2004), 48.

202 Homer Dixon does not believe that the 9/11 attacks caused a catastrophic disruption of financial and technological systems but he nevertheless warns of the growing likelihood of the threat of "complex terrorism." Thomas Homer-Dixon, "The Rise of Complex Terrorism, in Martin, ed., *The New Era of Terrorism*, 134-136.

there had been complacent certainty about the stability of global interdependence, there were now pervasive uncertainties and pregnant fears. The events of 9/11 shattered the preexisting, prevailing sense of personal, national, and international security. The presumed safety and euphoria of a peaceful and prosperous post-Cold War era were soon seen as an illusion."[203]

Like all acts of terrorism, the 9/11 attacks were also designed to influence a larger audience by maximizing their propaganda effect—a characteristic captured in Brian Jenkins's famous dictum that 'terrorism is theater.' Never has this been truer of a terrorist attack than for the attacks of 9/11. Striking at a metropolis at a time when satellite television stations and the ubiquity of the Internet transmitted images instantly to all corners of the world, the 9/11 attackers ensured that theirs would be the most widely captured terrorist attack in history. As Brigitte Nacos remarked in this regard, "from the terrorists' point of view the attack on America was a perfectly choreographed production aimed at American and international audiences… 9/11 opened a new chapter in the annals of terrorism as communication because of the choices the planners made with respect to method, target, timing, and scope."[204]

One of the ways in which Al-Qaeda was able to score a propaganda victory was by picking the most powerful enemy possible. Of course, guerrilla warfare and terrorism has always involved asymmetric warfare,[205] but again, it is in the sheer magnitude of the asymmetry that the 9/11 attacks were innovative, for nowhere did such an asymmetry ever seem larger than when a sub-state actor struck the world's only superpower on its home turf. The attacks proved, in the words of Tan and Ramakrishna, "beyond a shadow of doubt that even unipolar hegemons are no longer completely invulnerable in a world in which globalization has helped diffuse power to some extent."[206]

The impact of this asymmetric battle on other terrorist groups was swift, as the attacks had a deep demonstration effect upon other terrorist organizations. The period following the 9/11 attacks, for instance, saw an increase in the number of suicide attacks, the number of organizations conducting suicide attacks, and the number of states targeted by suicide attacks.[207] Among the many features of this attack—such as Al-Qaeda's confrontation of the world's superpower and the multiple attacks within a short time frame that were designed to maximize the shock factor—the fact that the attacks involved nineteen suicide hijackers in itself were a propaganda victory for Al-Qaeda. The group was now able to claim to possess highly determined members who are willing, even eager, to pay with their lives to fight the 'enemy of Islam.' The use of suicide terrorism was critical in this regard, for "self-sacrifice," according to Stephen Holmes, "has added value as propaganda, conveying important information about the cause that could not be delivered, or delivered so memorably, by a non-suicidal attack."[208]

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203 Charles W. Kegley Jr., "The Characteristics, Causes, and Controls of the New Global Terrorism: An Introduction," in Charles W. Kegley Jr., ed., *The New Global Terrorism: Characteristics, Causes, Controls* (Upper Saddle River, NJ: Prentice Hall, 2003), 1.

204 Brigitte Nacos, "The Terrorist Calculus Behind 9-11: A Model for Future Terrorism?" in Martin, ed., *The New Era of Terrorism*, 177-78.

205 See Walter Lacqueur, *No End to War: Terrorism in the Twenty-First Century* (New York: Continuum, 2003), 7.

206 Andrew Tan and Kumar Ramakrishna, eds., *The New Terrorism: Anatomy, Trends and Counterstrategies* (Singapore: Eastern University Press, 2002), 3.

207 Although it cannot be proven definitively that the increase in these variables is due to the influence of the 9/11 attacks, the growing trend in the spread of suicide attacks following 9/11 can hardly be denied. For figures, see Assaf Moghadam, "Motives for Martyrdom: Al-Qaeda, Salafi Jihad, and the Spread of Suicide Attacks," *International Security*, Winter 2008/2009.

208 Stephen Holmes, "Al-Qaeda, September 11, 2001," in Diego Gambetta, ed., *Making Sense of Suicide Missions*

The 9/11 attacks also trumped other terrorist attacks—despite the similarity in their basic ingredients—as far as the skill and determination of the perpetrators is concerned. As Bruce Hoffman notes, only few coordinated attacks in history have been well executed, among them the October 1983 coordinated bombings at the U.S. Marine Barracks and the French Paratrooper Barracks in Beirut, as well as the 1998 U.S. embassy bombings. Hoffman argues that the 9/11 attacks showed a "level of patience and detailed planning rarely seen among terrorist movements today."[209] Indeed, the detailed level of planning, carefully recounted in the 9/11 Commission Report, began years before the execution of the attacks, and involved careful selection of the team, physical training, language training, test flights, flight training, as well as training in coded communication, avoidance of detection, and other intelligence-related issues.

More importantly even, the 9/11 attacks were stunning in showing a level of determination and secrecy that had rarely, if ever, been seen among terrorists. Perhaps most remarkable was the ability of at least 19 suicide hijackers to maintain the highest degree of commitment imaginable—a commitment to sacrifice their own life—over an extended period of time, and removed from direct observation by their supervisors.[210] "The terrorists' secret weapon on September 11," Jenkins aptly remarked, "was not high technology but human resolve."[211]

The attackers also exhibited extraordinary skills in deception both before and during the 9/11 attacks. During the hijackings, for example, the hijackers misled the passengers into believing that the four aircraft were returning to their origins. The attackers also employed the element of surprise, which is a requirement in any successful terrorist operation. Beyond the uncertainty inherent in any hijacking, passengers were surprised by the presence of multiple hijackers on the planes, not all of whom apparently identified themselves from the outset. Some of the 'muscle hijackers' were able to restrain rebellious passengers who were unaware that additional hijackers were seated behind them. The ultimate, and most tragic surprise, arguably lied in the unexpected outcome of the 'hostage situation.' The hijackers' deception extended to their promises to the passengers that the planes were returning to their origins. One must assume that this lie led many passengers—at least on the two planes that crashed into the World Trade Center—to believe that compliance, rather than rebellion, would maximize their chances of survival. This would have also been the most rational reaction of the victims, since historically, most hostage situations have been accompanied by demands made on the part of the hostage-takers. The 9/11 attackers, of course, pursued a more sinister objective.

Any analysis of the 9/11 attacks would be remiss to fail to mention that the modus operandi itself was ingenious. This includes the relatively novel idea of turning airliners into incendiary devices. The selection of the particular transcontinental flights was probably deliberately designed to ensure that relatively few passengers were on board, minimizing chances of a successful mutiny on board. At the same time, the fact that the flights were transcontinental ensured that the planes carried about 10,000 gallons of aviation fuel that helped turn the aircraft into gigantic improvised explosive

(Oxford, UK: Oxford University Press, 2005), 159.

209 Bruce Hoffman, "The Emergence of the New Terrorism," in Tan and Ramakrishna, eds., *The New Terrorism*, 32.

210 There has been some debate over whether all 19 hijackers were aware that the attacks were supposed to be a suicide operation. Although this question has not been answered definitely, the planner of the 9/11 attacks, Khaled Sheikh Muhammad, told investigators that all 19 hijackers knew that this was a martyrdom operation, as will be discussed later.

211 Brian Michael Jenkins, "Anatomy of a Terrorist Attack," in James F. Hoge, Jr. and Gideon Rose, eds., *How Did This Happen? Terrorism and the New War* (New York: Public Affairs, 2001), 4.

devices. Finally, the fact that the hijackers took control of the planes using simplistic weapons, mainly box-cutters,[212] rendered this terrorist attack "fundamentally a low-tech affair," as Jenkins remarked—one in which "ingenuity rather than technological sophistication enabled the terrorist to enter the domain of mass destruction"[213]

To sum up, the 9/11 attacks were among the most innovative attacks for two main reasons. First, they were the first attacks combining a particularly deadly array of tactics that were flawlessly designed and executed; and secondly, the magnitude of the attacks far exceeded any terrorist attacks that had been carried out before. As Bruce Hoffman summarized it, "The enormity and sheer scale of the simultaneous suicide attacks on September 11 eclipsed anything we have previously seen in terrorism. Among the most significant characteristics of the operation were its ambitious scope and dimensions, impressive coordination and synchronization, and the unswerving dedication and determination of the 19 aircraft hijackers who willingly and wantonly killed themselves, the passengers and crews of the four aircraft they commandeered and the approximately three thousand persons working in or visiting both the World Trade Center and the Pentagon."[214]

III: PRECONDITIONS

This part of the paper will discuss some of the salient preconditions for the innovation of the 9/11 attacks, which in this project are defined as "those characteristics of terrorist organizations and of the environment in which they operate which make innovation more or less likely."[215] I will argue that among the many preconditions for the innovation of 9/11, three factors stand out: Al-Qaeda's obsession with martyrdom operations; bin Laden's uncontested leadership, including his ability to overrule dissenting views; and a unique management philosophy vis-à-vis the planning and execution of terrorist attacks. This does not mean that other factors were unimportant. For instance, it can be safely assumed that, as is suggested by Brian Jackson, Al-Qaeda's solid financial state in the late 1990s helped facilitate its ability to support proposals that were truly innovative, like KSM's idea for what became the 9/11 attacks.[216]

It is equally apparent that the fact that Al-Qaeda benefited from a safe haven in Afghanistan made it easier for the organization to plan attacks and recruit and train individuals, including for innovative terrorist acts such as 9/11, thereby lending credence to Dolnik's hypothesis that organizations with a safe haven or territorial stronghold are more likely and/or willing to innovate.[217] It should be noted, however, that a safe haven for terrorist groups is only abetting terrorist innovation as long as the state providing the safe haven is not opposed to that particular act of terrorism. In the case of the 9/11 attacks, there were signs that the Taliban were not particularly interested in the sort of massive provocation that the 9/11 attacks would certainly pose. Thus, despite Al-Qaeda's ability to train and plan the 9/11 attacks, it did have to contend with the shifting interests of its hosts.[218]

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212 The hijackers apparently also warned that bombs were present on the planes.

213 Jenkins, "Anatomy of a Terrorist Attack," 4.

214 Bruce Hoffman, "The Emergence of the New Terrorism," in Tan and Ramakrishna, eds., *The New Terrorism*, 30-31.

215 Maria Rasmussen and Mohammed M. Hafez, "Innovation in WME Terrorism: Preconditions, Causes, and Preparatory Behaviors," March 2010.

216 Brian Jackson, "Technology Acquisition by Terrorist Groups: Threat Assessment Informed by Lessons from Private Sector Technology Adoption," *Studies in Conflict and Terrorism* 24 (2001), 201

217 Dolnik, *Understanding Terrorist Innovation*, 150-52.

218 On tensions between the Taliban and Al-Qaeda with regard to the 9/11 attacks, see *9/11 Commission Report*,

It is important to state at the outset that when analyzing the 9/11 attacks from the perspective of innovation, it is difficult to separate variables into neat categories of preconditions, causes, and preparatory behaviors, as is the task at hand. Al-Qaeda's obsession with martyrdom operations—the first of the three main preconditions offered here—serves as a good example of a factor that has at once served as a precondition for the attacks but likely also a motivating factor for at least some of the 9/11 hijackers—and therefore also as one cause (among many others) of the attacks.[219]

Al-Qaeda's Martyrdom Complex

Though some have questioned whether all hijackers were aware that they were considered for an operation from which they would not return alive, it is unlikely that the attackers were left in the dark about this issue. If Khalid Sheikh Mohammed's testimony is to be believed, the hijackers—muscle hijackers included—all recorded a martyrdom video that was to be distributed after the attack.[220] KSM also directly answered the questions posed by his interrogators about the knowledge of the hijackers, responding that the muscle hijackers "knew they were in for a martyrdom operation. But, to prevent any leakage of information, they were not informed of many details. We told them that brother Abu Abdul Rahman [Mohammad Atta] would provide them with details at a later stage."[221] Zawahiri, too, suggested that the hijackers were not only aware of their fate, but that they craved to die in the attack. "It was the mujahideen's desire for martyrdom," he stated after 9/11, "that was the unique advantage, which resulted in the stealthy raids on New York and Washington—by the grace of Allah. Nineteen mujahideen who desired death were able to inflict damage upon America, such as it had never before witnessed in its history."[222]

Al-Qaeda has a symbiotic, even obsessive relationship with suicide attacks, its signature mode of attack, which it has generated, by its own admission, in order to sow as much fear, terror, and confusion among its enemies.[223]Al-Qaeda has institutionalized this tactic to an extent not seen in other groups by instilling the spirit of self-sacrifice in the collective psyche of virtually all of its fighters, thus creating a cult of martyrdom that far exceeds the Palestinian and Lebanese cult of death in both scope and depth. Abdullah Azzam, bin Laden's mentor, was the first theoretician who succeeded in turning martyrdom and self-sacrifice into a formative ethos of the Afghan Arabs, many of whom would later constitute Al-Qaeda.

In August 1996, bin Laden formally declared war against the United States. The declaration features a lengthy call upon Muslim youth to sacrifice themselves, praising their courage and 'love of death.' Intending to provide religious justifications for martyrdom operations, bin Laden tied the longing

250; and Vahid Brown, "Cracks in the Foundation: Leadership Schisms in Al-Qa'ida, 1989-2006," Combating Terrorism Center at West Point, September 2007. On the sometimes tense relationship between the Taliban and Al-Qaeda in general, see Anne Stenersen, "Al-Qaeda's Allies," New America Foundation, April 2010.

219 It is not argued that a desire for martyrdom is the central cause of the 9/11 attacks.

220 *9/11 Commission Report*, 235. Elsewhere, KSM stated that all except for one hijacker recorded a martyrdom videotape. See Yosri Fulda and Nick Fielding, *Masterminds of Terror: The Truth Behind the Most Devastating Attack the World Has Ever Seen* (New York: Arcade, 2003), 141.

221 Peter Bergen, *The Osama bin Laden I Know: An Oral History of al-Qaeda's Leader* (New York: Free Press, 2006), 304.

222 Quoted in Bruce Hoffman, *Inside Terrorism*, revised and expanded edition (New York: Columbia University Press, 2006), 135.

223 This and the next four paragraph rely heavily on Assaf Moghadam, *The Globalization of Martyrdom: Al-Qaeda, Salafi Jihad, and the Diffusion of Suicide Attacks* (Baltimore: Johns Hopkins University Press, 2008), chapter 2.

for martyrdom to a number of verses from the Quran, hadith, and other poems. Al-Qaeda's emphasis on suicide missions was naturally reflected in its Afghan training camps. A document found in an Al-Qaeda safe house in Afghanistan titled 'Goals and Objectives of Jihad,' for example, ranked the goal of "attaining martyrdom in the cause of God" second only to "establishing the rule of God on earth." Another document listed two "illegitimate excuses for leaving Jihad as "love of the world" and "hatred of death."[224]

KSM, the operational planner of the 9/11 attacks, told his interrogators that the most important quality for any Al-Qaeda operative was a willingness to sacrifice himself. He stated that operatives used for a suicide attack were not, for the most part, placed under any pressure to volunteer for such an operation.[225] As was confirmed by another Al-Qaeda operative, the willingness to participate in a martyrdom operation was the preeminent criterion in selecting the members of the 9/11 attacks—in addition to "demonstrable patience," due to the long time lag that could occur between the planning and execution of the attack.[226]

Bin Laden helped spread this veneration of martyrdom into the minds of Al-Qaeda's trainees as well as the global potential recruits by releasing videotape and statements on the Internet, thus reaching a much broader audience. In 2004, for instance, bin Laden urged his followers to "become diligent in carrying out martyrdom operations; these operations, praise be to God, have become a great source of terror for the enemy … These are the most important operations."[227]

The use of suicide operations is a logical outcome of Al-Qaeda's desire of maximizing pain and suffering among its enemies in a struggle that it regards as protracted. In his 2001 book *Knights under the Prophet's Banner*, Zawahiri wrote that "if our goal is comprehensive change and if our path, as the Koran and our history have shown us, is a long road of jihad and sacrifices, we must not despair of repeated strikes and recurring calamities."[228] There is a particular need on the part of the jihadist movement to offset the power of the Muslims' enemies, Zawahiri added, whose numbers and capabilities have risen tremendously, as did "the quality of their weapons, their destructive powers, their disregard for all taboos, and disrespect for the customs of wars and conflict."[229] To match this asymmetry, Zawahiri suggested several steps, including "The need to concentrate on the method of martyrdom operations as the most successful way of inflicting damage against the opponent and the least costly to the mujahidin in terms of casualties."[230]

Bin Laden's Decision-Making Abilities

A second critical precondition for the 9/11 attacks seems to have lain in the leadership qualities of bin Laden, and most importantly in bin Laden's abilities to make difficult decisions and to stand by them, even when faced with opposition. It is important to note here that bin Laden was, as is

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224 C.J. Chivers and David Rhode, "Turning out Guerrillas and Terrorists to Wage a Holy War," *New York Times*, 18 March 2002, A1.

225 *9/11 Commission Report*, 234.

226 *9/11 Commission Report*, 234.

227 Quoted in Christopher M. Blanchard, "Al-Qaeda: Statements and Evolving Ideology," CRS Report for Congress RL32759 (Washington, D.C.: Congressional Research Service, Library of Congress, 2005), 10.

228 Al-Zawahiri, *Knights under the Prophet's Banner.*, Part 11.

229 Ibid.

230 Ibid. The book was serialized in the London-based magazine Al-Sharq al-Awsat between December 2-10, 2001, and translated by the Foreign Broadcast Information Service (FBIS), FBIS-NES-2001-1202.

known, not the operational manager of the 9/11 attacks, but nevertheless the person whose decision to support these attacks was imperative to the plan's success. Besides bin Laden, Mohammed Atef (aka Abu Hafs al-Masri), Al-Qaeda's operations chief, played an important role in the planning of the 9/11 attacks. His death by a U.S. air strike two months after 9/11, however, prevented the 9/11 Commission from gaining additional insights into the details of his role.[231] Besides bin Laden and Atef, it was KSM who not only generated the basic plan for what became known as the "planes operation," but also managed that operation.[232]

There were several aspects of bin Laden's leadership abilities that enabled the 9/11 attacks to go forward. Among the less important of these was bin Laden's experience in construction and engineering. Although bin Laden gloated after 9/11 about his construction background, his background had less to do with the target selection than had preferences for symbolic targeting of key U.S. sites, including the White House.[233]

A far more important leadership skill of bin Laden was his pragmatism, which was evident when bin Laden reduced the original megalomaniacal plan of KSM to hijack ten planes to the more realistic plan that was executed on 9/11.[234] Bin Laden, according to interrogation reports of KSM, offered his skepticism because he was worried about the initial plan's scale and complexity. He also had to weigh these plans against other proposals for terrorist and insurgent strikes that Al-Qaeda kept receiving.[235]

Bin Laden's rejection of KSM's original proposal also underscored one of bin Laden's most important leadership skills, namely his ability to make decisions and stick to them even in the face of dissent. Thus, KSM told interrogators that Bin Ladin "could assess new trainees very quickly, in about ten minutes, and that many of the 9/11 hijackers were selected in this manner."[236] The 9/11 Commission Report states that the Al-Qaeda leader, with the help of Atef, personally selected all the future muscle hijackers, asking each one to swear bayah, the oath of loyalty, to him. After swearing bayah, the future hijackers were sent to KSM to be trained and recorded for their martyrdom video. As Al-Qaeda's head of the media committee, KSM also oversaw the shooting of these martyrdom videos.[237]

Equally "remarkable," as the 9/11 Commission Report authors marvel, was the speed with which the German cell members of the 9/11 attacks, Muhammad Atta, Marwan al-Shehhi, Ziad Jarrah, and

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231 *9/11 Commission Report*, 154.

232 KSM's role will be discussed elsewhere in the paper.

233 In a statement following 9/11, bin Laden said, "I was the most optimistic of them all due to my experience in this field [of construction. I] I was thinking that the fire from the gas in the place would melt the iron structure of the building and collapse the area where the plane hit and al the floors above it only. This is all that we had hoped for." Quoted in Bergen, *The Osama bin Laden I Know*, 283. On bin Laden's desire to include the White House among the targets, see *9/11 Commission Report*, 248.

234 KSM's original plan had envisioned the hijacking of a total of ten aircraft, nine of which would crash into targets on both coasts (including those eventually hit on September 11, the CIA and FBI headquarters, nuclear power plants, and the tallest buildings in California and the state of Washington). In addition, KSM himself intended to land the tenth plane on a U.S. airport, kill all adult male passengers on board, and hold a press conference before the assembled media in which he would denounce U.S. support for Israel, Arab governments, and the Philippines.

235 *9/11 Commission Report*, 154.

236 Ibid., 235.

237 Ibid..

Ramzi Binalshibh became core members of the 'planes operation, with Atta seleted as the operational leader of the team. "They had not yet met with KSM when all this occurred. It is clear, then, that Bin Ladin and Atef were very much in charge of the operation…Bin Ladin and Atef wasted no time in assigning the Hamburg group to the most ambitious operation yet planned by Al-Qaeda."[238]

Perhaps the clearest indication that bin Laden had unique leadership qualities—but also that he was determined to go ahead with the 'planes operation'—is found in the Al-Qaeda leader's tenacious pursuit of his goals despite evidence of clear opposition to this attack among his own ranks, and even among his Taliban hosts. The 9/11 Commission, for example, cited "evidence that Mullah Omar initially opposed a major Al-Qaeda operation directly against the United States in 2001. Furthermore, by July, with word spreading of a coming attack, a schism emerged among the senior leadership of Al-Qaeda. Several senior members reportedly agreed with Mullah Omar. Those who reportedly sided with Bin Ladin included Atef, Sulayman Abu Ghayth, and KSM. But those said to have opposed him were weighty figures in the organization—including Abu Hafs the Mauritanian, Sheikh Saeed al Masri, and Sayf al Adl."[239] According to Vahid Brown, the opposition from these senior leaders to the 9/11 attacks was so severe that they appear to have "broken with the 'hawkish' leaders of al-Qa'ida" after the U.S. led invasion of Afghanistan that followed the attacks." Brown suggests that the move of the dissenting group, led by Saif al-Adl, to Iran may have resulted out of this disagreement.[240]

Al-Qaeda's Philosophy of Terrorism Management[241]

A third important precondition for the innovation that took place on 9/11 is the management philosophy Al-Qaeda has adopted with regard to the planning and execution of terrorist attacks, which it labeled "centralization of decision and decentralization of execution." According to Lawrence Wright, Bin Laden "decided on the targets, selected the leaders, and provided at least some of the funding. After that, the planning of the operation and the method of attack were left to the men who would have the responsibility of carrying it out."[242] This philosophy points at Al-Qaeda's highly entrepreneurial leadership style—a style that David Tucker suggests is "key to understanding terrorist innovation."[243]

What this meant for the planning and execution of terrorist attacks was that Al-Qaeda's "worldwide terrorist operations relied heavily on the ideas and work of enterprising and strong-willed field commanders who enjoyed considerable autonomy,"[244] as the 9/11 Commission report put it. As far as the idea for the 'planes operation' was concerned, Al-Qaeda eventually adopted a version of a

238 The reason for the quick selection of the candidates is not only due to Al-Qaeda's ability to reach decisions quickly, but also a result of bin Laden and Atef's likely realization that the initial team selected lacked the proper qualifications and skills. Ibid., 166.

239 Ibid., 251. For a more thorough discussion of these schisms, see Brown, "Cracks in the Foundation."

240 Brown, "Cracks in the Foundation," 18.

241 This section does not refer to Terror Management Syndrome (TMS), but rather to Al-Qaeda's modus operandi when preparing terrorist attacks.

242 Lawrence Wright, *The Looming Tower: Al-Qaeda and the Road to 9/11* (New York: Vintage Books, 2007), 348.

243 David Tucker, "The Future of Armed Resistance: Cyberterror? Mass Destruction? Final Report of a Conference held May 15-17, 2000 at the UniversityPantheon-Assas, Paris, France, 13. See also Michael Horowitz, "Non-State Actors and the Diffusion of Innovations: The Case of Suicide Terrorism," *International Organization* 64:1 (Winter 2010).

244 *9/11 Commission Report*, 145.

plan by KSM, a seasoned terrorist mastermind and "plainly a capable coordinator, having had years to hone his skills and build relationships.[245] In Muhammad Atta, the leadership team of Bin Laden, Atef, and KSM found the perfect field commander.

During KSM and bin Laden's first meeting in which KSM shared his idea for the 'planes operation', KSM believed that bin Laden could be receptive to the idea because, as he would later state, he believed bin Laden was "in the process of consolidating his new position in Afghanistan while hearing out others' ideas, and had not yet settled on an agenda for future anti-U.S. operations."[246] For his part, KSM declined bin Laden's attempt to bring KSM into the Al-Qaeda fold by swearing bayah to bin Laden—although he would swear fealty to the Al-Qaeda leader at a later point. At the time of the meeting to broach the subject of the planes operation, however, KSM still desired to protect his independence by retaining the option to work with other jihadist groups. In March or April 1999, Bin Laden eventually informed KSM of Al-Qaeda's acceptance of KSM's proposal for the planes operation.[247]

KSM, the principal architect of the 'planes operation,' possessed a number of skills that came in handy for his terrorism career, including technical and managerial skills coupled with a heavy dose of fantasy. KSM put these traits to use even before 9/11 in a number of attacks such as car and aircraft bombing, assassination, hijackings, and poisoning, among others.[248] Following KSM's capture, he presented himself as an equal opportunity terrorist of sorts, who sought venture capital and suitable individuals to turn his ideas into practice.[249] Implicit in his statement was that he might have carried out the 9/11 attacks had they been supported by an organization other than Al-Qaeda, provided that organization could have supplied him with money and people. While it is difficult to determine if an organization other than Al-Qaeda existed that possessed the intentions and capability to sponsor such an attack, what is clear is that Al-Qaeda's goals and KSM's ideas were perfectly synergistic.

In retrospect, it is clear that Al-Qaeda's particular management style of "centralization of decision and decentralization of execution" is one that fundamentally abetted the adoption of innovative terrorist techniques. Like a flat business in which the managing director encourages members of his staff and of other interested parties to "think outside the box" to improve business operations, so did Al-Qaeda, in the years preceding 9/11, encourage its members and other interested parties to submit proposals for terrorist attacks. By expanding the circle of individuals who could run these proposals before the Al-Qaeda leader beyond Al-Qaeda members, bin Laden increased the chances that individuals with a good imagination would sooner or later make an enticing and innovative proposal. Al-Qaeda's networked relationships with many jihadist groups and individuals—many of whom had earlier trained in Al-Qaeda's training camps—further increased the pool of individuals interested in shopping around unique terrorist ideas. For that matter, there is a fair amount of support for the hypothesis that networked organizations are—all else being equal—more likely to become terrorist innovators than hierarchical terrorist organizations.

IV: CAUSES

245 *9/11 Commission Report*, 150.
246 Ibid., 149.
247 Ibid., 154.
248 For more on KSM's background, see Ibid., 145ff.
249 Ibid., 154.

In examining the causes for the innovation of the 9/11 attacks—defined here as the "factors that directly influenced the group's decision to innovate"[250]—this section will proceed by examining causal factors on two levels. The first is the level of the organization and the situational context. The second is the level of the individual and the small group. There are no simple answers to the question of what caused the group to innovate, and for space reason this discussion can barely scratch the surface of this matter.

Organizational and Situational Factors

The discussion of organizational factors must begin with Al-Qaeda's goals, and specifically its views on the United States. Simply and briefly put, Al-Qaeda is an Islamic revivalist program that aims to restore Islam's strength, as it manifested itself in the early centuries of its existence--centuries marked by a dramatic and incredibly rapid physical expansion of the *dar al-Islam*, the territory ruled by Muslims. Its ultimate goal is the establishment of the caliphate, the traditional, supranational Islamic form of government. Al-Qaeda's strategy to achieve its aim is jihad, which is understood by this group as a violent, holy struggle that is at once sanctioned by God, fought for his sake, and pleasing to him. Al-Qaeda aspires to achieve three partial goals on the way to the desired caliphate: the reawakening of Muslims, the defense of Islam, and the defeat of the enemy.[251]

The 9/11 attacks, like other Al-Qaeda terrorist strikes, is considered an activity done in the defense of Islam. Al-Qaeda's entire narrative is built on the assertion that the group is merely acting in self-defense. Thus, in an interview with John Miller, bin Laden said, "And my word to American journalists is not to ask why we did that [attack U.S. targets] but ask what their government has done that forced us to defend ourselves."[252]

Defending Islam is, first and foremost, presented as a religious duty for all Muslims. For Al-Qaeda, however, the call on Muslims to rise up and defend their religion is, no less importantly, an integral part of its project to reawaken Muslims from their hibernation and take their destinies into their own hands. Al-Qaeda presents a long list of Western infractions against Islam. It claims that these infractions have caused the killing and suffering of millions of Muslims, including the deaths of innocent children and the dishonoring of women. These infractions revolve first and foremost around the occupation of Muslim lands by the United States and Israel, and previously by other Western countries such as France and Britain. Bin Laden said, for example, that the September 11 attacks occurred after he had witnessed "the iniquity and tyranny of the American-Israeli coalition against our people in Palestine and Lebanon," which gave birth to his "resolve to punish the aggressors" and give America "a taste of what we have tasted and to deter it from killing our children and women. . . . Should a man be blamed for protecting his own? And is defending oneself and punishing the wicked an eye for an eye--is that reprehensible terrorism?"[253]

Al-Qaeda leaders also charge the United States with depriving the Middle East of its riches. In his book, Zawahiri accuses the United States of invading Afghanistan because of the large quantities of

250 Rasmussen and Hafez, "Innovation in WME Terrorism."
251 Moghadam, *The Globalization of Martyrdom*. This part incorporates sections from this book.
252 Quoted in Anonymous (Michael Scheuer), *Through Our Enemies' Eyes: Osama Bin Laden, Radical Islam, and the Future of America* (Washington, D.C.: Brassey's, 2003), xviii.
253 "The Full Version of Osama Bin Laden's Speech," MEMRI Special Dispatch Series No. 811 (5 November 2004).

petroleum lying under the Caspian Sea. Similarly, Zawahiri finds unforgivable America's "sin" of support of Israel, which he describes as "in fact a huge U.S. military base."[254]

Foreign occupation, however, is not the only way in which the West is allegedly attacking Islam. For Al-Qaeda, and even for many less violence-prone Islamists, Western countries are involved in a conspiracy to incite non-Muslims against the followers of Muhammad. Underlying Zawahiri's and bin Laden's opposition to U.S. and Western involvement in Islamic countries is a firm belief that the United States is bent on preventing Islam from playing a dominant role throughout the Middle East and beyond. Zawahiri believes that U.S. policies, its aid of Israel, and its opportunistic and devilish alliance with local Arab regimes are all designed to stem the rise of Islam, and thus constitute an attack on Islam's destiny, the faith chosen by God as the ultimate truth. In the words of Zawahiri, "The United States, and the global Jewish government that is behind it, have realized that (government by) Islam is the popular demand of the nations of this region, which is considered the heart of the Islamic world. They have realized that it is impossible to compromise on these issues. Hence the United States has decided to dictate its wishes by force, repression, forgery, and misinformation. Finally it has added direct military intervention to all the foregoing methods.[255]

Arguably, the United States tops the list of enemies of Al-Qaeda.[256] Its leaders portray America as inhuman and evil and find proof for this in countless U.S. policies, from the firebombing of Tokyo and the nuclear attack on Hiroshima and Nagasaki, to its sanctions on Libya, Iran, Syria, and Sudan, its occupation of Iraq, and its support of Israel.[257] Al-Qaeda is not interested merely in routing the United States out of Muslim lands but wants to defeat the United States entirely, while humiliating it in the process. One way to humiliate the United States is to taunt that enemy, making extensive use of the media. "Who could have believed that the 'Capital of the World' and the giant of the New World Order could be turned in a few moments into a frightened, breathless, helpless dwarf!" wrote Mahfuz ibn al-Walid (aka Abu Hafs al-Muritani), one of the closest aides of bin Laden, with hardly disguised Schadenfreude.[258]

Al-Qaeda has a precise plan of how it wants to achieve this aim, namely by eroding U.S. military power by spreading its military and intelligence forces thinner and in more costly manners.[259] Bin Laden's contempt for the United States finds an expression in his desire to hit the United States where it hurts. He hopes to punish the Americans economically and frequently boasts about his achievements. In his late October 2004 speech, for instance, he bragged that "each of Al-Qaida's dollars defeated one million American dollars, thanks to Allah's grace."[260] Ayman al-Zawahiri's call,

254 Al-Zawahiri, *Knights under the Prophet's Banner*, part 7.
255 Ibid.
256 There is some degree of disagreement on this issue, for it can also be argued that the "Zionist enemy" tops that list. Brynjar Lia argues that unlike the 'Crusaders' and 'apostates', who have been offered to either accept Al-Qaeda's notion of Islam or withdraw from Muslim occupied territory, Israel and the Jews have never been offered any way out of a confrontation with Al-Qaeda. Brynjar Lia, "Does al-Qaida Articulate a Consistent Strategy? A Study of al-Qaida Leadership Statements, 2001-2009," Paper presented at the International Studies Association's 50th Annual Convention, New York City, NY, USA, February 15-18, 2009.
257 Anonymous, *Through Our Enemies Eyes*, 46-47.
258 John C.K. Daly and Stephen Ulph. "How and Why: The 9-11 Attacks on America," *Spotlight on Terror* 1, no. 2 (22 December 2003).
259 Fuad Husayn, *Al-Zarqawi: The Second Generation of Al-Qaida*, part 8.
260 "The Full Version of Osama Bin Laden's Speech."

in late December 2005, to attack Gulf oil facilities was similarly designed to punish Western economic interests, while also hurting the despised apostate regimes in the Persian Gulf. [261]

Apart from the organization's core goals described above, which are in perfect alignment with the 9/11 attacks, there are a number of other factors at the organizational level that influenced the decision to innovate. The first was Al-Qaeda's elementary need to survive as an organization and to stay relevant. Following the withdrawal of the Soviet Union from Afghanistan circa 1988—the year in which Al-Qaeda was born—a core group around bin Laden was looking where next to take the jihad next. Supporters of bin Laden advocated the formation of a group that would take jihad internationally, proactively spreading Salafi-Jihadist ideals even to those places that were not under foreign occupation. A group around Abdallah Azzam also advocated 'global jihad' but restricted itself to a more classical understanding of jihad that referred to Muslim lands still under foreign occupation.[262]

It is interesting to ponder the question whether factionalism within Al-Qaeda encouraged or hampered innovation. Previously in this study, it was demonstrated that innovation was able to proceed on 9/11 *despite*, not *because*, of serious dissent among members of Al-Qaeda's top leadership who were concerned about the implications of the 9/11 attacks on the security of the group. At the same time, however, it seems that an early split between Osama bin Laden and his erstwhile mentor, Abdallah Azzam, created two distinct approaches to waging jihad—Azzam's classical and bin Laden's global jihad[263]—and that the latter version was inherently more violent, encouraging innovative attacks such as happened on 9/11. In short, factionalism helped send Al-Qaeda on a path towards innovation in its initial phase, but later on risked putting a halt on an innovative terrorist attack. It was bin Laden's role as an undisputed leader, with sole decision-making powers, that prevented factionalization from stopping the 9/11 plans.

While the relationship between factionalization and innovation is best described as ambivalent, there is no evidence that ideas of outbidding in any way abetted a process of innovation in the case of 9/11. It is not inconceivable that bin Laden believed that a successful attack would raise Al-Qaeda to the forefront of terrorist groups, but proof that bin Laden was worried about competition from other jihadist groups is hard to come by. On the contrary, at least his public expressions suggested that bin Laden saw Al-Qaeda's mission as creating unity among like-minded jihadist groups.

Tactical considerations of the attack plans also deserve mentioning among the many causes of 9/11, especially with respect to the nature of the 9/11 attacks. Thus, the attack on the airline industry—an industry not fully protected prior to 9/11, but certainly better protected than other transportation industries—in addition to observed behavior on the part of Al-Qaeda after 9/11 clearly suggests an Al-Qaeda obsession with targeting airplanes. There is no other explanation why Al-Qaeda continued, even after 9/11, to strike the international airline industry, as evident in the shoe bombing attempts of Richard Reid and the abandoned attempt by would-be shoe bomber Saajid Badat, or the August 2006 airline plots, to name just a few.

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261 "Qaeda Video Calls for Attacks on Gulf Oil Plants," *Associated Press*, 7 December 2005.

262 See Vahid Brown, "On the Global Margins: Al-Qa'ida's Franchising Frustrations," in Assaf Moghadam and Brian Fishman, *Fault Lines in Global Jihad: Organizational, Strategic, and Ideological Fissures* (London: Routledge, 2011) [forthcoming].

263 Ibid.

As has been mentioned, the decision to use suicide attacks was also of deliberate tactical nature. With the exception of CBRN attacks, suicide attacks are probably the single most terror-inducing tactic employed by violent groups today.[264] The tactic is not only particularly lethal, but also guarantees widespread media coverage and oftentimes leads by-standers with long-lasting psychological effects. It also portrays the targeted state and its agencies as helpless, thus further increasing the level of fear.[265] Words uttered by the Al-Qaeda leader after 9/11 underscore his satisfaction at the level of fear the 9/11 attacks were able to induce. In a video released October 7, 2001, he says, "There is America, full of fear from north to south, from west to east. Thank God for that."[266]

An additional 'cause' that helps explain the particular nature of the 9/11 attacks can also be found in the realm of tactics. According to the 9/11 Commission, there are some reports suggesting that sometime in the mid-1990s, Mohammed Atef and bin Laden may have conducted a study on traditional terrorist hijacking tactics and concluded that such tactics did not suit Al-Qaeda's needs. While such traditional hijackings were employed in order for the terrorist organization to make specific demands, such a purpose was apparently considered not useful or too difficult to achieve. The study apparently "considered the feasibility of hijacking planes and blowing them up in flight," paralleling the Bojinka concept as well as the bombing of Pan Am Flight 103 over Lockerbie.[267]

Along similar lines, KSM claimed that the 1993 bombing of the World Trade Center taught him that bombs and explosives could be problematic, and that a more novel form of attack was necessary. He says that it was Ramzi Yousef who contemplated using aircraft as weapons while working on the Bojinka plot.[268]

The last two likely causes on the organizational level that need to be mentioned are the role played by ideology and strategy. It has already been mentioned that Al-Qaeda had, since its founding, a symbiotic relationship with martyrdom. This is also true for the religious ideology Al-Qaeda offered—Salafi jihad—since the Salafi jihad inherently venerates martyrdom operations. Salafi-Jihadist ideology came to existence during the Afghan war, where it formed as a doctrine that borrowed elements from Salafi doctrine, the puritan tenets of Saudi Wahhabism, and the branch of the Muslim Brotherhood associated with Sayyed Qutb. Most Salafi-Jihadists see themselves as true fundamentalists, understanding the Quran in the most literal sense. They merged the Salafists' traditionalist perspective of the Quran with a deep belief in jihad, which in their mind assumed a place on par with the five pillars of Islam--the five daily prayers (*salat*), the pilgrimage to Mecca (*hajj*), alms giving to the needy (*zakat*), the declaration of faith (*shahadah*), and the fast of Ramadan (*sawm*).

Salafi-Jihadists believe that Muslims must actively wage jihad (defined in its aggressive form) against all infidels and apostates until an Islamic state can be declared on as large a territory as possible. They have set their eyes not only on local regimes in the Middle East, whom they accuse of collaboration with the West, but also on the far enemy--the United States and its Western allies.

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264 Binalshibh, during interrogation, reported that Atta had in fact contemplated hitting a nuclear power plant on 9/11, but the other pilots objected on the grounds that airspace is restricted, making reconnaissance flights impossible and increasing the likelihood that the planes would be shot down. *9/11 Commission Report*, 245.

265 Moghadam, *The Globalization of Martyrdom*, Introduction.

266 "Text: Bin Laden Statement," available at http://edition.cnn.com/CNN/Programs/people/shows/binladen/profile.html

267 *9/11 Commission Report*, 153-54.

268 Ibid., 153.

Unlike ordinary Muslims and even puritanical Salafists, Salafi Jihadist argue for the permissibility of suicide attacks.

Salafi-Jihadists rely on selected verses from the Quran and the hadith to show that, traditionally, the Quran venerates the martyr. They cite verse 9:111, which states "Allah hath purchased of the believers their persons and their goods; for theirs (in return) is the garden (of Paradise): they fight in His cause, and slay and are slain." They also cite verse 2:154: "And call not those who are slain in the way of Allah "dead." Nay, they are living, only ye perceive not."

As far as the modern phenomenon of suicide attacks is concerned, the consensus reached among Salafi-Jihadists that this tactic is the ultimate form of devotion to God was made possible by the earlier legitimacy most religious scholars afforded to "martyrdom operations" against Israelis.[269] During the late 1980s and 1990s, and continuing today, radical clerics and scholars shared a wide consensus that suicide attacks were always acceptable against Israelis. As Paz notes, the Arab and Islamic world "gave moral sanctioning to the Palestinian ethos of death," while the voices of those clerics who deplored suicide attacks were marginalized.[270]

Salafi-Jihadists present the willingness to perpetrate a martyrdom operation as the ultimate manifestation of complete submission to God's will in the holy struggle against the infidels and apostates. Equally important, however, this particular tactic also marks the difference between the mujahideen and his enemy. Salafi-Jihadists are often heard arguing that, while the West loves life, they love death. As Suleiman Abu Gheith declared, "those youths that destroyed Americans with their planes, they did a good deed. There are thousands more young followers who look forward to death like Americans look forward to living."[271] Salafi-Jihadists underscore the West's alleged clinging to life with a verse from the Quran (2:96): "Indeed, you will find them [the evildoers] of all people the most attached to life, even more than those who associated other gods with Allah. Every one of them wishes to live for one thousand years. This long life, however, will not spare them the punishment."

The final examination on the organizational level relates to the way in which the 9/11 attacks.have helped Al-Qaeda pursue specific strategies. According to Saif al-Adl, "our main objective… was to deal a strike to the head of the snake at home to smash his arrogance… Our ultimate objective of these painful strikes against the head of the serpent was to prompt it to come out of its hole. This would make it easier for us to deal consecutive blows to undermine it and tear it apart. It would foster our credibility in front of our nation and the beleaguered people of the world. A person will react randomly when he receives painful strikes on his head from an undisclosed enemy. Such strikes will force the person to carry out random acts and provoke him to make serious and sometimes fatal mistakes. This was what actually happened. The first reaction was the invasion of Afghanistan and the second was the invasion of Iraq… Such reactions prompted the Americans and their allies to deal powerful strikes to the head and other important parts of the body of our nation, which has been in hibernation for almost two centuries. God willing, these strikes will help the

269 Reuven Paz, interview with the author, Washington, DC, 17 July 2006. See also Mohammed M. Hafez, *Suicide Bombers in Iraq: The Strategy and Ideology of Martyrdom* (Washington, D.C.: USIP Press, 2007).

270 Ironically, legitimizing the tactic against Israelis gradually opened the door toward justifying the use of this tactic against other groups, including eventually against Muslims. Nowadays, many Salafi-Jihadist ideologues permit suicide attacks in Iraq and oftentimes limit their critique on the target selection rather than on the modus operandi.

271 Quoted in Hoffman, "The Logic of Suicide Terrorism," *Atlantic Monthly*, June 2003, 40-47.

nation to wake from its slumber."[272] In other words, if the former military commander of Al-Qaeda is to be believed, the 9/11 attacks were a case of the strategic use of terrorism to provoke a fierce response,[273] thereby leading more Muslims to join Al-Qaeda's cause. Rendering the 9/11 attacks a particularly memorable and humiliating strike—striking multiple targets, hitting the U.S. homeland in critical financial and political infrastructure, etc.—served the same goal.

Finally, the 9/11 attacks were also in line with the strategic shift of Al-Qaeda from targeting the near enemy to targeting the far enemy, which occurred during the mid-1990s.The strategic shift in the mid-1990s from attacking the near enemy to attacking the far enemy would become a watershed for Al-Qaeda and helps explain the subsequent decision to strike the United States and other countries beyond the traditional Islamic heartland.

Several factors influenced Al-Qaeda's decision to shift its eyes toward striking the West, especially the United States: First among them is the presence of U.S. forces in Saudi Arabia in the wake of Iraq's invasion of Kuwait. Jihadists viewed the presence of infidels in the midst of the *dar al-Islam* as a desecration of Islam's holiest places, which were located nearby. They also dreaded an encirclement by the United States, which in their eyes already occupied the Persian Gulf and was in the process of establishing a foothold in Somalia. U.S. government claims to the contrary notwithstanding, many Muslims believed that the United States and its allies were conducting a war not against Iraq but against Muslims.

A second reason is the jihadists' military defeat of the Soviet Union in Afghanistan, which encouraged the victors to seize the momentum of the jihad's success and export it to new battlefields. That export occurred both in the realm of ideology, with the spread of Salafi-Jihadist texts, and through the dispersal of the Arab Afghans to a host of other countries beginning in the late 1980s. A third reason—and a possible explanation for why Salafi-Jihadists began targeting the West at that particular time—also lay in the jihadists' defeat in the battle against the near enemy. After having suffered heavy losses in places like Egypt and Algeria, Al-Qaeda had to focus elsewhere. As Gerges explains, "jihadis in Egypt, Algeria, and elsewhere had to choose between surrender and a new mission that would keep their sinking ship afloat. They lost the battle against the near enemy and had few options at their disposal."[274]

But there were also tactical reasons for this strategic shift. Bin Laden believed that extending attacks against Americans and Israelis would boost Arab and Islamic self-confidence. There was also a second tactical rationale. The Al-Qaeda leader believed that attacks against local regimes were counterproductive, reducing the military effectiveness of Al-Qaeda's potential allies, such as the EIJ.[275]

Upon Al-Qaeda's return to Afghanistan, the group solidified its transition into a global terrorist organization. A dramatic step occurred on August 8, 1996, when bin Laden declared war against the United States—a step that "marked the emergence of the true global Salafi jihad."[276] Another

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272 Quoted in Bergen, *The Osama bin Laden I Know*, 309.

273 Provocation is listed by Kydd and Walter as one of five main strategies that terrorist organizations pursue. See Andrew Kydd and Barbara Walter, "The Strategies of Terrorism," *International Security* 31.1 (Summer 2006).

274 Fawaz A. Gerges, *The Far Enemy: Why Jihad Went Global* (Cambridge; New York: Cambridge University Press, 2005), 65.

275 Anonymous, *Through Our Enemies' Eyes*, 172-73.

276 Sageman, *Understanding Terror Networks* (Philadelphia: University of Pennsylvania Press, 2004), 45.

radicalization of Al-Qaeda took place around 1997. In 1996, and again early in 1997, bin Laden stressed the importance of driving the United States out of Muslim territories, but he had not yet included U.S. civilians among his preferred targets.[277] That changed on February 23, 1998, when the Al-Qaeda leader issued another declaration signed by several groups and called World Islamic Front against the Crusaders and the Jews. Bin Laden had now openly declared war on the far enemy and announced that the United States would henceforth be hit wherever possible, including on its own homeland.

Individual Motives and Small Group Radicalization

Individual motives are perhaps the most challenging to identify among the many factors that may have influenced the innovation of the 9/11 attacks. It is enormously difficult both to quantify personal sensations such as humiliation, shame, revenge, perceived injustices, etc., and it is equally difficult to measure the relative weight of one such sensation versus others. Hence, any attempts at precision when it comes to assessing the motivations of individual terrorists have so far eluded terrorism analysts of all stripes and backgrounds. Even direct statements of terrorists, in which they purportedly describe their motivations, must be taken with a grain of salt, for terrorists tend to portray their actions in the best, but not always the most accurate, light. The same caveats apply to the following discussion of individual motivations attributed to some of the main players involved in the 9/11 attacks. Due to space reasons, the below discussion is incomplete in that it does not—indeed, cannot—capture the motivations of all people involved in the 9/11 plots. Instead, the discussion offers tidbits of the declared or observed motivations of some of the key actors.

Aspects of Bin Laden's motives, including his intense hatred of the United States, Israel, and other Western countries and his belief in the need to 'redeem Islam' from perceived subjugation and humiliation have already been discussed previously, but some sources shed additional light on bin Laden's thinking, including on the timing and importance of the 9/11 attacks. For instance, one senior AQ member reported that bin Laden justified the need to immediately strike the United States by citing the need to "support insurgency in the Israeli-occupied territories and protest the presence of U.S. forces in Saudi Arabia." The same senior AQ member also recalled that bin Laden believed that an attack against the United States would benefit Al-Qaeda by "attracting more suicide operatives, eliciting greater donations, and increasing the number of sympathizers willing to provide logistical assistance."[278]

Over time, bin Laden also seemed to grow so eager for the attacks to go ahead that he apparently remarked, "I will make it happen even if I do it by myself."[279] One of the reasons why bin Laden may have been so eager to see these attacks happen was his belief that they would spell the end of the United States. "America is a great power possessed of tremendous military might and a wide-ranging economy but all this is built upon an unstable foundation which can be targeted, with special attention to its obvious weak spots. If it is hit in one hundredth of those spots, God willing, it will stumble, wither away and relinquish world leadership."[280]

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277 Benjamin Orbach, "Usama Bin Ladin and Al-Qaida: Origins and Doctrines," *Middle East Review of International Affairs* 5. 4 (December 2001): 59-60.

278 *9/11 Commission Report*, 251.

279 Ibid., 250.

280 Quoted in Wright, *The Looming Tower*, 348.

KSM's motives in planning the 9/11 attacks appears to be a mix of political motivation and vanity. According to interrogation reports, KSM suggests that the main driver for his anti-U.S. activities were not bad experiences he encountered as a student in the United States, but instead "violent disagreement with U.S. foreign policy favoring Israel."[281] KSM says that he started to think about attacking the United States after his nephew Ramzi Yousef returned to Pakistan following the 1993 WTC bombing. He essentially agreed with Yousef's assessment that the best way to influence U.S. policy would be to target the country's economy, and apparently the two relatives brainstormed about what drove America's financial system. Together, they apparently decided that New York, as the financial capital of the United States, should be the main target.[282]

Other signs, however, hint that KSM was driven in no small part by a sizable ego, noticeable by his initial refusal to pledge bayah to bin Laden. Another indication is that he appeared to be driven to grandiose plans after observing the notoriety that his nephew Ramzi Yousef gained following his failed attempt to collapse the World Trade Center towers in 1993.[283] Indeed, considering one of the early 9/11 plans of KSM, the suspicion that KSM was driven in part by vanity does not seem far-fetched. His plan involved hijacking ten planes, and crashing all but one of them on multiple targets. KSM himself had planned to heroically land the final plane on a U.S. airport and deliver a damning speech against U.S. support for Israel and other 'repressive' regimes. As the 9/11 Commission Report authors put it, "this vision gives a better glimpse of his true ambitions. This is theater, a spectacle of destruction with KSM as the self-cast star-the superterrorist."[284]

KSM also said that he was motivated to approach Al-Qaeda, and not any other group, about the 'planes operation' after he witnessed the 1998 embassy bombings in Nairobi and Dar es Salaam which convinced him, he says, that bin Laden was "truly committed to attacking the United States."[285] He was also duly impressed with the "recruiting bonanza" of Arab youth for Al-Qaeda that occurred after the embassy bombings and the 2000 attack on the USS Cole.[286]

As to the motivations of the 9/11 hijackers, more information is known about the German 9/11 cell than about the muscle hijackers. Mohamed Atta, who was born in Egypt in 1968 to a middle-class family, moved to Germany in 1992. At his university in Hamburg-Harburg, he became involved with Muslim student groups. He frequently voiced anti-American views, and his anti-Semitism was marked by conspiracy theories of a global Jewish movement headquartered in New York City, where it supposedly controlled the financial world and the media. To his friends, he became a proponent of violent jihad and expressed a willingness to fight for his beliefs.[287]

Ramzi Binalshibh, born in 1972 in Yemen, met Atta at a mosque in Hamburg in 1995. They befriended each other and shared similar outlooks on the world. Binalshib, too, blamed a global Jewish conspiracy for the misery of Islam, and believed that the "highest duty of every Muslim was to pursue jihad, and that the highest honor was to die during the jihad."[288]

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281 9/11 Commission Report, 147.
282 Ibid., 153.
283 Ibid., 147.
284 Ibid., 154.
285 Ibid., 149.
286 Ibid., 490, fn 16.
287 Ibid., 161.
288 Ibid., 161.

Marwan al Shehhi, born in 1978 in the United Arab Emirates, was the son of an Islamic prayer leader. He first entered Germany in 1996, and had difficulties at university. In 1998, he shared an apartment with Atta and Binalshibh, after which "his evolution toward Islamic fundamentalism became more pronounced," telling a fellow student that he was "living the way the Prophet had lived."[289]

Ziad Jarrah, who was born in Lebanon in 1975, came to Germany in 1996. Prone to a lifestyle of partying, he seemed to have little to do with Islamic radicalism, although signs of radicalization already appeared that year. After a trip to Lebanon that year, he adhered more strictly to the Koran, talked to friends about holy war, and expressed an interest in abandoned his former lifestyle. In 1999, Jarrah told his Turkish-German girlfriend that he planned to wage jihad since "there was no greater honor than to die for Allah."[290]

The radicalization of the 9/11 suicide hijackers is a testimony to the importance of friendship and kinship ties in the formation of jihadist cells in Western Europe.[291] The 9/11 team, for instance, included two sets of brothers (the Hazmi and Shehri brothers) and three cousins. More important perhaps is the crucial importance of friendship ties. The 'Hamburg cell', as it became known, was the result of a convergence of nine individuals who came together in a student community of upper-middle-class expatriate Muslims. The nucleus of the group formed around Mohammed Belfas, who had immigrated to Germany after having lived in Indonesia, Yemen, and Egypt. Belfas conducted a study group at Hamburg's Al Quds Mosque in which several cell members participated. Mounir Motassadeq and Abdelghani Mzoudi, two fellow students who would later stand trial for providing support to the Hamburg cell, knew each other from Marrakech, where they had been friends. Motassadeq helped conceal the Hamburg cell's trip to Afghanistan in late 1999. Both Motassadeq and Mzoudi witnessed the execution of Atta's will.

Motassadeq's apartment became a center in the student dormitories where militant Muslim students gathered, ate, and discussed religion and politics. Binalshibh joined next, as did his friend Atta and Said Bahaji.[292] Jarrah joined the clique in 1997 when he met Binalshibh at Al Quds Mosque, followed a year later by Marwan al-Shehhi.

In November 1998 Atta, Binalshibh, and Bahaji moved together into an apartment on Marienstrasse and referred to it as Beit al-Ansar. They strictly observed religious practices, prayed five times a day, and maintained strict Islamic diets. Their conversations revolved around the perceived state of Muslims and general damage done by Jews. They also watched battlefield videos and sang songs about martyrdom.[293]

German security services who monitored the clique heard the group talk a lot about the need to fight a jihad to defeat 'world Jewry'. Discussions about paradise were becoming more frequent, and the group as a whole became more religious over time. At Bahaji's wedding, for example, the group

289 Ibid., 162.
290 9 Ibid., 163.
291 On the importance of friendship and kinship ties for the global jihad, see Sageman, *Understanding Terror Networks*.
292 Sageman, *Understanding Terror Networks*, 104.
293 Ibid., 105.

loudly proclaimed their devotion to God and jihad. Ultimately, by 1999, the cell, which had become cult-like, decided to join the jihad.[294]

The 9/11 attacks would not have been possible were it not for the inclusion of "muscle hijackers," whose job it was to assist the lead hijackers in taking over the plane and preventing mutinies. According to Saudi intelligence who interviewed the muscle hijackers, twelve of whom were Saudis, they came from a variety of educational and societal backgrounds and were between twenty and twenty-eight years old, mostly unemployed with no more than a high school education, and single. Four of them came from a cluster of three towns in the isolated and underdeveloped Al Bahah region and shared the same tribal affiliation. They may have known each other since 1999. Five others came from Asir Province, a poor region of southwestern Saudi Arabia bordering Yemen. Two of the muscle hijackers were brothers.[295]

Several of the muscle hijackers had planned to go to Chechnya but, when denied, returned to Afghanistan, where they came under the indoctrination of bin Laden and volunteered for SMs.[296]

V: PREPARATORY BEHAVIORS

The final part of this paper will address preparatory behaviors of the team that planned and executed the 9/11 attacks. Preparatory behaviors in this context are defined as activities undertaken in preparation for the attacks once the group has decided that it wanted to innovate.[297] In the case of the September 11 attacks, the known details of the strike preparations have been painstakingly reconstructed by the National Commission on Terrorist Attacks against the United States, widely known as the 9/11 Commission. Needless to say, the present study cannot even remotely match the comprehensiveness and level of detail of the 9/11 Commission Report. For this reason, and due to space constraints, this final part of the paper will provide only brief summaries of the most important preparatory behaviors, relying mostly on findings presented at much greater detail in the 9/11 Commission Report. Preparatory behaviors of the team that planned and executed the 9/11 attacks will be divided into eight categories deemed as critical for the attack's success: operational decisions; team selection; coordination and supervision; training; intelligence gathering; flight training; travel and documentation; fundraising; and political/military preparation.

Operational decisions

Some of the more important operational decisions that the 9/11 team had to take related to the selection of targets, the selection of the date for the attack, as well as a decision on what weapons would be used in the course of the attacks. Beginning in the spring of 1999, bin Laden, Atef, and KSM began discussing details of the 'planes operation', including potential targets. The original idea for KSM to land the last plane himself and make a media statement was dropped. The initial list of targets then developed by the troika included the White House, the Capitol, the Pentagon, and the World Trade Center.[298] That bin Laden had a particular interest in the planes hitting the White House—and that the final selection of targets was left open at least until about five weeks before the

294 *9/11 Commission Report*, 164.
295 Ibid., 231-32.
296 Ibid., 233.
297 Rasmussen and Hafez." Innovation in WME Terrorism."
298 *9/11 Commission Report*, 155

attacks—is evident from communications that took place between Binalshibh and Atta as late as August 3, 2001. In these coded messages, Binalshibh reminded Atta of bin Laden's desire to hit the official residence of the U.S. president. Atta was unsure about the feasibility of this target, but told Binalshibh he would look into it. On the same day, Atta also recommended that the attacks take place not before the second week of September, when Congress would reconvene.[299] The final attack date, however, was only passed to Binalishib in the third week of August, 2001. Binalshibh claimed that Atta used coded words to inform him of the date: two branches, a slash, and a lollipop symbolizing 11/9.[300]

Another operational decision involved selecting the specific pilots for each plane. Atta informed Binalshibh of these plans in a meeting in Spain in the first half of July. The respective 9/11 pilots apparently volunteered for their assigned targets. Atta also informed Binalshibh that contingency plans were made in case a pilot would not be able to hit his target. In that case, the plane was to be crashed; in the case of Atta, he would crash his plane into the streets of New York.[301]

During their time in Spain, Binalshibh and Atta also discussed plans for how the hijackers would gain control over the planes. Atta reported that during reconnaissance flights, Shehhi, and Jarrah did not have problems carrying box cutters onto the flights. He also reported that since cockpit doors tend to open 10-15 minutes after takeoff, it would be the best time to enter the cockpit. Atta apparently had no contingency plans should the cockpit door have been locked, other than a rough plan to claim to have a bomb or force his entry by seizing a hostage. Atta also informed Binalshibh during one of these meetings in Spain in the first half of July that he planned on selecting planes scheduled for longer flights "because they would be full of fuel, and that he wanted to hijack Boeing aircraft because he believed them easier to fly than Airbus aircraft, which he understood had an autopilot feature that did not allow them to be crashed into the ground."[302]

Atta also told Binalshibh during the July meeting in Spain that the muscle hijackers would be divided into teams based on their English-speaking capabilities, so that at least one of them in each plane could provide passengers with commands in English.

Team selection

Bin Ladin initially selected four suicide operatives, Khalid al Mihdhar, Nawaf al Hazmi, Khallad, and Abu Bara al Yemeni—a decision that was made without KSM's knowledge.[303] Mihdhar and Hazmi were both Saudis and experienced mujahideen, having fought in Bosnia in the mid-1990s. They were the only ones retained for the operation from bin Laden's original selection, but both were eventually employed as muscle hijackers rather than pilots.

Atta, Jarrah, and Binalshibh arrived in Afghanistan in November 1999 and were quickly selected, along with Shehhi, to lead the 9/11 attacks. They shared their hatred of the United States, but in addition to that had a distinct advantage over the initially selected team in that they were fluent in English and familiar with the Western life styles, and thus could blend in far better than the original

299 Ibid., 248.
300 Ibid., 249
301 Ibid., 244
302 Ibid., 245
303 Ibid., 492, fn 41.

team.[304] The selection the Hamburg cell members by bin Laden proceeded even before the Hamburg cell members met KSM. Bin Laden chose Atta to become the tactical commander of the group, and met with him in private several times to provide him with additional instructions, including an initial list of targets.[305]

Binalshibh's role in the 9/11 attacks would later change from the initial plan for him to pilot a plane. After the U.S. government repeatedly rejected his attempts to obtain a visa to the United States, the 9/11 planners were forced to look for another fourth pilot.[306] The fourth pilot was Hani Hanjour, a Saudi national with both fighting experience and some flying experience. Hanjour was selected as a pilot sometime in early 2000 in Al-Qaeda's al Faruq camp, based on his background. After weeks at camp, bin Laden and Atef likely recognized that Hanjour had been a trained pilot and asked him to report to KSM.[307] Bin Laden and other senior AQ members began selecting the remaining muscle hijackers beginning in the summer of 2000. Nearly all of them were Saudis.[308]

Coordination and Supervision

Preparations for the 9/11 attacks made it incumbent that duties for coordination of the attack team and overall supervision of the attack were clearly delineated. These roles were crucial to ensure that members of the team were able to communicate with each other, but also to coordinate the attacks. As Binalshibh said, the 9/11 attacks were "not just a single hijacking operation, but four. It was crucial that all were executed simultaneously, and that all the brothers are on the flights at the same time."[309]

As mentioned earlier, Atta was selected as the tactical team leader and was, according to KSM, "the only 9/11 hijacker who knew the entire scope of the operation from the outset," indicating that information about the 9/11 plan was strictly compartmentalized.[310] His role was to communicate with Binalshibh and finalize the operational decisions of the attack, but also to coordinate the arrival of the muscle hijackers and helping them settle in the United States. By mid-June, most of them lived in shared apartment close to each other, and close to Atta.[311]

Binalshibh's role in the 9/11 attacks—once it became clear that he was unable to participate as a suicide pilot—was to coordinate between KSM and the team in the United States. He provided what is perhaps the best description of his activities himself under interrogation: "The coordination of the 9/11 attacks," Binalshibh said, is "simply a process of interconnecting various cells, establishing a line of contact between these cells and the General Command in Afghanistan as well as following up on work priorities of these cells until all phases of preparation are complete—up to the moment of execution."[312]

Training

304 Ibid., 160.
305 Ibid., 166
306 Ibid., 168, 225.
307 Ibid., 226
308 Ibid., 231-33.
309 Bergen, *The Osama bin Laden I Know*, 305.
310 *9/11 Commission Report*, 496, FN 92.
311 Ibid., 241
312 Bergen, *The Osama bin Laden I Know*, 304.

The suicide hijackers all underwent a variety of trainings, including physical training, cultural and language training, counterintelligence training and flight training (which will described separately).

The original four hijackers selected by bin Laden attended an elite training course in Al-Qaeda Mes Aynak camp in Afghanistan in the fall of 1999, which included physical fitness, firearms, close quarters combat, shooting, and night operations. They also received mental training in preparation for the attacks.[313] Following the training at Mes Aynak, several of the initially selected team traveled to Karachi, Pakistan, where KSM trained them on Western culture and travel over a period of 1-2 weeks. KSM reported that he trained the recruits basic English words and phrases, how to read phone books, interpret airline timetables, use the Internet, use code words in communications, make travel reservations, and rent an apartment. One of the recruits later reported that they also received training using flight simulator computer games in order to familiarize themselves with aircraft models and functions and identify security holes. They also viewed videos that featured hijacking scenes. Another topic of discussion was surveillance of flights. Here, KSM recommended that the team "watch the cabin doors at takeoff and landing, to observe whether the captain went to the lavatory during the flight, and to note whether the flight attendants brought food into the cockpit."[314]

Although the 9/11 Commission Report does not provide details on the training of the Hamburg cell, it appears that Binalshibh and Atta, and perhaps Shehhi, received similar training (minus language and cultural awareness training) by KSM in Karachi in early 2000.[315] Among the most important skills that they were taught was to avoid drawing attention to themselves. When they returned to Germany, the German cell members went to great lengths to appear moderate. They sought distance from known extremists and changed their appearance and behavior. Atta and Jarrah began wearing Western clothes, shaved their beards, and stopped attending extremist mosques. Shehhi, too, behaved "like his old self again" upon his return, according to a friend of his.[316] This form of deception was practiced up to the very day of the attacks. Binalshibh reported that in a July 2001 meeting in Spain, he gave Atta several expensive looking bracelets and necklaces he had requested in order for the hijackers to appear as "wealthy Saudis."[317]

As far as the muscle hijackers were concerned, at least seven of them started by undergoing basic training at the al Faruq camp near Kandahar—the preferred camp for vetting the muscle hijackers—akin to that of other AQ recruits, including firearms, heavy weapons, and explosives. Between late 2000 and early 2001, they received additional training at the al Matar camp that included more specialized skills such as how to conduct hijackings and disarm air marshals, as well as physical fitness and additional language training.[318] KSM reported later that the muscle hijackers also had to butcher sheep and a camel using a knife as part of their training. They were taught to focus on gaining control of the cockpit as soon as possible, and concentrate on the passengers later. He also said that the muscle hijackers were taught other tactics such as truck bombing to prevent them from disclosing compromising information in the event that they were caught. Only in the United States were they informed of the plan to hijack a plane and crash it into a building.[319]

313 *9/11 Commission Report*, 157
314 9/11 Commission Report, 157-58.
315 Ibid., 167.
316 Ibid., 167.
317 Ibid., 245.
318 Ibid., 235-36. AQ member Abu Turab al Jordani provided that additional training.
319 Ibid., 236.

Intelligence Gathering and Surveillance

Another crucial aspect of the preparation for the 9/11 attacks was intelligence-gathering, which most importantly included the surveillance of flights. KSM had an important role in the collection of all kinds of information relevant to the suicide operatives. In 1999, collection of training and information material was among his main tasks. Among the items KSM put together were aviation magazines, telephone directories for U.S. cities, airline timetables, and information on flight schools.[320]

Once in the United States, the suicide team took a number of cross-country casing flights. They all traveled in first class and picked those types of aircraft that they would eventually steer on September 11, 2001.[321]

Flight training

For the planners of the 9/11 attacks, the ability of the team leaders to fly planes was a sine qua non for the successful implementation of KSM's ideas, and flight training thus had a central role in the preparations for the 9/11 strikes.

The initial suicide attack team stood before challenging language barriers, which eventually prevented them from completing the flight courses. But they also proved otherwise incapable. Some instructors later recalled that Mihdhar and Hazmi, members of the initially selected team, were "poor students who focused on learning to control the aircraft in flight but took no interest in takeoffs or landings."[322]

The German cell members proved slightly much more professional in this regard. They began researching flight schools and training soon after leaving Afghanistan. Jarrah decided to take flight lessons in the United States, convinced that the German flight schools were inadequate. Binalshibh learned in his research that flight schools in the United States were relatively inexpensive, and training periods were shorter.[323]

The Hamburg team arrived in the United States in the early summer of 2000 to conduct flight training. Jarrah attended the Florida Flight Training Center (FFTC) in Venice, Florida. Atta and Shehhi ended up at Huffman Aviation in Venice, Florida, where they passed final tests in mid-August. In late September, Atta and Shehhi enrolled at Jones Aviation in Sarasota, Florida, where they came off as "aggressive, rude, and sometimes even fought with [the instructor] to take over the controls during their training flights." They seemed "upset," saying that they were in a hurry "because jobs awaited them at home."[324]

320 Ibid., 157.
321 See, for example, ibid., 242
322 Ibid., 221-22.
323 Ibid., 168.
324 Ibid., 224

In 2001, several of the suicide pilots took additional flight training. Jarrah and Hanjour took practice flights in the early summer of 2001. Both pilots were deemed inexperienced by their instructors at the time.[325]

Travel and documentation

The attackers came from several different countries, including Saudi Arabia, Egypt and the UAE; planned the attacks in other countries, including Afghanistan, Pakistan, Germany, and Spain; attacked the United States; and killed citizens from over 90 countries.[326] Many of the aspects that made the 9/11 an act of international terrorism par excellence required that the conspirators travel. Travel, including dozens of international travel recorded in the 9/11 Commission report, was a core requirement for a self-proclaimed movement of global reach and played a "part in Al-Qaeda's operational planning from the very start."[327] It was necessary not only to move individuals from country to country, but at times also for communication purposes and to transfer funds.[328] Thus, difficulties obtaining visas hampered Yemeni Al-Qaeda plotters such as Mihdhar, Hazmi, and Binalshibh much more than they did attackers with Saudi Arabian passports.

9/11 related travel was facilitated by key Al-Qaeda members, especially KSM and Abu Zubaydah, as well as by Al-Qaeda's security committee, which had an office of passports and "host country issues" managed by Atef, which forged passports, visas, identification cards, and other key documents. In fact, one of the reasons that Al-Qaeda collected passports of recruits was to recycle them in case some of them died. At least two 9/11 attackers, including Atta, were reportedly trained in passport alteration.[329]

Atta, Shehhi, Jarrah, and eleven other out of the 19 hijackers heeded KSM's advice and obtained new passports before they applied for U.S. visas, apparently concerned that the Pakistani visas in their old passports would alert the authorities.[330] KSM and other Al-Qaeda members also organized safe houses for 9/11 plotters in transit. KSM, for example, rented a safe house in Karachi financed by bin Laden, where he provided training to many of the 9/11 attackers.[331]

Fundraising

Al-Qaeda benefited from a variety of sources that provided funds for its operations, most of them from Gulf countries, and especially Saudi Arabia, but the exact source of the money used for the 9/11 attacks remains unknown. Given the relatively low cost of the operations, however, this question is of "little practical significance," as the 9/11 Commission Report put it. "Al-Qaeda had many avenues of funding. If a particular funding source had dried up, Al-Qaeda could have easily

325 Ibid., 242
326 U.S. Department of State, "5-Year 9/11 Remembrance Honors Victims from 90 Countries," Available at http://www.america.gov/st/washfile-english/2006/September/20060911141954bcreklaw0.9791071.html, last accessed 6 July 2010.
327 *9/11 Commission Report*, 156
328 Ibid., 169
329 Ibid.
330 Ibid., 235
331 Ibid., 157, 236.

tapped a different source or diverted funds from another project to fund an operation that cost $400,000-$500,000 over nearly two years."[332]

The 9/11 Commission Report, admitting that its understanding on the issue of funding the 9/11 attacks remains limited, states that the 19 hijackers were entirely funded by Al-Qaeda through wire transfers or cash provided by KSM. Atta, Shehhi, Jarrah, and Binalshibh, the Hamburg cell members, apparently supported themselves until late 1999, at which point they also received money from Al-Qaeda. KSM stated that the Hamburg cell members each received thousands of dollars of travel money from Al-Qaeda.[333]

The first batch of muscle hijackers brought at least $50,000 with them to the United States in the form of cash and traveler's checks purchased in the UAE and Saudi Arabia, while additional substantial funds arrived along with the next group of muscle hijackers. The hijackers extensively used U.S. banks to transfer and withdraw funds. Each of the hijackers opened an account in his name, using passports and other documents that looked professional enough to the bank employees. The 9/11 Commission does not fault bank employees for any wrongdoing. "Nothing [the hijackers] did would have led the banks to suspect criminal behavior, let alone a terrorist plot to commit mass murder."[334]

Political/military preparation

One may also add to the list of "preparatory behavior" by Al-Qaeda the September 9, 2001 killing of Ahmed Shah Massoud. On September 9, 2001, two Al-Qaeda members carrying Belgian passports approached the leader of the Northern Alliance, the leading faction fighting the Taliban in the aftermath of the Soviet withdrawal. The pair had already spent nine days at the camp, patiently waiting for Massoud to free up some time. When Massoud was finally available for the interview, one operative detonated an explosives charge he carried either in the camera or on his waist. Ahmed Shah Massoud died of his wounds within a few minutes. One of the attackers and a second Northern Alliance official died in the blast, and two others were wounded.

Bin Laden had likely planned the killing of Massoud as a gift to Taliban leader Mullah Omar because the Tajik fighter represented the key obstacle to the Taliban's complete rule over Afghanistan. Timed only two days before the 9/11 attacks, the assassination was also meant to cripple the Northern Alliance. Al-Qaeda must surely have anticipated a fierce U.S. response to the 9/11 attacks, and neutralizing Massoud would deny the Americans the support of the most competent of the Taliban's enemies.

CONCLUSION

In Chapter 11 ("Foresight—and Hindsight") of the 9/11 Commission Report, the report's authors summarize the most glaring failures of the United States in foreseeing and preventing the 9/11 attacks.[335] Instead of simply rehashing the thoughtful conclusions of the 9/11 Commission Report

[332] Ibid., 171
[333] Ibid., 172
[334] Ibid., 237.
[335] Ibid., 339-360.

here, this conclusion will proceed by referring back to some of the factors for innovation mentioned by Dolnik and examine the extent to which those factors apply to the case of 9/11.
At the outset of his book, Dolnik cites 11 variables that are the "most likely determinants of the level of innovation demonstrated by a particular terrorist group." They are the role of ideology and strategy; the dynamics of the struggle; countermeasures; targeting logic; attachment to weaponry/innovation; group dynamics; relationship with other organizations; resources; openness to new ideas; durability; and nature of the technology.[336]

Role of ideology and strategy: The above discussion strongly supports Dolnik's hypothesis that ideology and strategy are important determinants of the level of innovation of Al-Qaeda. In the case of Al-Qaeda, of particular importance is Al-Qaeda's intense hatred of the United States as well as its advocacy of suicide attacks, both of which are rooted in Al-Qaeda's Salafi-Jihadist ideological belief system.[337]

Dynamics of the struggle: Dolnik suggests that "tremendous differences are likely to exist between organizations that are equipped with an area in which they can operate freely, and urban guerilla organizations that have to rely on safe houses and training grounds located in the urban setting,"[338] with the former assumed to be better positioned to innovate. In the case of Al-Qaeda, Al-Qaeda's safe haven in Afghanistan no doubt enabled the group to plan the basic contours of the attack relatively unhindered, and of course establish adequate training camps. At the same time, however, it should be kept in mind that the distance between the country where the attack plan was decided—Afghanistan—and the targeted country—the United States—posed challenging hurdles before Al-Qaeda, including communications, travel, and money transfer challenges. In short, while analysts are quick to point to the benefits of safe havens, it is important to note that if safe havens are far removed from the target country, new problems emerged.

Countermeasures and attachment to weaponry/innovation: Al-Qaeda could have easily avoided the security measures that the United States had in place on air travel, but chose to attack airliners anyway. Of course, the innovative nature in which Al-Qaeda hijacked airplanes overcame what at the time were insufficient countermeasures. In Al-Qaeda's case, however, it appears that countermeasures put in place by the target country had less to do with Al-Qaeda's need to hijack airplanes and crash them onto their targets than had an obsession with suicide operations but also with striking at the airline industry. Hence, *attachment to weaponry/innovation*—another factor mentioned by Dolnik—played a more important role than countermeasures in Al-Qaeda's decision to innovate. Dolnik's conclusion that "the attachment to a particular weaponry or tactic seems to have the strongest predictive value with regards to providing an indicator of a group's attraction to using innovative means" can largely be confirmed here.[339]

Targeting logic also applies to the case of 9/11. Al-Qaeda clearly had a highly indiscriminate targeting logic, and the decision about the means of attack was partly driven by the desire to maximize casualties. However, at all times, the feasibility of the operation was kept in mind. Thus, Al-Qaeda dropped the idea to attack a nuclear reactor because of the high likelihood that the airliner would have been intercepted before reaching the nuclear reactor.

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336 Dolnik, *Understanding Terrorist Innovation*, 13.
337 On this point, see also Moghadam, *Globalization of Martyrdom*; and Moghadam, "Motives for Martyrdom."
338 Dolnik, *Understanding Terrorist Innovation*, 14.
339 Ibid., 158.

Group dynamics: Dolnik writes that "the lessons of the group dynamics factor show that organizations led by an uncontested leader who provides a strong drive toward innovation are the most likely candidates to take this path and to complete it successfully."[340] This finding clearly applies to the case of 9/11, as evidenced by bin Laden's tenacious pursuit of the 9/11 attacks despite the resistance among even some of his top lieutenants. This research also showed that bin Laden was the uncontested leader of Al-Qaeda whose input was binding on the team unless it was not feasible.[341]

Relationship with other organizations: Relationships between Al-Qaeda and other terrorist organizations may have influenced Al-Qaeda's early adoption of a crucial technique employed in the 9/11 attacks, namely coordinated suicide operations. The 9/11 report suggests that Al-Qaeda learned this tactic from Hizballah when it sent a number key operatives to Lebanon in 1993 for training with Hizballah.[342] As far as the planning of the 9/11 operation is concerned, however, relations with other organizations were irrelevant because the attack plans were kept a tight secret. Only few individuals other than bin Laden, Atef, KSM, and Atta were aware of the full scope of these attacks.

Resources: It is difficult to argue with the notion that the greater material and human resources a terrorist group possesses, the more likely it is to innovate, and that groups that are "most likely to innovate are state-sponsored entities."[343] Al-Qaeda clearly possessed formidable resources, though state sponsorship was not one of them. More important than material resources—to recall, the 9/11 attacks were a relatively low-cost affair—were arguably human resources. In particular, Al-Qaeda's attack philosophy of "centralization of decision-making and decentralization of execution" exposed it to a great number of individuals and potentially innovative ideas. Hence, in Al-Qaeda's case, it was more Al-Qaeda's *openness to new ideas*—another factor mentioned by Dolnik—that aided Al-Qaeda's ability to innovate than human or material resources proper.

Nature of the technology: Dolnik hypothesizes that "the more complicated the new modus operandi, the less likely are groups to succeed in its adoption."[344] The low-tech affair that was the 9/11 attacks clearly renders this factor highly relevant in the case of the 9/11 attacks. Of course, the 9/11 attacks demonstrate that low-tech is not equivalent to unsophisticated, as the brilliance of its execution lied in the very simplicity of its method. This does not mean, however, that the 9/11 planning lacked complexity. The above discussion showed that logistically, the 9/11 attacks very a highly complicated affair.

Concluding Thoughts

In summary, the most important preconditions for Al-Qaeda's willingness and ability to innovate lie in the group's ideology and strategy, which combined a fanatical hatred of the United States with an obsession with suicide attacks and a penchant for attacks on the airline industry; the leadership

340 Ibid., 161

341 Eventually it appears that Atta rejected bin Laden's preference to strike the White House because it was too small a target. He hinted at these difficulties several times, including during the July 2011 meeting with Binalshibh.

342 *9/11 Commission Report*, 68, 240.

343 Dolnik, *Understanding Terrorist Innovation*, 19.

344 Ibid., 21.

qualities of the uncontested emir of the group, Osama bin Laden; and a rare terrorist management philosophy that centralizes decisionmaking while decentralizing execution.
The main causes for Al-Qaeda's drive to innovate lie in a complex combination of motives and factors spanning the levels of the individuals involved, the small group, the organization at large, and the situational context with which Al-Qaeda believed to find itself in.

As far as preparatory behavior is concerned, the most critical preparatory activities discussed here include operational decisions that had to be taken; team selection; coordination and supervision; training; intelligence-gathering and surveillance; flight training; travel and documentation; and fundraising, with the letter activity probably being the least critical variable given the low cost of the attack.

Any terrorist operation depends to some degree on good luck. Thus, for instance, "bad weather could have delayed [the 9/11] flights, destroyed simultaneity, and obscured their targets."[345] While the role of the masterminds is to reduce the element of chance by preparing and planning for any possible contingency, of course some contingencies cannot be prevented.
Chance not only made the 9/11 attacks a success on that bright and sunny Tuesday, but also had a direct impact on the planning of the attack. The final makeup of the 9/11 attacks, as well as the roster of the attackers, was influenced by chance events. It is well known, for instance, that the Hamburg cell members Binalshibh, Shehhi, and Jarrah had wanted to join the jihad in Chechnya against Russia when a chance meeting on a German train convinced them to travel to Afghanistan. On the train, the would-be-hijackers met Khalid al Masri, who connected them with Mohamedou Ould Slahi, an Al-Qaeda operative in Duisburg who in turn convinced the jihadists to travel to Afghanistan, where they met bin Laden.

Had the three members of the Hamburg cell never met Khalid al Masri on the train, it is possible that Al-Qaeda would have conducted the attacks with less skilled Al-Qaeda members. It is impossible to know, however, how such a less than ideal roster of hijackers would have fared in the execution of the 9/11 plots.

[345] Jenkins, "Anatomy of a Terrorist Attack," 4.

APPENDIX X: STEVE HEWITT, 7/7 AS TERRORIST INNOVATION

INTRODUCTION[346]

The lingering image of the attacks of 7 July 2005 on the transportation system of the largest city in Western Europe remains the twisted wreckage of a red London double-decker bus. Fifty-two people died in four separate suicide bombings, including 13 on the bus. In a nation that has experienced numerous acts of terrorism since the 19th century, 7/7 represented the highest loss of life within the United Kingdom due to a terrorist attack, with the notable exception of the 1988 Lockerbie bombing. That the four attackers were British and chose to give up their own lives so that they could take the lives of their fellow citizens makes 7/7 a singularly unique moment in the UK's experience of "new terrorism."[347]

The legacy of these now five-year-old attacks is still being measured on a number of different levels. Especially relevant to counter-terrorism is what the attacks represent that are unique, different or innovative from what came before them, either in a UK or an international context. In particular, this paper will rely on Adam Dolnik's definition of terrorist innovation: "an act of introduction of a new method or technology or the improvement of an already existing capability."[348] The specific innovations of the attacks, this paper suggests, were not in terms of strategy, since other cells active in the UK before and after 7/7 have sought to carry out indiscriminate acts of violence, but in relation to tactics and organization and their underlying preconditions and causes.

Broadening this point, 7 July represented not just innovation but a growing trend in which "low intensity terrorism" involving cells or lone individuals carrying out small- scale attacks represents the immediate future of terrorism.[349] This is innovation driven at least partially by state "countermeasures."[350] It may also represent a tactic now seemingly embraced by al-Qaeda, perhaps out of a belief in its effectiveness or out of desperation or both, in contrast to its earlier pursuit of more spectacular attacks.[351] This fits with a model in which impact can be achieved through small scale attacks carried out by citizens from within a country. This scenario is a much more troubling prospect, particularly psychologically, than attacks launched by outsiders.

THE ATTACKS

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346 I would like to thank my research assistants, Chris Emery and Corinne Jones, those who agreed to be interviewed for the paper, and those who provided feedback.

347 For more on "new terrorism", see Walter Laqueur, *The New Terrorism: Fanaticism and the Arms of Mass Destruction* (New York: Oxford University Press, 1999); Peter Neumann, *Old and New Terrorism* (Cambridge: Polity Press, 2009).

348 Adam Dolnik, *Understanding Terrorist Innovation: Technology, tactics, and global Trends* (London and New York: Routledge, 2007), 6.

349 Peter Roell and Maxim Worcester, "Low Intensity Terrorist Threats-A Future Trend in Europe?" *Institute for Strategic, Political, Security and Economic Consultancy, 17 June 2010,* http://www.wpfdc.org/en/analytical-materials/252-low-intensity-terrorist-threats-a-future-trend-in-europe (accessed 17 June 2010).

350 Dolnik, *Understanding Terrorist Innovation*, 13, 152.

351 Ibid., 146, 148. Lolita C. Baldor, "Al Qaeda 'Lone Gunman' Approach: Small Attacks May Signal Shift In Strategy," *Huffington Post*, 11 March 2010, http://www.huffingtonpost.com/2010/03/11/al-qaeda-lone-gunman-appr_n_494536.html (accessed 17 June 2010).

On 7 July 2005, the city of London was still celebrating being awarded the 2012 Summer Olympics the previous day. Just after 9 a.m. the media carried reports of problems related to power surges on several London Underground lines. In fact, three suicide bombers had killed themselves and dozens of others around 8:50 a.m. A fourth bomber, unable to detonate the two to five kilograms of high explosives in his backpack on the tube for reasons which are still not known and after failing to reach his now dead comrades by cell phone, wandered seemingly aimlessly amid the growing chaos in the streets before boarding a double-decker bus. There on the top level he placed his backpack on the floor and at approximately 9:47 detonated the bomb. Overall, the four bombers had killed themselves and 52 others, while injuring nearly 800.[352] Two weeks after the 7 July attacks, four more men attempted multiple suicide attacks, three on the tube and one on the bus. This time all four bombs failed to detonate. A fifth attacker abandoned his bomb without attempting to explode it.[353]

7/7, as the attacks soon became known in a grim reference to 9/11, shocked the United Kingdom (UK). Among the stunned were elements of the security establishment. The head of the Security Service (MI5) had briefed a group of British members of parliaments on 6 July that her agency had no intelligence of an attack being on the horizon and in May 2005 the Joint Terrorism Analysis Centre (JTAC) had downgraded the UK level of alert from Severe General to Substantial.[354] The societal shock only grew when over the next few days the identities of the bombers emerged through a combination of police work (33,554 pieces of evidence and 15,798 statements would be accumulated in the ensuing investigation), the assistance of the bombers who carried identification with them, and through the intervention of the families of two of the bombers who reported them missing. Three of the four, Mohammad Sidique Khan (aged 30), Shehzad Tanweer (aged 22) and Hasbid Hussain (aged 18), were British born and raised around the city of Leeds in northern England, the children of Pakistani immigrants to the UK. Jermaine Lindsay (aged 19), the fourth bomber, had emigrated to the UK from Jamaica and converted to Islam when he was 15. Others, including the widow of Khan, would later be arrested in connection with the attacks, but no one has been convicted of a 7/7-related crime. The British government has consistently ruled out a 9/11-style inquiry. Instead, two separate reports were issued by the parliamentary Intelligence and Security Committee (ISC).[355] In May 2010, a coroner's inquest into the 52 deaths began in London.

7/7 INNOVATIONS

352 "Silence to mark 7/7 anniversary," *BBC News*, 17 May 2006, http://news.bbc.co.uk/1/hi/uk/4989336.stm (accessed 21 April 2010).

353 "21 July plot suspects: Charges in full," *BBC News*, 27 January 2006, http://news.bbc.co.uk/1/hi/uk/4130420.stm (accessed 5 May 2010).

354 Intelligence and Security Committee (ISC), "Report into the London Terrorist Attacks on 7 July 2005," http://www.official-documents.gov.uk/document/cm67/6785/6785.pdf, 30 March 2006 (last accessed 14 May 2010).

355 Michael Evans, 'Shortage of money led to 7/7 security failures,' *Times*, 11 May 2006. A detailed description of the bombers and a timeline of their efforts are available at: ISC, "Could 7/7 Have Been Prevented?"(London: House of Commons, May 2009), http://www.cabinetoffice.gov.uk/media/210852/20090519_77review.pdf (accessed 11 May 2010); Andy Hayman and Margaret Gilmore, *The Terrorist Hunters* (London: Bantam Press, 2009), 108; "Police quiz 7 July bomber's widow," *BBC News*, 9 May 2007, http://news.bbc.co.uk/1/hi/uk/6637917.stm (accessed 8 April 2010); "Trio cleared over 7/7 attacks," *BBC News*, 28 April 2009, http://news.bbc.co.uk/1/hi/uk/7507842.stm (accessed 8 April 2010); David Barrett, "Civil servants feared inquiry into 7/7 bombings would focus negatively on Muslims," *Daily Telegraph*, 6 June 2010.

The innovations represented by 7/7 were not strategic in that the goal of the attackers differed little from other UK-based plots, such as one that would have targeted a shopping mall and a nightclub or failed attacks on the London tube and the Glasgow Airport. The strategic aim, as with these other efforts, was to bring jihad to the streets of the United Kingdom by killing indiscriminately and, in the process, potentially influencing governmental policy or public opinion in the way that the Madrid bombings appeared to have done. Instead, the multiple levels of 7/7 innovations connect to both tactics and organization.

Organizationally and tactically, the attacks of 7 July 2005 embody a new innovation through a combination of who carried out the attacks, namely British born and raised individuals, and the nature of the attacks, simultaneous suicide bombings on a mass transportation system. In this respect, 7/7 deviated from both the 9/11 template of outsiders entering a country to carry out attacks and the UK norm of earlier Islamist domestic terrorism, in which plots involved foreigners or foreign-born terrorists.[356] This is not to say that Britons had not previously been involved in Islamist terrorism. In the 1990s, UK individuals participated in conflicts in Bosnia, Afghanistan, and Indian-controlled Kashmir, even carrying out suicide terrorist attacks.[357] British-born individuals, such as the "shoe bomber," Richard Reid, and Asif Hanif and Omar Sharif who attacked Israel in 2003, had already shown a willingness to carry out suicide attacks, just not primarily against their fellow citizens. The key point, however, is that in the period between 9/11 and 7/7 the high profile arrests and convictions for participating in terrorist activity within the UK (British Muslims arrested in March 2004 as part of a plot to bomb targets in the UK had yet to come to trial) involved non-British born individuals. One of the most prominent examples was the so-called "Ricin Plot", involving several North Africans, including an Algerian named Kamel Bourgass who stabbed to death a police officer.[358] The belief at senior levels of the government prior to 7/7 was that there was no evidence of a desire "among British Muslims … to act within the UK, against the authorities within the UK."[359]

In examining the composition of the 7/7 cell, a crucial question surrounding innovation is whether the 7/7 bombers were al-Qaeda inspired, al-Qaeda supported, al-Qaeda directed, al-Qaeda recruited and directed, or various combinations of all of these?[360] The degree of the innovation (and the wider

356 Lindsay Clutterbuck**, "**An overview of violent jihad in the UK: Radicalisation and the state response," in Magnus Ranstorp, ed., *Understanding Violent Radicalisation: Terrorist and Jihadist Movements in Europe* (New York: Routledge, 2009), 147-53.

357 Richard Baxell, *British Volunteers in the Spanish Civil War: The British Battalion in the International Brigades, 1936-1939* (Wales: Warren & Pell, 2007); Evan Kohlmann, *Al-Qaida's Jihad in Europe: The Afghan-Bosnian Network* (Oxford: Berg, 2004), 94; Jeevan Vasagar and Vikram Dodd, "British Muslims take path to jihad," *Guardian*, 29 December 2000; Philip Lewis, *Young, British and Muslim* (London: Continuum, 2007), 140.

358 Clutterbuck, "An overview …", 147; Marc Sageman, *Leaderless Jihad: Terror Networks in the Twenty-First Century* (Philadelphia: University of Pennsylvania Press, 2008), 134-5. For a general overview see Steve Hewitt, *The British War on Terror: Terrorism and Counter-Terrorism on the Home Front since 9/11* (London: Continuum, 2008), 56-86.

359 A senior UK counter-terrorism official as quoted in Mark Huband, "Radicalisation and recruitment in Europe - The UK case," in Magnus Ranstorp, ed., *Understanding Violent Radicalisation: Terrorist and Jihadist Movements in Europe* (New York: Routledge, 2010), 140.

360 It is clear al-Qaeda attempted in the aftermath in an effort to benefit from the atrocities. Its media wing, Al-Sahab, produced the martyrdom videos of Khan and Tanweer and Ayman al-Zawahiri appeared in both although not with the actual bombers. Vikram Dodd and Richard Norton-Taylor, "Video of 7/7 ringleader blames foreign policy," *Guardian*, 2 September 2005; Steve Bloomfield, Raymond Whitaker and Sophie Goodchild, Islamic group in secret plan to recruit UK students," *Independent on Sunday*, 4 September 2005. For excerpts of the Tanweer video see http://www.youtube.com/watch?v=E7Va-CuaO9M. For the Khan video

threat) is diminished if 7/7 was only al-Qaeda inspired although this does not exclude the spread of practice elsewhere by example.[361] There is no clear answer to this question. In 2006, the ISC report into the attacks said that the "extent of Al Qaida involvement is unclear. Khan and Tanweer may have met Al Qaida figures during visits to Pakistan or Afghanistan."[362] That committee's 2009 report said that British intelligence agencies "assess (i.e. they do not know for certain, but judge it is likely) that the bombers were directed in some way by elements of Al-Qaida based overseas."[363] Various rumours and accounts have speculated about the degree of al-Qaeda involvement in the attacks. Some have an al-Qaeda mastermind within the UK or outside of the UK as having directed the attacks. Another has Mohammad Sidique Khan himself as an al-Qaeda recruiter.[364] Andy Hayman, the head of counter-terrorism with the Metropolitan Police at the time of the bombings, suggests in his autobiography that 7/7 was an al-Qaeda operation. He quotes the current head of the Security Service as disputing that Osama bin Laden's terrorist organization has a "semi-autonomous structured hierarchy" within the UK. Instead, he argues that "the strategic intent of the Al Qaeda core, in Pakistan, is to mount attacks in the UK, and their model is to use British nationals or residents to deliver the attacks."[365] The answer to the question of the role of al-Qaeda in 7/7 may lie somewhere in between the extremes of al-Qaeda inspired against al-Qaeda recruited, supported and directed. This could have involved the ideologically committed Khan and Tanweer, desiring to do something for the cause, coming into contact with al-Qaeda or al-Qaeda-affiliated interests while in Pakistan, receiving training and being asked to carry out martyrdom attacks within in the UK. Indeed, the pattern evident with other plots in the UK sits between self-radicalized and independent versus directed by others with "tight cells of Jihadi activists swimming in a sea of like-minded individuals."[366]

Then there are the tactical innovations represented in 7/7 which fit in the category of "evolutionary" as opposed to "revolutionary."[367] The use of suicide was an innovation within the context of both UK and Western European terrorism as the tactic had never been used before in these areas.[368] The second part of the innovation was combining the use of suicide against a "soft target" mass transit system used on a daily basis by over one million people. It is a high volume transport system based on speed and ease and, concomitantly, minimal security. Furthermore, targeting a mass transit system has the potential for a much wider impact because such a strike demonstrates "the risks and threats that can be manufactured in everyday life situations by a determined minority and in so doing, induce changes in how citizens think, feel, or act in relation to their security."[369] Mass transit

see http://www.informationclearinghouse.info/article10079.htm (accessed 4 June 2010).
Dominic Casciani, "Path to Extremism: How It Started," *BBC News*, 3 May 2007, http://news.bbc.co.uk/1/hi/uk/6619147.stm (accessed 4 May 2007).

361 Martha Crenshaw, "The Logic of Terrorism," in Walter Reich, ed., *Origins of Terrorism: Psychologies, Ideologies, Theologies, States of Mind* (Baltimore and London: Johns Hopkins University Press, 1998), 11.

362 ISC, "Report into the London Terrorist Attacks on 7 July 2005," 27.

363 ISC, "Could 7/7 Have Been Prevented?" 101.

364 "How many more are out there?" *BBC Newsnight*, 30 April 2007; Sean O'Neill, Tim Reid and Michael Evans, "7/7 'Mastermind' Is Seized in Iraq" *Times*, 28 April 2007; Christopher Dickey, *Securing the City: Inside America's Best Counterterror Force - the NYPD* (New York: Simon and Schuster, 2009), 213.

365 Hayman and Gilmore, *The Terrorist Hunters*, 284-90; Jonathan Evans, as quoted in Ibid., 293.

366 Casciani, "Path to Extremism"; Margaret Gilmore, "Could 7/7 Have Been Prevented?" (London: Royal United Services Institute, 2009), http://www.rusi.org/go.php?structureID=commentary&ref=C4A14108283741 (accessed 12 June 2010).

367 Dolnik, *Understanding Terrorist Innovation*, 5.

368 Ian Blair, *Policing Controversy* (London: Profile Books, 2009), 11.

369 Martin Innes, "Policing Uncertainty: Countering Terror through Community Intelligence and Democratic Policing," *Annals of the American Academy of Political and Social Science*, Vol. 605, Democracy, Crime, and Justice

systems in Western Europe had previously been targeted by terrorists: the Paris Metro in 1995 by Algerian terrorists in the form of the Armed Islamic Group (GIA) and, most famously, in Madrid in 2004 by an al-Qaeda-inspired cell.[370] Only once, however, prior to 7/7, had a mass transit rail system been targeted through a suicide attack and that was in Moscow in February 2004 when a suicide bomber, apparently connected to Chechnya, killed 42 people on the Moscow Metro.[371] Innovatively, 7/7 involved the use of symbolic but also effective martyrdom attacks against a mass transit system.[372] "[T]here is something uniquely awful about a suicide attack," notes the former Commissioner of the Metropolitan Police, and his point can be multiplied by four.[373] The use of four attacks evidently amplified the potential scale of the operation and the weapon of mass effects (WME) results. Equally, multiple bombers improved the odds that at least one of the attacks would succeed while causing confusion as to where the explosions had occurred (aided by the bombs exploding between stations on moving trains) and simultaneously hampering the ability of emergency services to respond to the calamity. The adaptation of tactics and targets fits with Martha Crenshaw's observation that the "history of terrorism reveals a series of innovations, as terrorists deliberately selected targets considered taboo and locales where violence was unexpected. These innovations were then rapidly diffused, especially in the modern era of instantaneous and global communications."[374]

Additionally, a lower level tactical innovation seems relevant to 7/7 in the form of the explosives used by the bombers. In itself triacetone triperoxide (TATP) is not new. The explosive was invented in the late 19th century and had previously been used in terrorist attacks around the world, sometimes as a trigger for another explosive and by Ramzi Yousef in the bombing of a Philippines' airline in 1994. It had previously been used over a dozen times in the UK and can be manufactured from items easily acquired from pharmacies, and grocery and hardware stores.[375] TATP's deployment in 7/7 clearly represents a form of innovation in response to counter-terrorism policies which have seen other types of explosives, particularly those using fertilizer, become more difficult to obtain either through restrictions on access to materials or greater monitoring of purchases. The type of explosive used in 7/7, however, is highly unstable and its utilization required that the bombers establish a bomb factory and acquire equipment to maintain the mixture at a low temperature since excessive heat could trigger an explosion. Based on receipts, the bombers

(May 2006), 223.

370 Gilles Kepel, *The War for Muslim Minds: Islam and the West* (Cambridge, Massachusetts and London: Harvard University Press, 2004), 243-4, 248; Peter Nesser, "Joining Jihadi Terrorist Cells in Europe - Exploring Motivational Aspects of Recruitment and Radicalization," in Magnus Ranstrop, ed., *Understanding Violent Radicalisation: Terrorist and Jihadist Movements in Europe* (New York: Routledge, 2010), 90.

371 "Many dead in Moscow Metro blast," http://news.bbc.co.uk/1/hi/world/europe/3464545.stm, 6 February 2004 (accessed 24 June 2010).

372 Dolnik, *Understanding Terrorist Innovation*, 44, 157; Walter Laqueur, *Terrorism in the Twenty First Century* (London and New York: Continuum, 2004), 79, 97. Multiple suicide attacks in Casablanca in 2003 by Moroccans may also have influenced the 7/7 model. For more on Casablanca, see Marc Sageman, *Understanding Terror Networks* (Philadelphia: University of Pennsylvania Press, 2004), 54, 82-3. For more on suicide attacks and 7/7, see Robert Pape, *Dying to Win: The Strategic Logic of Suicide Terrorism* (New York: Random House Trade Paperbacks, 2005), 251-4.

373 Blair, *Policing Controversy*, 150.

374 Crenshaw, "The Logic of Terrorism," 15.

375 Philippe Naughton, "TATP is suicide bombers' weapon of choice," *Times*, 15 July 2005; Confidential source, 25 April 2010. In his study of the counter-terrorism unit of the New York Police Department, Christopher Dickey suggests the explosive used on 7/7 was hexamethylene triperoxide diamine (HMDT). This appears to be mistaken. Dickey, *Securing the City*, 212.

apparently began to assemble the materials for the bombs in March 2005.[376] The initial police assumption, based on some previous attacks, was that outside expertise must have arrived at a critical point to aid in the creation and assembling of the explosives. Attention centred on an Egyptian biochemist who had contact with the bombers in Leeds and who left the UK just before the attacks.[377] However, he was eventually ruled out, and the expertise appears to have existed with the bombers, possibly obtained during the visits that Khan and Tanweer made to Pakistan. The total cost of the operation is estimated to have been £8000 ($12000 U.S.). Since Khan apparently funded the operation himself through credit cards and a bank loan, the lack of extensive financial resources likely had an impact on the nature of the attack and thus the type of innovation.[378]

PRECONDITIONS AND CAUSES

Several of the factors that Adam Dolnik identifies as being relevant to terrorist innovation were present, including ideology, the nature of the campaign, countermeasures, targeting logic, group dynamics, and resources.[379] The significant element of 7/7 was its diminutive cell structure. As Walter Laqueur points out, while small groups make it more difficult to carry out a large-scale attack due to a lack of resources, they are more difficult for the state to penetrate and they may enjoy a greater esprit de corps.[380] It is also the small cell-like structure that led to the single most important element in the 7/7 operation, the predominance of the idealistic, dynamic and determined Mohammad Sidique Khan. The example of Khan supports Dolnik's contention "that organizations led by an uncontested leader who provides a strong drive toward innovation are the most likely candidates to take this path and to complete it successfully."[381] Khan played the role of an "operator/manager" to the group" or what Peter Nesser refers to as an "entrepreneur" who "'build[s]' terrorist cells," "embrace[s] violent ideologies," and "take[s] part in terrorism through activism."[382]

The son of Pakistani immigrants to Britain, Khan showed little interest in religion during his "westernized youth" and even expressed a desire to live in the United States. He later went to work for the British government, first employed to help promote UK industry abroad and then, after graduating from university, as a learning mentor at a local school where former colleagues praised his efforts with children. By all accounts, he was an upstanding citizen, dedicated to helping British Muslim youth, and not someone who would have been suspected of being a terrorist ringleader.[383] His movement along a more radicalized path appears to have begun in the late 1990s over time not in mosques but in backrooms by watching videos depicting Muslim suffering in the Balkans and Kashmir followed by group bonding through paintballing. For many British Pakistanis, Indian-controlled Kashmir was a prime radicalizer and an issue that was exploited as a recruitment tool.[384]

376 Hayman and Gilmore, *The Terrorist Hunters*, 97-8; Dickey, *Securing the City*, 212.
377 "Hunted chemistry expert arrested," *BBC News*, 15 July 2005, http://news.bbc.co.uk/1/hi/uk/4686089.stm (accessed 5 June 2010).
378 David Batty,"Two 7/7 bombers were under surveillance," *Guardian*, 11 May 2006; Hayman and Gilmore, *The Terrorist Hunters*, 103.
379 Dolnik, *Understanding Terrorist Innovation*, 13.
380 Laqueur, *The New Terrorism*, 41.
381 Dolnik, *Understanding Terrorist Innovation*, 160.
382 Rem Korteweg, with Sajjan Gohel, Francois Heisbourg, Magnus Ranstorp and Rob de Wijk in Magnus Ranstorp, ed., *Understanding Violent Radicalisation: Terrorist and Jihadist Movements in Europe* (New York: Routledge, 2010), 23; Nesser, "Joining Jihadi Terrorist Cells in Europe," 88.
383 Ian Herbert, "Revealed: How Suicide Bomber Used to Work for the Government." *Independent*, 11 March 2006.
384 "7 July bomber's motives examined," *BBC News*, 17 November 2005,

He also experienced family turmoil related to his parent's traditional Pakistani background and his position as a second generation Briton. These factors helped to alienate Khan from his family and moved him further into the embrace of religious extremism.[385] In turn, as an older individual and a respected mentor to young British Muslims, Khan would be, in a way not bound to generate suspicion, in the decisive position to groom Tanweer and recruit him as his protégé. Later, one or both of them would bring Hussain and Lindsay into the plot.[386]

In terms of causes, again the significant issue is the role of al-Qaeda. If al-Qaeda recruited the bombers and/or supported and/or directed the attacks then the connection to innovation is obvious. As mentioned earlier in the paper, before 7/7 the profile of potential Islamist terrorists within the UK focused on non-British individuals. The use of British citizens automatically would have reduced the interest of the authorities. Equally, that the key members of the cell were British Pakistani meant that their frequent travels to Pakistan--something that an estimated 400000 Britons do a year--would not have generated any additional scrutiny.[387] Similarly, the nature of the attacks meant that they could be conducted inexpensively without the need to access bomb ingredients such as fertilizer that might draw attention to the plot. All of the equipment and ingredients could be readily obtained from a variety of sources and then assembled in a flat away from prying eyes. The London Underground was a familiar target with minimal security and easily accessible, not just in terms of the actual attack but also for the reconnaissance mission some of the cell conducted in advance of their operation.[388] Finally, by striking a blow through martyrdom against those they believed were victimizing their fellow Muslims, the cell would serve as an example to other British Muslims, and force them to choose sides.[389] In that sense the attacks met what John Horgan refers to as a "desire to 'do something'" while ensuring, as a precondition of suicide terrorism which Laqueur has identified, that their sacrifice was not pointless.[390] These sentiments were evident in both Khan and Tanweer's martyrdom videos in which they justified the attacks on the grounds that the British public supported a foreign policy that waged war against Muslims, mirroring the "logic" expressed by Osama bin Laden in 1998 in defending al-Qaeda's targeting of American civilians.[391]

PREPARATORY BEHAVIOURS AND COUNTERTERRORISM

Could the 7 July attacks have been prevented? This is a question that continues to circulate in public discourse and within the policing and intelligence communities in the UK. Certainly, according to one former intelligence officer, the attacks represented "an intelligence failure."[392] What then in

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http://news.bbc.co.uk/1/hi/uk/4444358.stm (accessed 15 March 2010).

385 Shiv Malik, "My Brother the Bomber," *Prospect*, June 2007.

386 Huband, "Radicalisation and recruitment in Europe…," 125.

387 Alex Spillius, "U.S. pushes for visa control on Pakistani Britons," *Daily Telegraph*, 3 May 2007.

388 Interview with C, counter-terrorism officer, 17 June 2010.

389 "London bomber: text in full," *BBC News*, 1 September 2005, http://news.bbc.co.uk/1/hi/uk/4206800.stm (accessed 14 May 2010). Preparations for 7/7 had begun well before the May 2005 election; Interview with D.

390 John Horgan, *Walking Away from Terrorism: Accounts of disengagements from radical and extremist movements* (London and New York: Routledge, 2009), 12; Laqueur, *Terrorism in the Twenty First Century*, 97; Philip Lewis, *Young, British and Muslim* (London: Continuum, 2007), 140.

391 Osama bin Laden interview with Al Jazeera, December 1998, in Bruce Lawrence, ed., *Messages to the World: The Statements of Osama bin Laden* (London and New York: Verso, 2005), 70; "London bomber: text in full," *BBC News*, 1 September 2005, http://news.bbc.co.uk/1/hi/uk/4206800.stm (accessed 14 May 2010); "Extracts of Tanweer's speech," *Observer*, 15 October 2006.

392 Crispin Black, *7/7: The London Bombs: What Went Wrong?* (London: Gibson Square, 2005), 24; Crispin Black, "Our intelligence is lacking," *Independent*, 2 July 2006.

terms of preparatory behaviours might have led to their prevention? The potentially relevant factors were the profile of the bombers and their activities in the lead-up to the attacks that were evident to their families, their communities, and to the police and Security Service and their international collaborators.

In general terms, profiling would not have proved useful. There is no clear pattern to who will become jihadists not only in the UK but elsewhere in the world. In the words of one terrorism expert, "we can no longer assume that terrorists will come from any particular country or fit any particular profile."[393] The Security Service has admitted to the lack of a consistent profile to those involved in terrorism in the UK, although a recent comprehensive study suggests that dominant (albeit generalized) characteristics of UK jihadists are that they are male, under 30 years of age and British citizens with close to half being of south-central Asian background.[394] Nor is there any geographic pattern, including that those arrested are just as likely to come from well-integrated areas as more homogenous parts of the UK.[395] And the numbers themselves make it difficult to discover small cells. At the time of 7/7, MI5's "primary investigatory targets" had risen to around 800 from approximately 200 at the time of 9/11.[396] In the aftermath of the attacks, as part of an operation known as Rich Picture, the Security Service allegedly investigated upwards of 8000 Muslims who they believed were sympathetic to al-Qaeda. Currently, it monitors some 2000 terrorism suspects.[397]

The four bombers themselves had displayed few overt signs to their families and communities of the violent paths that they were following. Jermaine Lindsay was disciplined by his school for distributing pro-al-Qaeda leaflets; Hasbid Hussain once scribbled "al-Qaeda no limits" on a school notebook. Some within the families and wider community were aware of a change in the demeanour of the men, with their adoption of a greater religiosity, although they saw this as preferable to involvement in drugs and crime. Nor could they fully comprehend that their children, siblings or friends might be planning to commit mass murder. The brother of Mohammad Sidique Khan admitted to a journalist that the family was aware of his radicalism and embrace of Wahhabism, but saw this countered by his being the dedicated father of a baby daughter. Even a sign of the on-going bomb preparations, for instance two of the plotters turning up with bleached hair, was explained away as having been caused by chlorine at a local swimming pool. The actual bomb factory was not located where any of the men lived and although accusations have been made that family and/or friends may have been aware of the specific plots, this has never been proven.[398]
There were also signs available to the police and Security Service.[399] Initially after the attacks the label "clean skins" was attached to the bombers with the suggestion that the attackers were

393 Jessica Stern, "5 myths about who becomes a terrorist," *Washington Post*, 10 January 2010.

394 Alan Travis, "MI5 report challenges views on terrorism in Britain," *Guardian*, 20 August 2008; Huband, "Radicalisation and recruitment in Europe …," 125; Robin Simcox, Hannah Stuart, and Houriya Ahmed, "Islamist Terrorism: The British Connections (Preview)," (London: Centre for Social Cohesion, July 2010), viii, http://www.socialcohesion.co.uk/uploads/1278089320islamist_terrorism_preview.pdf (accessed 9 July 2010).

395 Casciani, "Path to Extremism."

396 Jason Bennetto, "MI5 conducts secret inquiry into 8,000 al-Qa'ida 'sympathizers'," *Independent*, 3 July 2006.

397 Frank Gardner, "MI5 watch 2,000 terror suspects," *BBC News*, 2 May 2007, http://news.bbc.co.uk/1/hi/uk/6613963.stm (accessed 14 May 2010).

398 "Profile: Jermaine Lindsay," *BBC News*, 11 May 2006, http://news.bbc.co.uk/1/hi/uk/4762591.stm (accessed 1 June 2010); Alvin Hamilton and Stewart Tendler, "They aroused no suspicion. They were hugging and happy — but had bombs," *Times*, 12 May 2006; "Profile: Shehzad Tanweer," *BBC News*, 6 July 2006, http://news.bbc.co.uk/1/hi/uk/4762313.stm (accessed 1 June 2010); Jenny Booth, "Profile: Shehzad Tanweer," *Times*, 6 July 2006; Shiv Malik, "My Brother the Bomber," *Prospect*, June 2007.

399 The other two main intelligence agencies, GCHQ and the Secret Intelligence Service (MI6), did not come

unknown.[400] In reality, all four of the attackers had come to the attention of the Security Service or the police or both. However, in the case of Hussain and Lindsay it was only through insignificant criminality and because Lindsay's mobile number had turned up as part of a Security Service investigation in 2002 although it was not tied to him until after 7/7. Khan and Tanweer had both been arrested by the police at various points for minor criminal offences but neither was ever convicted of a crime. The more serious occasions where they entered the radar occurred first with Khan in 2001 when he attended a camp in England involving extremists that was under surveillance by the West Yorkshire Police. Such group activity is now recognized as a type of bonding activity carried out as part of the path toward violent radicalization. Indeed, Tanweer and Khan went white-water rafting just over a month before they carried out their attacks. Visual images of participants at Khan's 2001 gathering were gathered and distributed within MI5 and parts of the police in an effort to discover the names of participants but Khan's involvement was not known until after 7/7. In addition, Khan and Tanweer had been referred to by detainees held abroad because of their activities in Pakistan although they were not properly identified until after the attacks. MI5 passed the information on to West Yorkshire Police but they were unable to identify the individuals. The West Yorkshire Police also received intelligence about an individual who had undergone terrorism training in Afghanistan in the late 1990s. Both Khan and Tanweer had made trips to Pakistan, multiple ones on the part of the former. The problem with tracking such movements beyond the fact that the men were outside of British jurisdiction is that several hundred thousand Britons make similar journeys annually.[401] The ISC did suggest that "greater coverage in Pakistan" may have led to the foiling of 7/7 but the number of potential targets was and remains daunting.[402]

At various points in 2003 and 2004, both Tanweer and Khan came under surveillance by the Security Service and the West Yorkshire Police as part of Operation Crevice, an investigation into a plot to detonate fertilizer bombs around the UK. In the end, MI5 deemed them not to be significant targets, believing that they were involved in low-level financial fraud instead, and due to the priority of monitoring Crevice suspects and limitations on resources never made them the subjects of "intrusive techniques."[403] Nor did it fully share its intelligence with the West Yorkshire Police even after those connected to Crevice had been arrested in April 2004, choosing to operate on a "need-to-know" basis instead.[404]

These lessons of 7/7 appear to have been learned by the police and Security Service:

1. Increased resources for counter-terrorism are necessary but so is greater cooperation between agencies.

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across any of the bombers. ISC, "Report into the London Terrorist Attacks on 7 July 2005," 14.

400 Antony Barnett, "7/7 Ringleader 'Was Watched since 2003'," *Observer*, 14 January 2007.

401 ISC, "Could 7/7 Have Been Prevented?" 16-39; Sean O'Neill and Daniel McGrory, *The Suicide Factory: Abu Hamza and the Finsbury Park Mosque*. London: Harper Perennial, 2006: Nesser, 105; Tom Hays, "U.S. Says Informant Flagged London Bomber," Associated Press, 8 February 2006; Christopher Dickey, *Securing the City: Inside America's Best Counterterror Force - the NYPD* (New York: Simon and Schuster, 2009), 213

402 "Government Response to the Intelligence and Security Committee's Report into the London Terrorist Attacks on 7 July 2005," (London: Her Majesty's Government, May 2006), 6, http://www.official-documents.gov.uk/document/cm67/6786/6786.pdf (accessed 15 January 2010); ISC, "Could 7/7 Have Been Prevented?" 49.

403 Barnett, "7/7 Ringleader 'Was Watched since 2003'"; ISC, "Could 7/7 Have Been Prevented?" 42-3.

404 Gilmore, "Could 7/7 have been prevented."

2. Different methods beyond conventional intelligence gathering or normal crime fighting are required to combat a small cell of "homegrown"[405] Islamist terrorists.

MI5 had already begun to expand before 7/7 and its numbers will reach 4000 by 2011 with 25% of them stationed outside of London and its eight regional offices. These were already being established before 7/7 but the attacks sped their completion. More resources were also put into police counter-terrorism capabilities, including the establishment of counter-terrorism units. Greater cooperation between the police and the Security Service has also become a mainstay with systematic liaison between Counter-Terrorism Units and MI5. Included, in this is a recognition on the part of the Security Service that at times it must follow the police lead in curtailing plots.[406]

The model of response has also changed, with a more aggressive approach to potential terrorists and plots. Indeed, the absolution by the ISC of the Security Service over its failure to follow-up in a thorough way on Khan and Tanweer was premised on a lack of resources required for sustained surveillance. Detailed surveillance of one individual over a 24-hour period, for instance, can involve up to 60 people.[407] According to the ISC, to conduct surveillance against all potential terrorism suspects in the United Kingdom in the present would require the expansion of the Security Service to several hundred thousand members.[408] Thus, priorities had and have to be decided.[409] Not considered by the ISC, however, were alternatives to surveillance of the type that at one time may have been used by the UK's domestic police intelligence wing, Special Branch, against Cold War targets or Ireland-related terrorists. Today, the appearance of Khan and Tanweer on the security grid might lead the police to visit them at work or at home to express concern about their activities. Their families may also be notified of police concerns about the individual's well-being. The belief is that such aggressive behaviour might deter the individuals or cause their families to deter them from participating in terrorism. Of course, the risk is--and this is recognized by practitioners--that it may have the reverse effect and play into a narrative of victimization and/or escalate preparations for an attack.[410]

A similar aggressive approach to potential plots is also evident in New York, where NYPD efforts at infiltration and disruption through informers and undercover officers have been extensive. Local businesses selling potential ingredients in explosives have also been contacted by the police.[411] The latter strategy was considered in the aftermath of 7/7 but because of the extensive availability of the ingredients it was deemed impractical. However, some businesses have been encouraged to be on alert for terrorist activity and the Security Service has focused on "hostile reconnaissance" by

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405 The term "homegrown" is problematic in that it fails to accurately acknowledge the interconnectedness between the domestic and the international. In other words, a British citizen made embrace violent radicalism without ever leaving his or her home town but this path is motivated by events thousands of miles away. Interview with C.

406 Jonathan Evans, "How the Security Service is Responding," Speech to the Council on Foreign Relations, 5 November 2007, http://www.cfr.org/publication/14789/mi5_director_generals_speech_on_intelligence_coun (accessed 4 April 2010); "Government Response to the ISC's Report into the London Terrorist Attacks on 7 July 2005," 6; Interview with A, counter-terrorism officer, 11 March 2010; Interview with B, counter-terrorism officer, 4 May 2010; Interview with C; Interview with D, counter-terrorism officer, 24 June 2010.

407 Transcript of "Real Spooks," *BBC Panorama*, 30 April 2007, http://news.bbc.co.uk/1/hi/programmes/panorama/6692741.stm (accessed 13 March 2010).

408 ISC, "Could 7/7 Have Been Prevented?", 42.

409 Hayman and Gilmore, *The Terrorist Hunters*, 88; Blair, *Policing Controversy*, 20.

410 Interviews with A, C, and D.

411 Christopher Dickey, "Psyching out the Terrorists," *Newsweek*, 5 May, 2010.

terrorists of potential targets.[412] In addition, a public advertising campaign in major UK cities in 2009, including posters on the London Underground (see the image below), encouraged ordinary citizens to keep watch for preparatory behaviors such as the dumping of suspicious chemical containers.

Furthermore, there has been an embrace of a more holistic approach to preventing terrorism that might be more accurately labelled as anti-terrorism instead of counter-terrorism. The key UK counter-terrorism strategy that first emerged in 2002 is known as CONTEST. There are four key components of it: Pursue, Prepare, Protect, and Prevent. The strategy in general received little attention and some criticism prior to 7/7.[413] What changed after 7/7 was an emphasis on the priorities. Whereas before the attacks, little attention was paid to the final strand of Prevent, a reflection of the fact that it had only been tacked on at the end almost as an afterthought, this changed after 7 July 2005 with a greater prominence placed on "preventing violent extremism" (PVE).[414] The prevailing idea became that more resources were required to derail the recruitment of young men, particularly those like Lindsay, Hussain and Tanweer, into Islamist terrorism. This was a recognition that the state could not "arrest ourselves out of the problem."[415] Money has been invested into youth programs and other efforts have been launched, including one known as the "Channel Project" which seeks to identify particularly vulnerable young people to recruitment into violent extremism and reroute them into new directions. Essentially, the programs are to ensure that when an individual displays sympathies for al-Qaeda, as Hasbid Hussain had once done in school, this would not go unchallenged. By March 2009, over 200 children had been identified as being "at risk" of extremism during the first 18 months of the program.[416]

This holistic approach also implicitly acknowledged that the plot may have been foiled if "community intelligence" had been forthcoming. Various British police forces have made efforts to reach out to Muslim communities as a way of improving community relations by addressing a wider agenda than just terrorism, and, undoubtedly, to encourage more intelligence to flow in.[417]

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412 Confidential email, 7 July 2010; Duncan Gardham, "Shopping centres on alert for terrorism attack," *Daily Telegraph*, 18 July 2009.

413 "The Prevent Strategy:
A Guide for Local Partners in England," Department of Children, Schools and Families, http://www.dcsf.gov.uk/violentextremism/downloads/Prevent%20Strategy%20A%20Guide%20for%20Local%20Partners%203%20June%202008.pdf; Hewitt, *The British War on Terror*, 99-100.

414 "Preventing violent extremism- Winning hearts and minds," Department of Communities and Local Government, April 2007, http://www.communities.gov.uk/documents/communities/pdf/320752.pdf (accessed 17 April 2010); "The Prevent Strategy: A Guide for Local Partners in England. Stopping people becoming or supporting terrorists and violent extremists," Department for Children, Schools and Families, May 2008, http://www.dcsf.gov.uk/violentextremism/downloads/Prevent%20Strategy%20A%20Guide%20for%20Local%20Partners%203%20June%202008.pdf (accessed 1 May 2010); Basia Spalek and Laura McDonald, "Terror Crime Prevention: Constructing Muslim Practices and Beliefs as 'Anti-Social' and 'Extreme' through Contest 2," *Social Policy & Society* 9, no. 1 (2009): 124-5.

415 Adam Fresco, "Community Intervention to Beat Homegrown Terrorism," *Times*, 21 March 2008.

416 Fresco, "Community Intervention to Beat Homegrown Terrorism"; Mark Hughes, "Police identify 200 children as potential terrorists," *Independent*, 29 March 2009; Sean O'Neill, Alex Ralph, "Terror Police to Monitor Nurseries for Islamic Radicalisation." *Times*, December 11, 2009; Interview with A.

417 Peter Clarke, "Learning from Experience - Counter Terrorism in the UK since 9/11," Colin Cramphorn Memorial Lecture, 24 April 2007. The Federal Bureau of Investigation has made similar efforts in the United States although with trust issues also emerging. "Statement Before the House Committee on Homeland Security, Subcommittee on Intelligence, Information Sharing, and Terrorism Risk Assessment," United States Congress, 17 March 2010, http://terrorism-online.blogspot.com/2010/03/terrorism-risk-assessment.html

Controversy would erupt over police participation in some of the schemes, particularly Prevent, with allegations that they are really a cover for spying on Muslims or recruiting informers. The ultimate success of the various schemes remains to be seen, but the likelihood of their usefulness appears to be connected to programs that involve true partnerships between communities and the state.[418]

CONCLUSION

Martha Crenshaw has observed that terrorists "learn from the experiences of others, usually communicated to them via the news media. Hence the existence of patterns of contagion in terrorist incidents."[419] This seems particularly apt with respect to the UK experience and the pattern of Islamist terrorism domestically against the west which has emerged since 7/7.[420] Equally, it is why 7/7 may represent a harbinger for the future, including in the United States and elsewhere.[421] Since 9/11, there has been considerable discussion about the lack of Islamist terrorism carried out by Americans. With the threat of terrorism in the UK and the 7/7 attacks, comparisons were naturally drawn between the two countries. Some of the commentary, including a 2008 U.S. Senate report entitled "Violent Islamist Extremism, the Internet, and the Homegrown Terrorist Threat," labelled attacks as being less likely in the U.S. for a variety of reasons but frequently centred on what might be termed American exceptionalism (as in an ideology welcoming to people from around the world in contrast to older and more static societies in Europe). This is an interpretation embraced by some in the UK who have encouraged as a counter-terrorism strategy the government to promote a sense of "Britishness," especially among immigrant communities.[422]

Presciently, the 2008 U.S. Senate report warned that "radicalization is no longer confined to training camps in Afghanistan or other locations far from our shores; it is also occurring right here in the United States."[423] It 2010, there have been two incidents in the U.S. with striking correspondence to attacks in the UK. There was the failed Times Square bomber who deployed a vehicular born explosive device similar to car bombs which failed to detonate outside a London nightclub in June 2007. In his trial speech, the individual responsible for the Times Square car bomb, Pakistani-

(accessed 4 April 2010); Karen DeYoung, "Distrust Hinders FBI In Outreach to Muslims," *Washington Post*, 8 February 2007.

418 Vikram Dodd, "Government anti-terrorism strategy 'spies' on innocent," *Guardian*, 16 October 2009; "Police-Muslim Engagement and Partnerships for the Purposes of Counter-Terrorism: an examination," University of Birmingham, 18 November 2008 http://www.religionandsociety.org.uk/uploads/docs/2009_11/1258555474_Spalek_Summary_Report_2008.pdf (accessed 15 June 2010); Rachel Briggs, "7 July bombings five years on: Is there still a role for communities in tackling terrorism?" Royal United Services Institute, July 2010, http://www.rusi.org/analysis/commentary/ref:C4C331519B8C90/ (accessed 12 July 2010).

419 Crenshaw, "The Logic of Terrorism," 11.

420 It should be pointed out that the only lives lost due to the terrorism since 7/7, with the exception of one of the Glasgow airport attackers, has been due to Ireland-related terrorism.

421 "Al-Qaida suspects held over Norway bomb plot," *Guardian*, 8 July 2010; "Toronto 18," Toronto Star, 2010, http://www3.thestar.com/static/toronto18/index.html (accessed 12 July 2010).

422 Jonathon Paris, "UK Counter-Radicalisation Strategy: Accommodation to confrontation?" The Henry Jackson Society, 2 July 2008, http://www.henryjacksonsociety.org/stories.asp?id=734# (accessed 4 March 2010). Greater affluence of American Muslims has also been suggested as a factor for lower levels of involvement in terrorism than in the UK but there is no evidence that poverty and despair motivated the 7/7 attackers. Nina Bernstein, "In American Cities, No Mirror Image of Muslims of Leeds," *New York Times*, 21 July 2005.

423 Senate Report, as quoted in David Schanzer, Charles Kurzman, and Ebrahim Moosa, "Anti-Terror Lessons of Muslim-Americans," 6 January 2010, http://www.sanford.duke.edu/news/Schanzer_Kurzman_Moosa_Anti-Terror_Lessons.pdf (accessed 15 April 2010), 9.

American Faisal Shahzad, even invoked rhetoric similar to Mohammad Sidique Khan and Shehzad Tanweer in their martyrdom videos, when he described himself as responding to U.S. foreign policy: "the U.S. [is] terrorising the Muslim nations and the Muslim people. On behalf of that, I'm revenging the attack. Living in the United States, Americans only care about their people but they don't care about the people elsewhere in the world when they die." He added, in Khan-like rhetoric, that he was a "Muslim soldier."[424]

Of greater similarity to 7/7 is the plot to carry out suicide attacks on the New York City subway near to the anniversary of 9/11. The attack would have involved four young men, some of who had received training in Pakistan, boarding four separate subway trains during rush hour and detonating bombs attached to their bodies. The men had gone to Pakistan in 2008 apparently to fight with the Taliban against western forces but, there they had been recruited or redirected by al-Qaeda for the martyrdom operation in New York. The lead plotter, Najibullah Zazi, had even conducted a scouting mission around New York in the same way that some of the 7/7 bombers had done before their attack.[425]

Indeed, the 2006 National Intelligence Estimate recognized this terrorism trend when it noted that "the global jihadist movement is decentralized, lacks a coherent global strategy, and is becoming more diffuse. New jihadist networks and cells, with anti-American agendas, are increasingly likely to emerge. … We assess that the operational threat from self-radicalized cells will grow in importance to U.S. counterterrorism efforts, particularly abroad but also in the Homeland."[426] A 2010 American intelligence threat assessment did caution, however, that while "violence from homegrown jihadists probably will persist … [it] will be sporadic." Should it occur, the report added, it would be in the form of "individuals and small, discrete cells."[427] It is these 7/7-type attacks that are more likely to be successful than a 9/11 operation requiring greater planning, coordination and resources while navigating ongoing counter-terrorism measures like tighter border controls.[428] Thus, innovation has occurred in response to counter-terrorism by moving through necessity away from the large to the small-scale, in which the loss of lives and level of destruction is lower but the possible impact, in terms of WME, remains great. Equally, innovation involves not getting outsiders to lead the attacks but rather those from within whose loyalties are in some way divided, making them either susceptible to terrorist recruitment or willing participants in violent extremism.[429]

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424 Lewis Smith, "'Muslim soldier' admits Times Square bomb plot," *Independent*, 22 June 2010. New York Times story

425 John Marzulli, "Zazi, Al Qaeda pals planned rush-hour attack on Grand Central, Times Square subway stations," New York Daily News, 12 April 2010.

426 "Declassified Key Judgments of the National Intelligence Estimate 'Trends in Global Terrorism: Implications for the United States'," April 2006 web address?

427 Director of National Intelligence, "Annual Threat Assessment of the U.S. Intelligence Community for the Senate Select Committee on Intelligence," 2 February 2010, 11, http://www.dni.gov/testimonies/20100202_testimony.pdf (accessed 28 June 2010).

428 John R. Schindler, "Intelligence and Strategy in the War on Islamist Terrorism," in Christopher Andrew, Richard J. Aldrich and Wesley K. Wark, eds., *Secret Intelligence: A Reader* (London and New York: Routledge, 2009), 248-9; Sageman, *Understanding Terror Networks*, 146.

429 There is a counter-intelligence parallel in the growing propensity for foreign espionage against the United States to involve citizens of dual nationalities. Katherine L. Herbig, "Changes in Espionage by Americans: 1947-2007," Defense Personnel Security Research Center, March 2008, vii, http://www.fas.org/sgp/library/changes.pdf (accessed 1 July 2010).

APPENDIX XI: WORKSHOP PARTICIPANTS

Gary Ackerman is Assistant Director for Research and Communication of START and is responsible for managing START research projects, exploring new avenues for research, and establishing collaborative research relationships with other institutions. Mr. Ackerman previously held the post of Director of the Center for Terrorism and Intelligence Studies, a private research and analysis institute. Prior to taking up his current position, Mr. Ackerman was Director of the Weapons of Mass Destruction Terrorism Research Program at the Center for Nonproliferation Studies in Monterey, California, and he earlier served as the Chief of Operations of the South Africa-based African-Asian Society. He received his M.A. in International Relations (Strategic Studies - Terrorism) from Yale University and his Bachelors (Law, Mathematics, International Relations) and Honors (International Relations) degrees from the University of the Witwatersrand in Johannesburg, South Africa. Originally hailing from South Africa, Mr. Ackerman possesses an eclectic academic background, including past studies in the fields of mathematics, history, law, and international relations, and has won numerous academic awards. His research encompasses various areas relating to terrorism and counterterrorism, including terrorist threat assessment, terrorist technologies and motivations, terrorism involving chemical, biological, radiological, and nuclear (CBRN) weapons, terrorist financing, environmental extremism, and the modeling and simulation of terrorist behavior.

Rogelio Alonso Pascual is currently the Ramón y Cajal Research Professor in the Political Science Department at the King Juan Carlos University. He has been teacher and coordinator of the doctoral program in Analysis and Prevention of Terrorism (URJC), and teacher in charge of the subject of Free Choice Terrorism, Security, and Globalization (URJC) since 2004. He has authored numerous publications to include four case studies on political violence, including one published in English by Routledge. He has been a Research Fellow at the Institute of Governance, Public Policy and Social Research (Queen's University, Belfast), and the Institute of Irish Studies (Queen's University, Belfast). He is the recipient of the prize for best journal article granted by the Spanish Association of Political Science (AECPA) in September 2005 for the article "Pathways out of Terrorism in Northern Ireland and the Basques Country : the misrepresentation of the Irish model," published in Terrorism and Political Violence, from which the jury appreciated its "rich and illuminating comparative analysis of the differences between the processes of overcoming violence and terrorism in Northern Ireland and the Basque Country."

Peter Bergen is a print and television journalist, and the author of *Holy War, Inc.: Inside the Secret World of Osama bin Laden* (2001), which has been translated into 18 languages and The Osama bin Laden I Know: An Oral History of Al-Qaeda's Leader (2006). Both books were named among the best non-fiction books of the year by *The Washington Post*, and documentaries based on the books were nominated for Emmys in 2002 and 2007. Mr. Bergen is CNN's national security analyst and a fellow at New York University's Center on Law & Security. He has written for many publications including *The New York Times, The Washington Post, Vanity Fair, Los Angeles Times, The Wall Street Journal, International Herald Tribune, The Atlantic, Foreign Affairs, Rolling Stone, The National Interest, TIME, Washington Monthly, The Nation, Mother Jones, Washington Times, The Times* (UK), *The Daily Telegraph* (UK), and *The Guardian* (UK). He is a contributing editor at *The New Republic* and has worked as a correspondent for National Geographic television, Discovery, and CNN. In 2008 he was an adjunct lecturer at the Kennedy School of Government at Harvard University, and he worked as an adjunct professor at the School of Advanced International Studies at Johns Hopkins

University for several years. He has testified on Capitol Hill on a number of occasions. Mr. Bergen holds a M.A in modern history from New College, Oxford University. As a Senior Fellow at the New America Foundation, Mr. Bergen researches and writes on the al-Qaeda network; counter insurgency and counter-terrorism, Afghanistan, Pakistan and Iraq.

Lindsay Clutterbuck (Ph.D., Social Science) is a Research Leader at RAND Europe in Cambridge, UK and is currently engaged in research for a range of projects relating to terrorism and counterterrorism. Prior to joining RAND Europe, he served for over 27 years with the Metropolitan Police Service (MPS) in London. He spent over 22 years as a specialist in terrorism and counterterrorism with the Specialist Operations Department, based at New Scotland Yard, and retired as a Detective Chief Inspector in 2006 before joining RAND Europe. He served in a variety of roles related to police covert investigations and as a close protection officer. During his last eight years, he served as Head of the MPS Counterterrorism Policy and Strategy Unit (working directly with the Assistant Commissioner, Specialist Operations Department), as Head of the SB Hi-Tech Intelligence and Investigation Unit (HTIIU). He also served in a variety of policy, strategy, and research roles relating to terrorism and counterterrorism for the police National Coordinator of Special Branch. In 2005, he was a senior member of the exercise planning team responsible for delivering the first transcontinental counter terrorism exercise involving the UK, USA, and Canada (TOPOFF 3). He is the author of several articles in academic journals and chapters in books. Their content encompasses the origins and evolution of terrorism and counterterrorism in the UK, contemporary issues in terrorism (particularly how individuals make the transition from radicalism and extremism into terrorism), the nexus between terrorism, insurgency, and crime, and the role of police in counterinsurgency. He received his Ph.D. from the University of Portsmouth; an MA in Policing Studies from the University of Exeter and a BSc Honours in Zoology from the University of Sheffield. From 2004, he was a Senior Associate Research Fellow at the Institute of Policy Research, King's College London. Since October 2008, he has been a member of the European Experts Network on Terrorism (EENeT).

Martha Crenshaw is a senior fellow at CISAC and FSI, Stanford University and a professor of political science by courtesy. She was the Colin and Nancy Campbell Professor of Global Issues and Democratic Thought and professor of government at Wesleyan University in Middletown, Conn., from 1974 to 2007. Her current research focuses on innovation in terrorist campaigns, why the United States is the target of terrorism, the effectiveness of counterterrorism policies, and the organizational development of terrorist campaigns. She has written extensively on the issue of political terrorism; her first article, "The Concept of Revolutionary Terrorism," was published in the Journal of Conflict Resolution in 1972. Her recent work includes "Terrorism, Strategies, and Grand Strategies," in Attacking Terrorism (Georgetown University Press), "Terrorism and Global Security," in Leashing the Dogs of War: Conflict Management in a Divided World (United States Institute of Peace Press), and "Explaining Suicide Terrorism: A Review Essay," in the journal Security Studies. She is also the editor of *The Consequences of Counterterrorism* (Russell Sage Foundation, 2010). This fall Routledge will publish *Explaining Terrorism*, a collection of her previously published work. She served on the Executive Board of Women in International Security and chaired the American Political Science Association (APSA) Task Force on Political Violence and Terrorism. She was a Guggenheim Fellow in 2005-2006. She served on the Committee on Law and Justice and the Committee on Determining Basic Research Needs to Interrupt the Improvised Explosive Device Delivery Chain of the National Research Council of the National Academies of Science. She was a senior fellow at the National Memorial Institute for the Prevention of Terrorism in Oklahoma City for 2006-2007. In 2009 she was awarded a grant from the National Science Foundation for a project

on "mapping terrorist organizations." The grant is part of the Department of Defense Minerva Initiative. Since 2005 she has been a lead investigator with the National Center for the Study of Terrorism and the Response to Terrorism (START) at the University of Maryland, funded by the Department of Homeland Security.

Adam Dolnik (Ph.D.) is an Associate Professor and the Director of Terrorism Studies at the Centre for Transnational Crime Prevention (CTCP) at the University of Wollongong in Australia. Formerly he has served as Chief Trainer at the International Centre for Political Violence and Terrorism Research (ICPVTR) in Singapore, and as a researcher at the Weapons of Mass Destruction Terrorism Research Project at the Monterey Institute of International Studies in California and at the United Nations Terrorism Prevention Branch in Vienna. Dolnik has lectured for various governmental and nongovernmental organizations and agencies in over 35 countries, and regularly conducts field research in conflict zones. Dolnik's books include *Understanding Terrorist Innovation: Technologies, Tactics, and Global Trends* (London: Routledge, 2007) and *Negotiating Hostage Crises with the New Terrorists* (Westport CT: Praeger Security International, 2007) as well as over 40 reports and articles on terrorism related issues. Dolnik also serves on the editorial boards of *Terrorism and Political Violence* and *Perspectives on Terrorism* the leading academic journals in the field.

Richard English was born in 1963 in Belfast, where he is Professor of Politics at Queen's University. His books include *Armed Struggle: The History of the IRA* (which won the 2003 UK Political Studies Association Politics Book of the Year Award) and *Irish Freedom: The History of Nationalism in Ireland* (which won the 2007 Christopher Ewart-Biggs Memorial Prize, and the 2007 Political Studies Association of Ireland Book Prize). Educated at the universities of Oxford and Keele, he is a frequent media commentator on Irish politics and history and on terrorism, including work for the BBC, ITN, SKY NEWS, NPR, RTE, the Irish Times, the Times Literary Supplement, Newsweek and the Financial Times. He is the author of six books and co-editor of a further five, and is the author of over forty journal articles and book chapters. In 2009, he was elected a Fellow of the British Academy (FBA) and a Member of the Royal Irish Academy (MRIA). His most recent book, *Terrorism: How to Respond*, was published in 2009 by Oxford University Press.

Mohammed M. Hafez earned his Ph.D. from the London School of Economics and Political Science. He is now an Associate Professor in the Department of National Security Affairs at the Naval Postgraduate School in Monterey, California. Previously, he served as Visiting Professor of Political Science at the University of Missouri, Kansas City. A specialist in Islamic movements and political violence, his books include *Why Muslims Rebel: Repression and Resistance in the Islamic World* (2003); *Manufacturing Human Bombs: The Making of Palestinian Suicide Bombers* (2006); and *Suicide Bombers in Iraq: The Strategy and Ideology of Martyrdom* (2007). Dr. Hafez is also the author of numerous book chapters and journal articles on Islamic movements, political radicalization, and jihadist ideologies. He regularly briefs government and military analysts on issues related to terrorism, war of ideas, and countering radicalization. Dr. Hafez has made several appearances on NewsHour with Jim Lehrer, NPR, C-SPAN, and other national and international media outlets.

Mark S. Hamm is professor of criminology at Indiana State University and a former guard, teacher, and associate warden in the Arizona Department of Corrections. He is a Senior Research Fellow at the Center on Terrorism, John Jay College, the City University of New York and a faculty member at the Office of Legal Education, U.S. Department of Justice. Hamm has been published widely in the areas of terrorism, hate crime and prisoner subcultures. His books include *Terrorism as Crime: From Oklahoma City to Al-Qaeda and Beyond* (2007); *In Bad Company: America's Terrorist Underground*

(2002); *Ethnography at the Edge: Crime, Deviance, and Field Research* (1998, with Jeff Ferrell); *Apocalypse in Oklahoma: Waco and Ruby Ridge Revenged* (1997); *The Abandoned Ones: The Imprisonment and Uprising of the Mariel Boat People* (1995); and *American Skinheads: The Criminology and Control of Hate Crime* (1993). Dr. Hamm is co-editor of Crime, Media, Culture: An International Journal. A frequent consultant to national and international counterterrorism agencies, his research has been covered by such media outlets as the New York Times, CNN and National Public Radio. His recent work on prisoner radicalization was supported by the National Institute of Justice.

Steve Hewitt is Senior Lecturer in American and Canadian Studies at the University of Birmingham in the United Kingdom. He is the author of several books, including *Spying 101: The RCMP's Secret Activities at Canadian Universities, 1917-1997* (University of Toronto Press, 2002), *The British War on Terror: Terrorism and Counter-Terrorism on the Home Front since 9/11* (Continuum, 2008), and *Snitch: A History of the Modern Intelligence Informer* (Continuum, 2010). He is also the author of a number of articles and book chapters related to security and intelligence in the past and present.

William Matchett served for over 27 years in the Royal Ulster Constabulary (UK), where he garnered vast experience in criminal investigation and counterterrorism. Currently, he is acting Head of Training for New Century Consulting – a firm that provides a range of intelligence-led security services and client support from creation of doctrine, skills transfer (mentoring, advising, training) and institutional capacity-building. William has assisted in supporting operations to train national security forces in Iraq and most recently Afghanistan.

Assaf Moghaddam (Ph.D.) is Assistant Professor and Senior Associate at the Combating Terrorism Center at the U.S. Military Academy at West Point. Dr. Moghaddam is the author of two books, *The Globalization of Martyrdom: Al-Qaeda, Salafi Jihad, and the Diffusion of Suicide Attacks* (Johns Hopkins University Press, Nov 2008) and *The Roots of Terrorism* (Chelsea House, 2006). He has also authored "A Global Resurgence of Religion?," a working paper published by the Weatherhead Center for International Affairs at Harvard University. He is the co-editor (with Brian Fishman) of the forthcoming book *Fault Lines in Global Jihad: Organizational, Strategic, and Ideological Fissures* (Routledge, 2011) and is completing another edited volume on militancy in the Shia community after 1979. Dr. Moghaddam has lectured widely on terrorism issues before audiences in the United States, Europe, and the Middle East and has consulted various U.S. government agencies on terrorism. A leading expert on suicide missions, Dr. Moghaddam serves on the editorial board of *Studies in Conflict and Terrorism*. He has published various book chapters in edited volumes and several articles in academic and other publications and journals. Dr. Moghaddam was a predoctoral (2004-2006) and postdoctoral (2007-2008) fellow at the Belfer Center for Science and International Affairs, and a Fellow in National Security at the Olin Institute for Strategic Studies (2006-2007), both at Harvard University. From 2008-2010, he was a Research Associate with the Belfer Center's International Security Program/Initiative on Religion in International Affairs. Dr. Moghaddam holds a Ph.D. in international relations and a Master of Arts in Law and Diplomacy (MALD), both from The Fletcher School at Tufts University. He holds a Bachelor of Arts (B.A.) in political science from The Hebrew University of Jerusalem.

José A. Olmeda is a professor of political science with the Universidad Nacional de Educación a Distancia, Madrid. He received his Ph. D. in Political Science and Sociology from the Complutense University of Madrid in 1984. He has served in a variety of research roles with the Department of National Security Affairs (NSA), Naval Postgraduate School (NPS) from 2007-8; Department of Sociology, Texas A&M University, 1995; and in the International Public Administration Center,

University of Southern California, 1987. He has appeared as an expert before the Defense Committee of the Spanish Congress of Deputies. He has been a member of the following: the Editorial Board of Security and Defense Studies Review; the Interdisciplinary Journal of the Center for Hemispheric Defense Studies (National Defense University, Washington DC); the Board of RESDAL; the Working Group on Public Opinion, Mass Media and the Military; the ERGOMAS (European Group on Military and Society); and the Standing Group on Extremism and Democracy, European Consortium for Political Research. He has done research on government and public policy, on defense and security policy, and on Spanish public opinion and the use of military force. He has published, among others works, *Democracias frágiles: las relaciones civiles-militares en el mundo iberoamericano* (2005), *Ciencia de la Administración II. Los sistemas administrativos* (2000), *Enciclopedia del nacionalismo* (1997, 1999), *Ciencia de la Administración. I. Teoría de la organización y gestión pública* (1999), *Ciencia de la Administración* (1991, 1994, 1996), *Las Fuerzas Armadas en el Estado franquista. Participación política, influencia presupuestaria y profesionalización, 1939-1975* (1988), and *La institución militar en el Estado contemporáneo* (1985).

María José Rasmussen is an Associate Professor in the Department of National Security Affairs at the Naval Postgraduate School. She joined the school in 1993 after teaching at Yale University and the University of Vermont. She is the author of *Argentina's Lost Patrol: Armed Struggle, 1969-1979* (New Haven, CT: Yale University Press, 1995). Dr. Rasmussen has also written numerous articles on the internal dynamics of terrorist organizations, and on legal and military responses to political violence. Dr. Rasmussen earned her degree in Political Science from Yale University (Ph.D., 1990). She was a John M. Olin Postdoctoral Fellow in military history and strategy from 1990-1991.

Glenn E. Robinson is an Associate Professor in the Department of Defense Analysis at the Naval Postgraduate School in Monterey, California. He has spent time as a Senior Political Scientist at RAND and as a Research Fellow in the Center for Middle East Studies at the University of California at Berkeley. A Berkeley PhD (1992), Dr. Robinson has lived and studied in the Middle East for many years, including as a Fulbright Scholar at the University of Jordan, a Research Fellow at the Truman Institute of the Hebrew University of Jerusalem, the American University in Cairo, Yarmouk University in Jordan, and as an exchange student in Iran. Robinson has authored or co-authored three books on Palestinian politics, and his articles have appeared in the *International Journal of Middle East Studies*, *Foreign Affairs*, the *Middle East Journal*, *Journal of Conflict Studies*, *Current History*, *Middle East Policy*, *Survival*, and the *Journal of Palestine Studies*, among others. He is currently writing a book on Jihadi information strategy entitled *The Battle for the Story*, forthcoming from Stanford University Press.

Yoram Schweitzer, an expert on international terrorism, has been a researcher at the Institute for National Security Studies (INSS), which incorporated the Jaffee Center for Strategic Studies (JCSS), since February 2003, following a distinguished career in the Israeli intelligence community as well as in the academic world. Among other positions, he served as a consultant on counter-terror strategies to the prime minister's office and the Ministry of Defense, Head of the Counter International Terror Section in the IDF, and a member in a Task Force dealing with Israeli MIAs at the Prime Minister's Office. Mr. Schweitzer was a researcher and head of Educational Curriculum at the International Policy Institute for Counter Terrorism (ICT) at the Inter Disciplinary Center in Herzliya. Schweitzer has lectured and published widely on terror-related issues, and serves as a consultant for government ministries on a private basis. His areas of expertise include al-Qaeda and its affiliates – also known as the "Afghan alumni phenomenon," suicide terrorism, and state-sponsored terrorism. Among his publications are *The Globalization of Terror: The Challenge of Al-Qaida and the Response of the International*

Community (co authored with Shaul Shay, 2003) and *Al-Qaeda and the Internationalization of Suicide Terrorism* (with Sari Goldsetin Ferber, 2005), and he is the editor of *Female Suicide Bombers: Dying for Equality?* (2006). Schweitzer's current research involves extensive meetings with failed suicide terrorists and their operators in an effort to analyze their motivations and objectives. Schweitzer holds an MA in military and diplomatic history from Tel Aviv University.

Stuart Wright is currently the Director of the Office of Research and Assistant Associate Provost for Research at Lamar University. He has been published in various journals and is the author of *Leaving Cults: The Dynamics of Defection*. Washington, D.C.: Society for the Scientific Study of Religion, 1987. He received the American Sociological Association Distinguished Book Award nomination in Political Sociology for Patriots, Politics and the Oklahoma City Bombing (Cambridge University Press, 2008) and has provided various legal and advisory consultations to include Jones, Wyatt & Roberts Attorneys at Law in federal bombing trial, United States v. Timothy James McVeigh, U.S. District Court of Colorado, 96-CR-68-M, (November 1995-June 1997). He earned his B.A. in Sociology from the University of Houston 1974; Ph.D. Sociology, University of Connecticut 1983; and conducted post-doctoral Study at Yale University 1984-1985.