Understanding Terrorist Innovation

Technology, tactics and global trends

Adam Dolnik

Contemporary Terrorism Series

Understanding Terrorist Innovation

This book proposes an empirical theory of innovation in terrorist tactics and technologies. It examines global historical trends in terrorist innovation, as well as the critical factors responsible for the differences in *modus operandi* among various terrorist organizations. The book provides a useful tool for assessing the future trajectories of terrorist violence by identifying signature characteristics of highly innovative terrorist groups, and thus has considerable policy relevance.

The first part of this book provides an overview of the tactics and technology used by terrorists in the last half century and identifies the key trends and prospects for the future. The second part compares four different terrorist organizations with the aim of identifying the key motives that drive terrorist groups to adopt innovative tactics and technology. The last part identifies the key characteristics and conditions under which a terrorist group can be expected to adopt an innovative approach.

This book will be of great interest to students of terrorism studies, security studies and political science in general.

Adam Dolnik is the Director of Research Programs and Senior Research Fellow at the Centre for Transnational Crime Prevention at the University of Wollongong in Australia. He has previously worked at the International Centre for Political Violence and Terrorism Research in Singapore, the Monterey Institute of International Studies in California, and the United Nations Terrorism Prevention Branch.

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For Katka and Tania

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AD

Introduction

Over the course of the past several years, the possibility of the use of chemical, biological, radiological and nuclear (CBRN) weapons by terrorist groups has become a topic of an extensive academic and public debate. This debate has thus far largely oscillated around two main components: the capability of terrorists to acquire and successfully weaponize CBRN agents, and their motivation to produce mass fatalities. At the level of capability, terrorists have traditionally not been deemed to be able to overcome the significant hurdles involved in CBRN acquisition and weaponization. However, the breakup of the Soviet Union has according to many authors eroded many of these constraints. Not only has the questionable security of former state-level CBRN programs made it easier for terrorists to gain access to lethal agents, the know-how necessary for successful weaponization of these agents has also allegedly become more available to terrorists, mainly through the "brain drain" caused by the high level of unemployment among ex-Soviet scientists, as well as the proliferation of communication technologies such as the Internet. Overall, the capability constraints associated with CBRN terrorism are generally regarded as gradually eroding.

Besides the ability to acquire and successfully weaponize lethal agents, "superterrorists" must also possess the motivation to inflict indiscriminate mass casualties. But despite the fact that terrorism does typically involve killing and destruction, most traditional terrorists have practiced a level of restraint on their activities. Traditionally, terrorists have not necessarily been interested in killing a lot of people, but rather in inflicting only the minimum amount of damage necessary in order to gain publicity and spread fear, but also to attract sympathy and support. An act of mass killing would likely hinder such support rather than attract it, especially if it were to be achieved by weapons that are universally regarded as inhumane. Moreover, a large-scale attack might also strengthen the affected government's resolve to track down and punish the terrorists, and may thus jeopardize the group's very existence. While this traditional interpretation of terrorism has been the consensus for decades, many authors have observed that over the past 20 years, the phenomenon has experienced disturbing new trends. These indicate the rise of violent activities motivated by a religious imperative,

as opposed to the still lethal but arguably more comprehensible motives of ethno-nationalism and revolutionary ideologies. Some authors have claimed that religious terrorists are not constrained by the traditional political concerns, such as popular image or the reaction of the constituency or the targeted state. Rather, since they base their justifications for using violence on the sanction of a supernatural authority whose will is absolute, the "new" terrorists are less rational, and therefore more prone to indiscriminate mass-casualty violence.[1] Overall the motivational constraints associated with mass-fatality CBRN terrorism are also regarded as gradually eroding, especially with the growing lethality of terrorist attacks: while the deadliest incidents prior to 1983 involved "only" dozens of fatalities, in the 1980s and 1990s the most lethal attacks were counted in the hundreds, and in the new millennium the plateau has reached into the thousands of the first time in history.

The body of literature covering both the motivational and the capability dimensions of the probability of mass-fatality CBRN terrorism is quite extensive.[2] However, one element that is absolutely vital to a balanced assessment has largely been ignored thus far; that is the role tactical and technological innovation plays in the progression of terrorist organizations to the use of high-end CBRN agents. If the desire of the "new terrorists" is indeed to kill as many people as possible, why not just attack more often, at more locations, and on a greater scale with weapons that are available and have proven to be effective? Why invest a massive amount of precious resources into a new technology that only few, if any, know how to use and that could potentially end up killing the perpetrators themselves – all without any guarantee of success? Why risk a negative public reaction and a possibly devastating retaliation likely to be associated with the use of non-conventional weapons? All of these questions have yet to be satisfactorily answered.

The goal of this study is to help fill the gap in the contemporary terrorism literature by developing a comprehensive theory of terrorist innovation. This will be achieved by a two-step process. The first step will focus on general trends in terrorism, providing an overview of what tactics and technologies have been used by terrorists thus far. The aim of this section is to set the stage for further study by identifying the key points at which innovation occurred, followed by an attempt to explain the reasons behind its occurrence at those particular moments. The second step will then consist of a comparative analysis of four case studies, the goal of which will be to take a more in-depth look at the level of innovation demonstrated by various terrorist organizations in order to identify the factors that were responsible for the differences in the outcomes among these individual cases. The final product will be a historical explanation of the trends in terrorist innovation, which besides contributing to theory development will also have a policy-relevant value by identifying the distinct characteristics of especially innovative terrorist organizations. The question of these factors is highly

important, as a terrorist organization's willingness and ability to innovate is one of the key components necessary for achieving mass-destruction CBRN capability. Our ability to identify signature characteristics of innovation-prone terrorist organizations is thus a critical element in predictive threat assessment of future terrorist violence.

1 Terrorism and innovation

As any work in the terrorism field, this book also cannot escape the issue of defining the phenomenon itself. It is not the ambition here to provide a universally acceptable definition of terrorism, which by itself constitutes a virtually impossible endeavor. Instead, the goal is to select a broad definition that will allow a wide inclusion of cases directly relevant to the topic under scrutiny, also reflecting the main source of data used in this study. For the purposes of this book, terrorism shall be defined as *the use or threat of use of anxiety inducing, extranormal violence for political purposes by any individual or group, when such action is intended to influence the attitudes and behavior of a target group wider than the immediate victims*.[3] This definition emphasizes several key elements. First, the definition excludes states as perpetrators (but not as sponsors) of terrorist violence. This is not to suggest that states do not engage in acts of terrorism, quite the contrary appears to be true. The main reason behind their non-inclusion, however, is to isolate the focus of the study to non-state actors, who seem to follow very different patterns of innovation than states. Second, the definition presented above purposefully leaves out the specifications of the target of terrorism, since if one considers only attacks against civilians, it is practically impossible to flesh out fully the scope of terrorist tactics used thus far. Such a definition would also inhibit the examination of a given terrorist group's targeting progression from attacking armed forces to targeting noncombatants, which is an essential component of the phenomenon under scrutiny. Many organizations start off their campaign by attacking combatant targets, and progress to noncombatants only after their capability to attack combatants successfully is diminished, or after the group decides that an escalating strategy designed to target a wider population is needed. Including noncombatants as the exclusive target of terrorism would inhibit the study of a given terror group's early operational patterns, rendering any analysis of tactical and/or technological progression incomplete. The final point to make in this regard is that the definition as it is presented above allows for a balanced examination of both tactical and technological innovation as the isolated element under inspection, without getting involved in the highly subjective debate regarding the morality of targeting innocents. Quite simply this book

avoids treating the issue of terrorism from a moral perspective for practical reasons. In other words, while the above-presented definition of terrorism is by no means perfect, it is designed merely to facilitate the study of terrorist innovation, and as such serves its purpose.

While the topic of innovation in terrorist campaigns per se has not yet been widely researched, the body of strategic studies literature focusing on state level military innovations is considerably more extensive. And even though there are many aspects of state level innovation that are not applicable to the dynamics of the phenomenon at the level of terrorist organizations, several important lessons of the findings in the literature can be derived for the purpose of this book as well. The first important lesson concerns the definition of "innovation" itself. Interestingly, most authors in the field of strategic studies have neglected to define the term, choosing instead to treat the term as synonymous with "major military change."[4] This has been very similar to the approach assumed by authors in the field of terrorism studies. Some strategic studies scholars, such as Farrel and Terriff have criticized this approach, arguing that innovation constitutes only one of three pathways whereby military change occurs, the other two being adaptation and emulation. According to the definitional distinction offered by Farrel and Terriff, innovation involves "developing new military technologies, strategies, tactics and structures." Adaptation then constitutes the "adjusting [of] existing military means and methods." Last, emulation involves "importing new tools and ways of war through imitation of other military organizations."[5] Another comprehensive building block in the strategic studies literature has been provided by Evangelista, who defined *technological* innovation as "development of a new military technology that leads to significant changes – for example in the realm of strategy, in the organization of military forces, or in the distribution of resources among services." According to Evangelista, the term does not refer to "incremental improvements in characteristics of weapons that arguably constitute the main activity of military research and development."[6]

As we can see from these examples, the few authors who have chosen to define innovation have focused mainly on a very narrow aspect of military change, concentrating on innovations that are indeed completely new at the global level. In the realm of terrorist organizations, however, such a narrow definitional approach is hardly applicable, as we would be hard pressed to find a *single* terrorist invention that would fit either Evangelista's or Farrel and Terriff's definition. Terrorist innovation would simply fall into the realm of emulation and adaptation, as technologies used by terrorists have *never* been completely new. In this sense revolution in terrorist technology has essentially consisted of attempts to emulate or adapt an existing capability, but has never really opened up a capability never before possessed.[7] Similarly to Napoleon's victories at the end of the eighteenth century, which were based almost wholly on the innovative use of existing types of weapons, and scarcely at all on innovations in the weapons themselves, terrorists have

engaged in what some authors have labeled evolutionary (incremental) innovation as opposed to revolutionary (radical) innovation.[8] Consequently, in order to apply the definition of innovation put forward by authors in the field of strategic studies to terrorism, serious modifications have to be made. First, for the reasons mentioned above, the distinction between innovation, adaptation and emulation will be avoided. In contrast, the incremental improvements in technology that Evangelista has specifically eliminated from his definition of innovation will hereby be included. In order to account for both radical and incremental innovation, for the purposes of this book innovation shall be defined as "*an act of introduction of a new method or technology or the improvement of an already existing capability*." Such a definition incorporates situations when 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).[9] Further, in contrast to state level military innovation, this definition deliberately does not aspire to cover the introduction of new technologies at the global scope of mankind, but rather is limited to the realm of terrorist activities in the broader interpretation, and to a particular terrorist organization in the more specific context.

The key point to make here is that since the goal of the book is to identify the conditions and factors that drive terrorist groups to change their *modus operandi*, innovation will not be understood strictly at the business level of creating something completely original through a long process of focused experimentation. 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. This may either take the form of a mere adoption of weaponry or military tactics that have already been extensively used by conventional military forces, or may consist of ideas that are entirely new. At the level of particular terrorist organizations, innovation should then be understood as 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.[10] On a final note, at this point the definition of innovation introduced here accounts for all changes in a terrorist group's *modus operandi*, whether technological or tactical. In some cases of course, each type of innovation may be driven by different variables, and thus a need may come to make a distinction between the two in order to make the findings of this book more precise. Should such a situation arise, this distinction between tactical and technological will specifically be stated in the analysis.

Comparing the case studies

The main portion of this book consists of a comparative analysis of four case studies of the innovational trail followed by different terrorist organizations. More specifically this analysis will utilize a method which in academic circles is sometimes called "structured, focused comparison," and which provides a framework for comparing historical lessons in a systematic and differentiated way, leading to the development of a theory based on the analysis of differences among the individual cases.[11] It is the task of the theory then to identify the many conditions and variables that drive a terrorist group to innovate, and to sort out the reasons behind the differences in the level of innovation demonstrated by the individual terrorist organizations under scrutiny. By doing so, the theory will account for the variance in innovational outcomes, explaining the inconsistencies and contradictions among the lessons of different cases by identifying the critical conditions and variables that differed from one case to another.

In order to do this, four terrorist organizations will be closely studied using a standardized format that will remain constant for each case study. This will allow for a structured comparison of the factors that differed in each case, as well as the variables that remained constant.[12] The cases themselves have been selected on the basis of varying outcomes with regards to the given organization's approach to innovation, as well as on the basis of similar outcomes that were however achieved by different means and for different reasons. In other words, even when two organizations demonstrate approximately the same level of innovation, the causes behind this outcome may be very different in each case. The case studies have also been selected in a manner that allows the book to compare cases across a wide array of motivational, ideological, regional and structural types of terrorist organizations. In essence, the criteria used for selection of cases take into account two main elements. First, it is the necessity to include groups that represent both poles of the innovation scale, from extremely conservative groups to extremely innovative ones. Though the main focus here is on innovative organizations, a control case study of a highly *conservative* organization will also be included in order to identify which of the differences between the respective groups are most relevant to the variance in the demonstrated levels of innovation. Second, in order to have a sample that will be as globally representative as possible, it is key to include organizations representing as wide an array of critical factors as possible. The selected groups will therefore vary across factors such as ideology, overall strategy, size, structure, leadership, duration of existence, available resources, outside sponsorship, geographical area of operation, lethality, density of the operational theater, security environment, etc.

The groups selected for case studies are the following: *Aum Shinrikyo* has been selected as a representative of a large and extremely innovative terrorist organization, characterized by a dubious apocalyptically cosmic ideology,

unparalleled amount of human and material resources, and an uncontested cult-type leader, operating in the favorable security environment of modern-day Japan. In terms of terrorist technology Aum's efforts were unprecedented, as the group attempted to acquire anything from chemical, biological and nuclear, to seismological, plasma and even laser weapons. Implicitly, given its status as the most innovative terrorist organization of all time, this case study simply cannot be avoided in any serious effort to understand the phenomenon terrorist innovation.

The *Popular Front for the Liberation of Palestine – General Command* (PFLP-GC) has been selected as a highly innovative organization operating under heavy state sponsorship in the Middle East and Europe, in an operational theater where it competed for attention with a large number of other organizations that possessed virtually identical ideological foundations and goals. In terms of terrorist technology, the PFLP-GC was the first to use a barometric pressure detonation mechanism to blow up airliners simultaneously in mid-course flight, which by itself constitutes one of the greatest advances in terrorist technology ever achieved. In addition, the group had constructed various booby-traps such as letter-bombs, pen-bombs and sophisticated explosive devices to be placed inside load-bearing equipment where the fighters kept their gear. At the tactical level, the PFLP-GC showed its innovativeness by using air-mail to smuggle explosive devices on board commercial aircraft, the use of mules for the same purpose, infiltration via motorized hang-gliders, the concept of suicide bombing, and the use of walkie-talkies and other wireless equipment to connect the fighters in the field to the command and control center in the forward position. The PFLP-GC has for many years held the label of the most innovative terrorist organization now attributed to Aum, making this group another natural candidate for closer scrutiny.

The *Riyadus-Salikhin Suicide Battalion* (RAS) has been selected as an example of a spectacular and highly lethal North Caucasus-based Islamist terrorist organization, which embraced a highly innovative approach to operational planning and execution. RAS' leader Shamil Basayev was the first to engage in large-scale barricade hostage-taking operations involving a large commando unit of suicide fighters, the first to explore the potential of radiological terrorism, the first to resort to sending live video footage of beheadings of Russian soldiers to the media, and the first among Islamists to systematically rely almost exclusively on female suicide operatives. Since RAS was one of the two deadliest, most innovative and most spectacular terror groups of the post 9-11 period its inclusion is also unavoidable. And while a strong argument might exist for the inclusion of *al Qaida* (AQ) in the "innovative Islamist group" category instead, RAS has been given preference based on the fact that this group has not been nearly as well researched. Nevertheless, AQ is by far too important in the current security environment to be left out of this study completely. As a result, references to the group will be brought into the picture in the final analytical portion of this book.

Finally, at the traditionalist pole of the innovation spectrum, it would be difficult to find a more conservative group than the *Revolutionary Organization 17 November* (17N), a small, highly durable, left-wing, terrorist group operating in the urban environment of Western Europe, which was notorious for its reliance on the very same .45 caliber Colt 1911 semiautomatic pistol throughout the entire 27 years of its existence. The role of 17N is to provide a control case study which will be used to validate or refute the findings based on the examination of the other cases of highly innovative groups.

All of the selected cases will be profiled using a standardized format that will identify and analyze the shifts that have occurred in the *modus operandi* of the given organization over time. The outcomes in terms of innovation demonstrated by each individual case study will then be compared and analyzed. Some authors in the field of strategic studies have identified three basic sources of military change: cultural norms, politics and strategy, and new technology.[13] These factors are significant in the realm of terrorist organizations as well, but alone are too abstract to provide a useful comparative framework. In the terrorism context, it is likely going to be a number of very specific factors that will be responsible for the variance of outcomes in terms of the terrorists' decision to innovate, including the organizations' ideology, objectives, dynamics of their struggle, internal perception of urgency, specific outside events, group cohesion, background and authority of leadership, approach to risk taking, overall duration of existence, timing, ambition, historical roots, number and influence of concurrent organizations, and availability of expertise. Once the decision to innovate has been made, many additional factors that will determine the success of the innovation process will also come into play. These include the level of outside support, availability of financial and material resources, human resources, intensity of the struggle, and the security environment in which the group operates. This list is, of course, rather extensive and it is hardly manageable within the scope of one book to examine each of these variables separately. Instead, for practical purposes the factors listed above will be collapsed into 11 critical variables that will then be used as a constant "measurement stick" applied to each individual case study, in order to facilitate the standardized format required by the focused, structured comparison method. The 11 critical variables will be explained and operationalized in the last section of this chapter.

It should be noted that the focus of scholars on terrorist tactics and on the relationship between technology and terrorism is certainly not new. However, the existing literature has concentrated mainly on counterterrorism technology, as opposed to the means used by the terrorists. As a result, existing analyses assessing terrorist tactics and technologies are rather limited in scope. An important piece of work in this respect has been Wilkinson's *Terrorism and Technology*,[14] which provides two relevant chapters by leading experts, although their scope is to address only basic trends and

concepts.[15] Drake's *Terrorists' Target Selection*[16] also includes useful typologies of terrorist targets and objectives, but the supporting data have a strong bias toward European-based organizations. Jackson's articles on technological innovation[17] and on organizational learning[18] both provide an excellent basic framework for analysis of factors influencing successful technology adoption by terrorist groups, even though they in many ways raise more questions than they answer. Nevertheless, the article on technological innovation does provide a useful list of variables possibly pertaining to terrorist innovation, the relevance of which will be tested throughout the course of this study. Further, in order to compensate for the comparative lack of research on the trends and causes of terrorist innovation, broader strategic studies literature on the topic of state level military innovations will also be consulted.

Overall, surprisingly little work has been done thus far on the topic of tactical and/or technological innovation by terrorists themselves. In general, the schools of thought regarding terrorist innovation can be divided into two general categories. In the first category are authors who hold that terrorists always seek new technologies in order to boost the ever-increasing lethality of their attacks.[19] This argument in essence constitutes an economical model that literally equates terrorist organizations to businesses, in that it automatically attributes a universal motivation to all parties. The second category of authors, which has relied more on empirical data than on theoretical models, has argued that terrorists are conservative in nature and that innovation in the context of terrorism is essentially a reactive, as opposed to a pro-active, process. On the technological level then, terrorist innovation allegedly takes the form of novel methods of weapon concealment, as opposed to adoption of new weaponry per se.[20] This second school of thought is consistent with the observation made regarding state level innovation that military organizations prefer to preserve tried strategies and structures rather than adopt new ones.[21]

As we can see from this breakdown, both schools of thought suffer from significant weaknesses. On the one hand, it should be emphasized that unlike businesses, the motivation of which is characterized by the constant and easily operationalizable objective of making the largest possible net profit, the motivations of terrorist organizations are much more diverse and much less linear. The success of terrorist operations cannot simply be measured by the number of casualties inflicted, as many other tactical goals such as propaganda effect, group survival, increased pressure on the government, the attraction of financial support, increased recruitment, and embarrassment of the opponent also come into play. Possibly for this reason have the proponents of the business approach to terrorist innovation found only very limited empirical support for their claims, with the exception of a few pieces of anecdotal evidence. On the other hand, the empirical school of thought, while being correct in identifying the general conservative trend, fails to explain why some terrorist organizations demonstrate a much greater propensity toward innovation than others. The objective of this book will be

to fill the gap by providing an interpretation of why that has been the case, and to develop a comprehensive theory that will identify the key variables and conditions under which terrorist organizations adopt a pro-active approach to innovation. The key questions to be answered throughout the course of this book are: What types of tactics and weapons have terrorists used so far? To what extent are terrorists innovative? What factors and group characteristics differentiate innovative terrorist organizations from conservative ones? What do the historical trends in terrorist innovation mean for the future of terrorism? Answering these questions is highly important as it can improve our understanding of the overall level of the terrorism threat. And since innovation is a necessary component of achieving a mass-destruction capability, the identification of signature characteristics of potential perpetrators of such an event *before* it occurs should be the main focus of our contemporary struggle against terrorism. Without an understanding of the processes and factors that drive terrorist innovation it is simply impossible to make good judgments about the specific counterterrorist actions that need to be taken.

The data used throughout the course of this book draw mainly from open-source materials, including academic literature, media sources, Lexis-Nexis and Federal Broadcast Information Service (FBIS) reports, interviews with investigators, groups' statements, terrorist training manuals, etc. The primary sources of data on individual terrorist incidents originate in a number of databases, including the RAND–St Andrews Chronology of International Terrorism, the Monterey Institute of International Studies' Weapons of Mass Destruction Terrorism Database, and the Institute of Defense and Strategic Studies' Political Violence and Terrorism Database. With regards to information about attacks perpetrated by the groups that serve as case studies, more narrowly focused sources of data have been consulted in order to corroborate and update the information from the international databases listed above. Overall however, the single most important source of data for this book has been the meticulous work of Edward F. Mickolus and his colleagues, who have filled thousands of pages with detailed information on all terrorist incidents recorded since 1945. The survey of every single incident documented in these chronologies has allowed me to gain a comprehensive understanding of what sorts of tactics and weapons have been used by terrorists thus far. This of course, is a critical component of the ability to determine what constitutes an act of innovation in the realm of terrorist operations.

Just like any study in social sciences, this book also has significant limitations. The first such limitation lies in the difficulty of using historical data to predict future events precisely. And while it is probably safe to assume that acts of terrorism will occur in the future, predicting exactly when and where they will occur and what form they will take is extremely difficult. The second shortcoming has to do with the considerable disagreement on the topic of innovation itself. For instance, according to a survey from 1971,

academics who had come up with 38 different notions about innovation, disagreed about 34 of them. The four notions that were not objects of disagreement were the ones that had not yet been discussed by academic experts.[22] The third shortcoming pertains to the reliability of open source data. Terrorist organizations are by their very nature not only secretive but also very sensitive to the messages their actions send to the public. This explains why in many cases terrorist groups release information that is either fabricated completely, or altered in a way that the group believes will provide the desired effect in terms of public perception. For instance, even if an attack fails miserably, the terrorist group typically explains the end result to have been the original plan, and declares the operation an ultimate success while attaching some sort of a creative explanation. By the same token, governments also frequently alter the reality by either overemphasizing the threat and potential consequences of some terrorist plots for propaganda value, while at the same time attempting to deny even the very existence of others in an attempt to prevent the spread of panic. This problem of reliability of open source information is, of course, endemic to the field of terrorism studies in general and is not meant to serve as a pretext for justifying the deficiencies and shortcomings of this study. It is, however, important for the reader to realize that while statements and testimonies made by the actors directly involved in terrorist operations can be invaluable in terms of providing unique insights, they must be treated with utmost caution and in the light of the limitations mentioned above. Only by examining all the perspectives and all available data and by "reading between the lines" is it possible to get the full picture.

The first part of this book focuses on the global historical trends in terrorists' *modus operandi*. Each tactic profile will include several key elements, including a brief overview of the history and evolution of the particular terrorist tactic, its variations, the technology involved, as well as the identification of terrorist campaigns in which the particular tactic has been strikingly popular. Further, this part will analyze the individual modes of attack by identifying the advantages and disadvantages of each individual tactic from the perspective of a terrorist organization, in order to provide an explanation of what specifically makes a particular tactic or weapon attractive for terrorist purposes. The first part concludes with an analysis of the global trends in terrorist innovation. The second part then focuses on the four individual case studies. Each of the case study sections provides a profile of the organization's activities, as well as an interpretation of the reasons that led to modifications in the given group's *modus operandi*. Particular attention will be devoted to examining the relevance of each of the standardized variables explained below. The third part of the book will focus on analyzing the specific factors that have impacted the variance of outcomes in terms of differing level of demonstrated innovation among the case studies under scrutiny, leading to the inductive building of a comprehensive theory of terrorist innovation. The summary of findings as well as their implications for the future of terrorism will be presented in the conclusion.

The factors explained

In order to facilitate the comparison of terrorist innovation across the selected case studies in a focused and structured manner, certain variables need to be defined and operationalized. Based mainly on the variables proposed by authors in the field of strategic studies, as well as the preliminary ideas put forward by Brian Jackson, the following 11 variables have been selected as the most likely determinants of the level of innovation demonstrated by a particular terrorist group.[23] The upcoming section explains these variables in more detail, and also identifies the hypothetical assumptions of how each given factor affects terrorist innovation. It is important to emphasize at this point that the hypotheses associated with individual variables are in some cases contradictory with respect to each other. This is because the impetus behind terrorist innovation can practically never be attributed to one factor alone, and in most cases it is likely to be a particular combination of several variables that will provide the necessary driving force. At this point however, it is necessary to isolate individual variables for the purposes of operationalization, so the issue of compatibility among individual variables will be left out of the equation for now. Any possible contradictions and confusion will be resolved in Chapter 7, where the impact of each individual factor examined in this book, including the ones that were for practical purposes introduced under a single heading, will be analyzed. The analysis in this chapter will also resolve possible conflicts within individual variables by introducing a matrix of specific characteristics, conditions and factors that trigger or facilitate the process of innovation in terrorist campaigns.

Factors relevant to terrorist innovation:

- role of ideology and strategy
- dynamics of the struggle
- countermeasures
- targeting logic
- attachment to weaponry/innovation
- group dynamics
- relationship with other organizations
- resources
- openness to new ideas
- durability
- nature of the technology.

Role of ideology and strategy

The first variable is the role of ideology and overall strategy. Ideology is important as it is an organization's ideological foundation that frames the worldview of its members and thus provides a sense of collective identity.

Ideology is also instrumental in identifying the enemy, while also providing the necessary explanation and justification for its targeting. Moreover, it is again the ideology of a group which determines its core objectives and the strategy for how and by what means these objectives are to be achieved. And finally, ideology is also a critical component in determining a group's ambitions, as well as the overall perception of urgency for armed action in order to fulfill these aspirations. At the operational level then, the group's core strategy translates into the frequency and intensity of its military operations. This is where ideology, strategy and innovation meet, in the sense that terrorists' innovation is often driven by the need to achieve the capability necessary for reaching and sustaining the level of operational intensity preferred by the group. For this reason, it seems likely that organizations whose ideology identifies an ideal outcome with regards to definite objectives, and which prescribes a time frame and a specific course of action for reaching those objectives, can be expected to demonstrate a higher level of both tactical and technological innovation than organizations with vaguely defined goals, low sense of urgency, and a low level of strategic planning. In reality, of course, this variable rarely remains constant throughout the life span of a group. For this reason, points of shift in the strategy of each given organization will be closely monitored as well, in order to determine whether such transformations are associated with changes in the given group's approach to innovation.

Dynamics of the struggle

Another factor that seems relevant to terrorist innovational patterns is the dynamics of the struggle. In this sense, 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. While the former have the option to conduct research and training freely without the immediate fear of detection and obviation in case of an accident, the latter have to take tremendous security precautions to ensure that their experiments and training do not arouse suspicion among the ever-present strangers. For instance, while an accidental explosion of a new and untested device during assembly at a secluded Revolutionary Armed Forces of Colombia (FARC) or Abu Sayyaf training camp will hardly endanger the existence of these organizations, for groups such as the Red Army Faction (RAF) or the Red Brigades which assembled their devices in city apartments, such a mistake could prove fatal. Further, the nature of the struggle also reflects on its frequency and intensity, having a profound impact both on the decision to innovate, as well as the likelihood of success in the case of a positive attitude toward such a decision.

As previously observed by Herwig in the cases of both American and German militaries in the inter-war period, it was war itself that provided

the engine of innovation.[24] Similarly Rosen has argued that wartime innovation offers constraints but also opportunities, as both old and innovative methods can be tested in combat and can thus be directly compared.[25] The same is likely to apply to the realm of asymmetric warfare. First, guerilla organizations in territorial control of a safe haven usually engage the enemy on a larger scale and with greater intensity and are therefore in more of a need of sophisticated weaponry to use in the field. Second, when groups that are involved in reciprocal clashes with the government decide to innovate, their greater overall combat exposure not only translates into more experience with handling weaponry, but also provides more ample opportunity to battle test the new innovations in the field. Thus, greater frequency of attacks seems to have a profound impact on both the desire and the ability of terrorists to innovate. With regards to the "dynamics of the struggle" variable, it seems reasonable to assume that organizations with guerilla characteristics such as frequent reciprocal clashes with the enemy armed forces and control of a territorial stronghold are likely to be both more willing and more capable to innovate than urban terror groups that are confined in their training and operations to the municipal setting. At the secondary level, it is likely that organizations facing greater pressure – either in the form of deterrent police presence or a pro-active approach employing hit squads – are less likely to succeed in their innovative efforts than groups operating in a favorable security environment.

Countermeasures

Herwig has argued that a precondition of significant military innovation is a concrete problem which the military institutions involved have a vital interest in solving, and that the key determinant of innovation success lies in the specificity of the problem, the solution of which would offer significant advantages.[26] Applying this finding to the terrorism realm, it seems that another key variable will be the presence of specific security countermeasures introduced by the group's adversary in order to provide protection against specific tactics used by terrorists in the past, such as the installation of metal detectors at airports as a response to a wave of high profile skyjackings.[27] Such target hardening efforts have in many instances rendered the tactics previously used by terrorists ineffective, forcing them to innovate in order to overcome these measures. Such innovations were then usually countered again by a new set of countermeasures, feeding a cycle of what could be described as a "mini arms race." This cycle can then take the form of either an introduction of a new technology in order to beat the specific countermeasure, or the adoption of a new tactic to achieve the same result. With regard to the "security environment" variable, organizations whose *modi operandi* are frequently countered by the adversary by target hardening efforts are likely to demonstrate a greater innovative drive in the technological and/or tactical realm than organizations whose tactics are not effectively countered.

Targeting logic

Targeting logic is another variable that can have a strong effect on the level of innovation demonstrated by a particular group. At the most basic level, terrorists identify the scope of their targets, and then seek to attain the capability to attack these targets at the desired scale. In other words, groups that embrace a very narrow and discriminate targeting logic will depend on weaponry that will allow such a targeting. For instance, organizations that take great pride in causing destruction without any casualties, such as the National Liberation Front of Corsica (FLNC), or groups that aimed to assassinate only very particular individuals, such as the Greek 17N, are not likely to strive to acquire highly indiscriminate and deadly capability. Groups that do embrace a highly indiscriminate targeting logic, on the other hand, are more likely to engage in the process of innovation in order to obtain adequately destructive means of attack.

In sum, the hypothetical assumption tied to this variable is that the more indiscriminate and more deadly the targeting logic of the group under scrutiny, the greater the organization's propensity to technological and/or tactical innovation. Another relevant dimension of a group's targeting logic is the level of rigidity with which the given group approaches the issue. Organizations that have a highly rigid approach to their targeting throughout the whole period of their existence are less likely to demonstrate innovative tendencies than organizations whose targeting logic is flexible in terms of frequency and extent of targeting shifts. In other words the more often the given group shifts its targeting logic to a more indiscriminate and deadly scale, the greater the likelihood of attempts at tactical and/or technological innovation.

Attachment to weaponry/innovation

According to Murray and Millet, of all the issues that are crucial to innovation, cultural values of military organizations may be the most important.[28] Similarly, Farrel and Terriff claim that the relationship between man and his weapons is a "great deal more intimate and complex than heretofore has been admitted." According to them, weapons are "very special devices, artifacts of the greatest significance." As a result, Farrel and Terriff argue, states may undertake military change for reasons of identity and legitimacy rather than to improve military effectiveness.[29] A similar situation exists in the realm of terrorist organizations. In recognition of the fact that rational (i.e. strategy) and objective (i.e. limited resources) factors are not always the most important determinants of terrorist innovation, the "attachment to particular weaponry or tactic" variable will be added to the equation. In fact, it is impossible to understand fully the tactical and technological choices of a group without understanding the historical, emotional and expressive meaning of a particular weapon or tactic to a given group. An ancient example of this phenomenon are the *Thuggees* (Thugs), an Indian cult of Kali

worshippers that according to some claims killed over a million people in acts of sacrificial violence between the seventh and mid-nineteenth century. According to David Rapoport, the *Thuggees* believed that if they do not shed blood, their victims will go to paradise, and probably for this reason the cult used strangulation as its main operational method.[30] Other examples of this phenomenon include the IRA's nostalgic sentiment for the M1 Thompson submachine gun long after it became obsolete, the Abu Nidal Organization's trademark use of the Polish W.Z. 63 submachine gun, and the JRA's naming of one of its units "VZ 58" after the weapon that was used by the group in the 1972 Lod Airport massacre.[31] Interesting in this regard is the reflection of the attachment to particular weaponry in terror groups' texts or speeches. For instance, Aum's guru Shoko Asahara wrote poems about sarin, while Kach's leader Meir Kahane used slogans such as "keep Jews alive with a .45" or "for every Jew a .22" explaining this preference by the fact that "every Jew an M-16 did not rhyme."[32] The key point of this variable is to test whether the particular organization's preferences in terms of *modus operandi* and weapons selection are driven more by non-rational factors rather than rational and cost–benefit considerations. With regards to the "attachment to weaponry" variable, the hypothetical assumption is that the greater the sophistication of the cherished weapon, the more technologically innovative the organization will be. Further, the attachment to the innovation process itself can also provide the decisive push toward innovation, at both technological and tactical levels.

Group dynamics

Much has been written about the crucial role of individuals in exercising influence over the innovation process, as well as the difficulties in securing changes in organizational environments to facilitate the innovation process.[33] Evangelista, for instance, has argued that the difference between various countries' *processes* of innovation (i.e. top-down versus bottom-up) can be understood on the basis of the relative strengths of state and society. In particular, Evangelista points to the examples of the Soviet Union and the US during the Cold War to argue that centralization tends to be negatively associated with innovativeness; that is "the more power and control are concentrated in an organization, the less innovative the organizations is." However, the same author has also found that although initiation of innovation in centralized organizations is less frequent, the centralization may in fact encourage the implementation of innovation once the innovation decision is made.[34] Murray then, took a step further by distinguishing between revolutionary (radical) innovation, which according to him appears largely as a phenomenon of top-down leadership,[35] and evolutionary (incremental) innovation, which depends on "organizational focus over a sustained period of time, rather than on one particular individual's capacity to guide the path of innovation for a short period of time."[36]

Building on these lessons from the conventional military realm, another variable that seems to be crucial to understanding terrorist innovation is "group dynamics." The first component of this variable will consist of the background, the value system, and the authority of the leader as a key determinant of the motivation of such a figure to instigate innovation, as well as his or her ability to impose such a decision successfully on the rest of the group. In this sense, the group structure is also extremely important. First, the structure will establish the group's decision-making dynamics, determining whether major operational decisions are based on a consensus of all members, or are rather a product of a top-down approach with the group's penultimate leadership taking the decision and passing it on to operational sub-units or cells for execution. The bottom-up decision-making approach, in which individual cells come up with their own autonomous plans to be executed pending the leadership's approval, will also be considered. The final component of this variable is the overall level of internal disputes as a source of innovation. In this scenario, the ideational, operational or power disputes can sometimes trigger escalation or innovation as a reconciliation tool that will help the group overcome the differences and unite by channeling their energy into a major effort to strike the enemy. With regard to the "group dynamics" variable the hypothetical assumption is that loosely knit or heavily factionalized groups that experience strong internal pressures will demonstrate a greater desire to innovate on both tactical and technological levels, but will have more difficulty completing this process successfully. Conversely, highly structured and highly cohesive groups led by an undisputed leader are likely to demonstrate a greater capability to innovate successfully, 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.

Relationship with other organizations

The next variable relevant to innovation is the relationship of the examined group with other similar organizations operating in the same operational theater. In the event of cooperation, know-how and technology transfers from one group to another can take place, contributing to a group's ability to perform a seemingly sudden capability leap. In contrast, the rivalry among groups operating in the same theater can result in a fierce competition that will drive each group to improve in order to demonstrate superiority over its rival. Such a development is particularly likely in cases where the given organization places a high level of importance on operational capability as a source of its identity. While Farrel and Terriff have argued that political culture of a military organization can block military change, particularly emulative change,[37] in the realm of terror groups which rely on operational uniqueness for their identity, the unacceptability of emulating other groups is likely to push them even further toward innovation. With

regards to the "relationship with other organizations" variable, it is likely that competition between groups with similar ideologies and ambitions in the same operational theater will be associated with a higher level of tactical and/or technological innovation than in the case of indifference or cooperation among such groups.

Resources

In the strategic studies literature, the role of resources in military innovation has already been widely discussed. Evangelista, for instance, introduces the term "organizational slack" defined as "the degree to which uncommitted resources are available to an organization," as one of the key determinants of organizational and technological innovativeness.[38] Quite logically, the level of available resources is likely to be one of the key determinants of any armed struggle. In the case of terrorist groups, resources can be divided into two main categories: material and human. At the level of material resources, terrorist organizations need items such as weapons, communications equipment, fake documentation, safe houses, training camps, money for payoffs, etc. These resources can be acquired by a variety of means, ranging from individual self-help methods such as bank robberies, kidnappings for ransom, credit card fraud, petty theft or narcotics smuggling, to state assistance such as safe haven, logistical support, or direct transfer of weaponry and other equipment. The availability and scope of a terrorist group's resources are likely to be one of the key determinants of the extent to which the given group innovates, with more resourceful or state-sponsored organizations being more likely to innovate due to their ability to invest more heavily into the process. Overall, the groups that are most likely to innovate are state-sponsored entities, as documented by the historical observation that organizations that enjoy the support of a state sponsor have been on average eight times more deadly than groups that receive no such support.[39] One of the reasons for this disparity is presumably the greater availability of resources for the state-sponsored groups.

At the level of human resources, terrorist organizations differ significantly not only in size, but also in the availability and capability of their individual members, including anyone from bomb-making experts and operational masterminds to ideological, logistical, media, recruitment, communications and R&D specialists. The availability of expertise in these areas is thus going to be key to a given organization's willingness and ability to innovate, in the sense that it will determine both the outcome as well as the necessary confidence that the group can undergo this process successfully in order to justify the initial investment. Full-time terrorist organizations are more likely to innovate than groups comprising members who have daily jobs, based simply on time availability of these individuals. At the same time some part-time terrorists may be exceptionally qualified in certain relevant areas due to the dual-use nature of their profession having exactly the opposite effect. In this sense it may not

necessarily be the size and full-time status of the group, but rather the qualitative attributes of the cadres that will determine its innovational potential. Another aspect which contributes to a terrorist group's ability to carry out operations is the number of members it has, with larger groups being able to rely on more human resources for reconnaissance and other tasks.[40]

With regard to the "resources" variable, it seems probable that large organizations with hefty budgets, outside sponsors and highly qualified membership are more likely to demonstrate an inclination toward tactical and/or technological innovation with respect to both motivation and capability, than smaller groups with limited financial and logistical resources.

Openness to new ideas

The level of openness to new ideas is another variable likely to be closely associated with terrorist innovation. Murray has demonstrated the importance of challenging basic assumptions as a critical precondition to innovation, arguing that the one thing that made the Germans good innovators in the inter-war period was their willingness to recognize problems.[41] Similarly, Till has argued that the Americans and Japanese were able to create an environment conducive to innovation mainly because of an honest self-assessment of what needed to be done.[42] This need for realistic self-reflection and ability to recognize problems has an important implication for innovation in terrorist groups as well.

The first component of this variable is tied to group decision-making dynamics. In highly autocratic organizations where members are closely watched and controlled, and where dissent is not tolerated, the likelihood of critical assessment of current practices or innovative proposals coming from individual group members is lower than in the case of groups that base their decisions on democratic vote. The second critical component is the technological awareness of the group. In this regard, organizations that are in frequent contact with the modern technologies affecting our everyday lives are more likely to take advantage of them than groups which are secluded from the rest of the world. The third important component which innovative groups are likely to possess is a positive attitude toward risk taking, both at the level of the risk of failure and the physical risks associated with conducting experiments with unfamiliar weaponry. At the operational level, failure is a nightmare for most groups, as it wastes resources, leaves clues for investigators, and has negative effects on outward image and group morale. In other words, an operation is worth conducting only if one can minimize the chances of failure.[43] At the basic level of physical risk, virtually any terrorist is willing to die for the cause. However, some organizations have shown a great willingness to sacrifice the lives of some of their members during suicide operations, while others have gone out of their way to avoid as many physical dangers as possible, even sacrificing the effectiveness of their operations in order to see their operatives fight another day. Innovative groups are

likely to demonstrate less fear with regards to operational failure, as well as a greater willingness to sacrifice their members in the process of attack preparation and delivery.

To sum up, with regards to the "openness to new ideas" variable, the hypothesis is that organizations that are in 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 technological innovation than ideologically conservative, socially secluded, risk-averse, and autocratically ruled groups.

Durability

While the average life span of a terrorist group is largely an unknown, it has been estimated that only one out of ten groups survive the first year of operation, and only half of the groups that do make it through the first year survive a decade.[44] Only about ten existing terrorist groups have survived over 20 years.[45] The durability of an organization is likely to be another key variable, as organizations that last longer are likely to have more time to progress in terms of their motivation to innovate, as well as the opportunity to gather enough experience to facilitate the success of this process.[46] And while groups whose existence can be measured in months may in some cases be significantly motivated to innovate, their ability to do so successfully is likely to decrease the shorter the duration of their life span. With regards to the durability variable, the hypothetical assumption is that the length of life span of a terrorist group will be positively correlated with its demonstrated level of tactical and/or technological innovation.

Nature of the technology

Once the decision to innovate has been made, additional variables that will determine the success of the innovation process will also come into play. These variables include some of the above-stated factors such as the level of outside support, availability of financial and material resources, expertise, time, human resources, quality of membership, intensity of the struggle, and the security environment in which the group operates. The one obvious variable that is likely to have the strongest impact on the level of innovation success, however, is likely to be the nature of the technology or tactic in question. Quite simply, the more complicated the new *modus operandi*, the less likely are groups to succeed in its adoption. For instance, an organization attempting to achieve the capability to fire their homemade rockets remotely will have a greater chance of succeeding than one that will strive to kill thousands with an aerosolized powder form of *Bacillus anthracis*. With respect to the "nature of the technology" variable, the sophistication of selected tactic or weaponry is likely to be negatively correlated with the success of the attempts to adopt such a method.

2 Terrorist tactics and technologies

This chapter will discuss the scope of terrorist tactics and the technologies involved in their execution. The main objective of this part is to provide a comprehensive overview of the general trends in terrorist innovation by identifying tactical and technological shifts as they have occurred over time, along with an explanation of the purpose and timing behind them. Each tactic profile will include several key elements, including a brief overview of the history and evolution of the particular terrorist tactic, the technology involved, as well as the identification of terrorist organizations among which the given tactic has been strikingly popular. Further, this section will also analyze the advantages that make a certain tactic attractive to a given organization.

Primitive assaults

For hundreds of years terrorists have used essentially very crude weaponry, with weapons such as the dagger, the noose or the torch being the terrorist instruments of choice. The *Sicarii* (Zealots), for instance, a Jewish group which resisted the Roman occupation between AD 66 and 73 by assassinating Roman soldiers in broad daylight, relied almost exclusively on using the *sica*, a primitive dagger.[47] Similarly, the highly mythologized *Hashishin* (Assassins), the radical offshoot of the Shiia Ismaili sect that operated between AD 1090 and 1272, counted on exceptionally dangerous missions, which utilized operatives with daggers who were famed for their ability to infiltrate any environment in order to execute their victims.[48] And finally, the *Thuggees* (Thugs), the aforementioned Indian cult of Kali worshippers that according to some claims killed over a million people in acts of sacrificial violence between the seventh and mid-nineteenth century, used the noose as their primary mode of attack against unsuspecting travelers. And while many historians question even the existence of the *Thuggees*, claiming that they were a myth that was developed by the British during their colonial rule of India, if this group actually existed and if the numbers are correct, the *Thuggees* are the deadliest terrorist group in history;[49] their average killing rate of 800 people per year remains unchallenged to this day despite great advances in weapons technology.[50]

Of active terrorist organizations, only the Algerian *Groupe Islamique Arme* (GIA) can challenge the *Thuggees* in terms of killing intensity. Interestingly, the GIA has also relied on very primitive weapons in its campaign, preferring to slash the throats of villagers with knives, or to cut their heads off with axes and swords.[51] Most recently, this practice was revived by Abu Musab al-Zarqawi's al Qaida in Iraq, which engaged in brutal beheadings of hostages while capturing the process on video. This example clearly demonstrates that while weapons technology has made quantum leaps since the time of the *hashishin*, certain terror organizations still deliberately prefer very primitive modes of attack – not necessarily out of a lack of better options but mainly because of the distinct strategic advantages such methods offer. First, crude weaponry can help the given group in terms of emphasizing the disproportionate and desperate nature of the respective struggle, which aids the organization in reiterating and politically exploiting the image of an underdog. Second, crude tactics such as throat slashing or hacking the victim to death with a machete have the power of augmenting the horror value associated with the attack. While several centuries ago edged weapons did not have this characteristic since they were the norm, in the age of modern and remotely operated weapons, getting one's "hands dirty" by killing someone from close proximity carries a curious stigma of extreme and unnecessary brutality. So while modern technologies have made killing psychologically easier due to the ability of the perpetrator to kill his or her victims from a distance and thus decreasing the danger of last moment change of mind due to the "looking into the eye" of the victim, some terrorist groups have intentionally killed from up close with edged weapons in order to manifest their superior resolve and desensitization to the suffering of their victims.

The above-mentioned GIA, but also the Palestinian Islamic Jihad (PIJ) and HAMAS at its early stages, as well as a number of groups in Bosnia, Chechnya, Iraq and central Africa have relied on such tactics. A number of brutal variations have also been employed, as in the case of the loyalist "Shankill Butchers" in Northern Ireland, who carried out 19 brutal killings during the 1970s, abducting many of their victims, torturing them by mutilation with butcher knives and axes, and then finally killing them. One of the victims, a man whose body was carved like a piece of wood with some 147 cuts, was only put out of his misery by slowly choking himself to death on a noose placed around his neck, by the weight of his own weakening body.[52] In other cases, certain terrorist groups have sought to send a particular message by mutilating their victims but leaving them alive in order for them to serve as a living deterrent reminder of the group's power and resolve. In this instance, the IRA's knee-capping practices, or the deliberate amputations of limbs of the civilian population in Sierra Leone by the local rebels, come to mind.

Another primitive, yet rather principal terrorist tactic has been arson attacks, which are often overlooked despite the fact that they account for

roughly a quarter of all terrorist violence. While relatively sophisticated incendiary devices have on occasion been used, most arson attacks have employed only very crude methodology. And yet, such attacks have been in some cases extraordinarily destructive. For instance, the third deadliest terrorist attack prior to 9-11 was the 1978 torching of a movie theater in Iran which killed 442 people.[53] Similarly, the most destructive attack on American soil in terms of property damage other than the World Trade Center Bombing, Oklahoma City bombing and 9-11 was the series of fires set by the Earth Liberation Front at the nation's busiest ski resort in Vail, Colorado.[54] Just like knifings, arsons have also been a traditional terrorist tactic for centuries. The advantages that they bring to today's terror groups include the deniability element associated with the fact that fires can occur naturally, allowing the perpetrators to forgo credit if they wish to do so. In addition, the natural characteristic of fires makes arson attacks specifically attractive to ecoterrorist groups, to whom fire represents a natural way for the "Mother Earth" to fight back against "inconsiderate civilization." Besides ecoterrorists, arson attacks have also been the method of choice for the neo-Nazi groups in Italy, Germany and the US. A final advantage of arson is the ability to cause devastating material damage without necessarily causing casualties. This has specifically been the objective of most arson attacks, including the wave of apparently unconnected torchings of USIS libraries which in the 1960s and 1970s spread over four continents.

Overall, while primitive tactics and weaponry have in the past been largely a product of necessity or a lack of a better option, today's terrorist organizations often use such methods deliberately as a product of a strategic choice, based on a number of advantages these tactics provide over more advanced forms of attack. The key lesson here is that a group's reliance on primitive weaponry does not necessarily translate into a lack of operational capability to use more modern means.

Firearms

The dominance of the dagger, the noose and the torch as favorite terrorist weapons remained unchallenged until the 1584 assassination of William of Nassau, the Prince of Orange, who became the first ever political figure to be assassinated by a firearm. Fascinatingly, not until the 1792 assassination of Gustav III Adolf, the King of Sweden, had a firearm been successfully used again as an assassination weapon.[55] This more than 200 year gap has yet to be adequately explained, but it is likely that the unreliability and the unfavorable physical characteristics of sixteenth century firearms played a significant role. The firearms of today have of course become more efficient, increasing their rate of fire, accuracy, range and reliability, while also significantly reducing their size and weight. Due to the proliferation of state sponsorship of terrorism following World War II, many conventional infantry weapons have made their way into terrorist arsenals. But as some experts have pointed out,

the technological advances in small arms have actually been much more limited than is commonly believed. For instance, the 1884 Maxim gun fired 13 rounds per second – the same cadency as the Armalite favored by the Irish Republican Army (IRA) or the AK-74, the smaller caliber version of the infamous AK-47.[56] In regards to firearms used by terrorists, the AK-47 has been the most popular weapon, which is not surprising considering the fact that it remains the most widely manufactured rifle of all time.[57] Other firearms frequently used by terrorist organizations have included the M-16, the VZ-58 rifle that was employed by the Japanese Red Army (JRA) during their 1972 indiscriminate shooting spree at the Israeli Lod Airport, or the VZ-61 automatic pistol (Skorpion) that was used by the Italian Red Brigades to murder former Prime Minister Aldo Moro in 1978.[58]

Other assault weapons that have been exploited for terrorist use are submachine guns, with popular models including the Heckler&Koch MP5 favored by the Red Army Faction (RAF), or the M1 Thompson submachine gun, which was cherished by the IRA even after it had crossed the threshold of becoming obsolete.[59] But while relying on obsolete weapons in some instances, the IRA has also been able to obtain some high performance firearms, such as the highly regarded Barrett Light .50-caliber sniper rifle with which the South Armagh Brigade killed at least ten soldiers and RUC in the period between 1992 and 1997 by using one-shot snipers firing from a mobile platform. And even though the IRA has never exploited this gun to its full potential by having fired the 2,000-meter range weapon from a maximum of a 150 meter distance, the fact that a terrorist organization possessed a rifle that has the ability to knock down aircraft, or to punch through concrete or armored vehicles, is highly disturbing.[60]

As mentioned earlier, most characteristics of firearms have not significantly changed over the last 50 years. The only noteworthy shift has been miniaturization, which made firearms easy to carry and conceal and thus even more suitable for terrorist operations. Another worrisome development has been the proliferation of submachine guns. *Jane's Infantry Weapons* lists over 150 different models, many of which can be purchased commercially.[61] Besides innovation pertaining to firearms designs, terrorists have also kept up with the advances in various gun accessories such as better sighting systems or silencers, which were used for the first time in the 1979 assassination attempt against two PLO officials in Cyprus.[62] Another example is the terrorists' acquisition of Teflon-coated bullets capable of penetrating body armor, several of which were recovered from a Weather Underground hideout as far back as 1984.[63]

With regards to the tactical use of small arms, shootings account for roughly 13 percent of all terrorist violence. These have included highly focused assassinations of individuals, among whom Charles de Gaulle is an undisputed leader with at least a dozen attempts having been made on his life in the 1960s. Assassinations have been a popular terrorist tactic for several reasons, among them the high level of publicity associated with the

killing of a high official or revenge for particular political decisions that have been unfavorable to the respective group. In this sense, assassinations can also serve as an elimination of a direct threat to the group, while also sending a strong deterrent message to future leaders. In some cases, assassinations of ruthless and widely unpopular dictators have also served as an excellent propaganda and advertisement victory for the respective group. Nevertheless, most assassinations of politicians have been the work of individuals rather than organizations. For instance, none of the 83 assassins that attempted to kill a public official or a celebrity in the US during the past 50 years was a member of a terrorist organization.[64]

Besides highly focused assassinations, terrorists have also employed sniping attacks against soldiers and civilians, such as the 2002 incident in which a highly trained *Tanzim* sniper methodically killed ten IDF soldiers and civilians at a West Bank checkpoint, holding the police down for more than an hour before escaping undetected.[65] Other firearms attacks have included small- to medium-scale roadside ambushes and suicidal shooting sprees in which the objective is to kill as many people as possible before the attackers' own elimination. Examples of such operations include the attacks on airports, beaches, synagogues and Jewish settlements by groups associated with the Palestinian cause, the occasional attacks on Muslim places of worship by Jewish terrorists, or the numerous *fedayeen* operations carried out in India by *Lashkar-e-Toiba* (LeT) or *Jaish-e-Mohammed* (JeM). Another variation of high fatality shooting attacks have been summary executions popular especially among Sikh and Tamil terrorists in the 1980s. Such operations usually involved the stopping of a bus and the separation of passengers, where the individuals associated with the enemy nationality, ethnicity or religion were rounded up and killed.

Overall, shooting attacks have enjoyed a more or less constant rate of popularity over the last 40 years, a trend that appears to correspond with the limited advances in firearms development. More precisely, the developments in firearms technologies relevant to terrorists have included above all their miniaturization and addition of accessories such as silencers, and advanced ammunition. In contrast, the advancements in accuracy and range have not shown a particular relevance to terrorist operations, as there seems to be a cutoff point in terrorist capability to utilize such innovations adequately. From this perspective, the cutoff point at which small arms development stopped becoming directly relevant to the advancement in terrorist operations has occurred somewhere during the 1970s. In this light, it is not surprising that terrorists have in general shown little drive to move past the AK-47 or the M-16.

Stand-off weaponry

In the category of small arms, a number of weapons other than rifles or pistols deserve notice. Many terrorist organizations have utilized homemade

rockets, anti-tank weapons, mortars, and even surface-to-air missiles. One of the first instances in which a stand-off weapon was used for terrorist purposes was the 1964 firing of a bazooka-type rocket shell triggered by an automatic timing device across the East River in New York City by anti-Castro Cubans, who claimed to have deliberately missed their target by about 200 yards in order to divert public attention from the speech of Ernesto "Che" Guevara, during his address to the UN General Assembly.[66] Since this incident, many organizations, including the Palestinian Liberation Organization (PLO), PIRA, FARC, LTTE, Lebanese Hezbollah, HAMAS and the Japanese Chukaku-ha (Middle Core faction), have become frequent users of rockets and mortars. Homemade rockets have included several interesting designs such as the Red Army Faction's "Stalin organ," consisting of 42 rockets constructed of lengths of water piping arrayed in a wide rifting arc.[67] The most significant development in improvised rocket attacks, however, has been the introduction of new safety features and, above all, the increasing range of the devices. For instance, while the Chukaku-ha surprised observers in the mid-1980s by constructing homemade rockets with the range of 3.2 kilometers, the latest generation of HAMAS' *al Qassam* rockets has already reached an estimated range of more than 12 kilometers.[68] For HAMAS in particular this advancement is key, given the fact that a 12-kilometer range gives the group a capability to attack Israeli territory from way beyond the Green Line, thus providing enough time for the perpetrators to escape undetected. This trend of increasing rocket range is likely to continue in the future.

As we can see from the HAMAS example, rockets and mortars have been attractive for terrorists for several reasons, mainly because of the safety factor associated with the fact that they can be fired from afar by timing and solar devices or by remote control.[69] On the downside, rockets and mortars have not been a very successful weapon with regards to producing a large number of casualties due mainly to their limited ability to carry large warheads and their generally low level of accuracy. Nevertheless, some attacks in this category have accounted for spectacular operations, such as PIRA's 1991 mortar attack on 10 Downing Street in London which came within five meters of killing the members of the Tory War Cabinet. A similar claim about the advantages and disadvantages can be made in relation to rocket-propelled grenades (RPGs), the traditional unguided anti-tank weapon which has been used extensively by terrorists to attack foreign embassies in countries like El Salvador, Honduras, Lebanon, Sri Lanka and Afghanistan. In addition to guerilla struggles, RPGs have been used in urban campaigns for assassination purposes, as in the 1981 RAF assassination of General Kroesen.[70] Another occasional use of RPGs has been associated with unsuccessful efforts to bring down civilian airliners during takeoff or landing, such as the 1975 attempt by the Popular Front for the Liberation of Palestine (PFLP) to take down an El Al 707 at France's Orly airport. In this instance not only did the terrorists completely miss their target and hit

another airplane instead, the recoil of the rocket launcher also punched out the windshield of their own getaway vehicle.[71]

Much more dangerous for civilian aircraft than RPGs have been surface-to-air missiles (SAMs), such as the American Stinger, the British Blowpipe or the Russian SA-7. These shoulder-fired weapons are equipped with a chemically cooled seeker that hunts heat sources, independently guiding the missile to its target after it has been fired. The first recorded instance of a terrorist plan to use SAMs against civil aviation was the 1973 arrest of an Arab terrorist in possession of two SA-7 missiles in Italy.[72] Since that time, SAMs have been used on several dozens of occasions by groups in Afghanistan, the Sudan, Georgia, Angola, Sri Lanka, Saudi Arabia, Chechnya, Rhodesia and Kenya. Attractive aspects about SAMs besides their "fire-and-forget" guidance capability also include their portability and ease of operation by a single person. However, since SAMs sell on the black market for between $7,000 and $80,000 (depending on year, model and make) they remain an expensive weapon for most terrorist organizations, especially if one considers that their effective use requires a considerable level of training.[73] Another interesting fact is that despite the relatively unchallenging operability of SAMs, the range of suitable distance from which it is possible to down a civilian airliner is relatively narrow. As a result, their effectiveness in terms of bringing down civilian aircraft is much less certain then commonly believed.[74]

Overall, attacks with stand-off weapons carry several distinct advantages for a terrorist group. For instance, for organizations that operate out of an independent stronghold under their control, the ability to reach the enemy's territory with a strike from afar is undoubtedly an attractive option. Further, the employment of military means such as mortars is a positive image factor for any group that seeks to be seen as soldiers, as opposed to "mere terrorists." And finally, the ability to overcome the different "security" or "buffer" zones often established by nations in order to protect themselves from terrorist violence is a boost to the confidence and morale within the group. On the downside, the chronic inaccuracy of homemade rockets and mortars heightens the danger of striking an unintended target, possibly even one sympathetic to the terrorists' cause. With respect to SAMs, the one clear bonus is the fact that if used successfully against commercial aviation these weapons are mass-fatality capable. Further they are especially effective against military helicopters, which is useful for the disruption of supply and personnel air-links. On the other hand, SAMs are relatively expensive to train with and not as easy to use effectively as commonly believed.

Hostage incidents

Despite the fact that hostage situations are among the most spectacular types of terrorist operations, they in fact make up only about 20 percent of overall incidents. Historically terrorists have utilized three types of hostage

incidents: barricade hostage attacks, kidnappings, and air/land/sea hijackings. The major difference between these scenarios is that unlike in barricade incidents, where the hostage takers are surrounded in an enclosed area, the location of the hostages and their captors in kidnappings is unknown. Hijackings are then a combination of the two scenarios, in the sense that the capturing of a vehicle – especially an airplane – provides the terrorists with a mobile platform. In all of these scenarios, the key objective of the incident is the creation of an exchangeable "good" by taking and threatening the lives of hostages, in order to create a bargaining chip that can be used for the attainment of terrorist demands. These demands have most frequently involved the release of imprisoned comrades, alteration of government policies, guarantee of free passage, and money. In some cases, however, terrorists have also demanded specific concessions such as the increase of hourly wages in a particular factory or an investment into a poverty ridden region.

With the first recorded incident dating back to biblical times, kidnapping is by far the most frequently used type of hostage incident (12 percent of all terrorist violence). This has become especially true following the end of the Cold War, when many organizations with a political agenda were forced to adapt to self-financing, and kidnappings for ransom became a major source of income. As a result, worldwide reported kidnappings have risen by 70 percent over the last ten years.[75] While the overall numbers are unknown because of a low reporting rate, it is estimated that annually over 10,000 kidnapping incidents occur worldwide, 80 percent of them in Latin America.[76] It should also be noted, however, that purely criminal elements are responsible for a dominant portion of this number, so the overall count of kidnappings carried out by politically motivated groups is significantly lower. Generally speaking, most kidnappings occur in areas where the given group has a large presence, making the task of transporting the victim to an unknown location a less challenging task. This has been the case especially in Lebanon, Yemen, Colombia, Kashmir, Angola and Chechnya. In some cases, however, terrorists have succeeded in kidnapping and holding high profile victims in the urban environment as in the cases of high profile incidents in Israel, Canada and Italy. A disturbing trend besides the rising overall number of international kidnappings has been their increased sophistication. Kidnappers often use disguise and research the financial capabilities of the victims by studying their bank information and tax returns. The ransom demand is then designed to be high enough to be profitable, but reasonable enough to be affordable. The FARC even has a database of Colombian millionaires against which it checks all of the victims captured at roadblocks.[77] In some cases the kidnappers have even carried the latest technology, such as global positioning systems or equipment to check the authenticity of the ransom money.[78]

Kidnappings are an attractive option for terrorist groups as they constitute a comparatively low risk operation – the concealed nature of the position of the victims and the terrorists makes a rescue operation impossible

without identifying the location, and even then enormously challenging if the hostages are held in a terrorist stronghold. This element provides an advantageous negotiating position for the terrorists, who have the freedom to carry out their threats of executing the hostages if their demands are not satisfied, without the threat of immediate sanction. This is why in most kidnapping cases terrorists have been successful in achieving at least some of their demands, even though some groups have occasionally opted to release hostages without fulfilling any declared objectives under the claim of "humanitarian reasons." On the downside, with the exception of a small number of cases such as the kidnappings of Aldo Moro, Daniel Pearl, the Beirut hostages, and the early hostages in Iraq, kidnappings are comparatively not very high profile, due to the absence of television cameras on the site where hostages are being held, as well as the consequent lack of "juicy" details in the media reporting. Another reason is the fact that since kidnapping incidents typically result in prolonged periods of silence in the negotiations, the public's attention to the particular incident becomes diluted by other news over time.

In contrast to kidnappings, terrorist barricade hostage and hijacking incidents have been much less frequent, while at the same time being considerably more spectacular. The live on-the-scene broadcasts, minute by minute updates, dramatic scenes featuring hostage pleas and terrorist threats, and the possibility of instantaneous forceful resolution of the incident keep the viewers up on their toes. Further, the up-close nature of the coverage, along with the opportunity for the terrorists to explain their motives fully, and the tangibility of launching a rescue operation at any moment, are all factors that usually succeed in generating a wide public debate about the moral dilemmas of individual options available to the government. Further, barricade hostage and hijacking incidents usually do not last long enough for the public to lose receptiveness to the message that is being conveyed to them by the terrorists. From this perspective, barricade hostage incidents provide probably the best advertisement and propaganda benefits of any terror tactic, which is the main reason the majority of historically groundbreaking terrorist events have involved this component. On the downside, barricade and hijack cases are high risk operations in which the outcome is never certain and the safety of the hostage takers is under constant threat – only the reluctance to risk the lives of the hostages is there to keep the security forces from storming the location and killing the terrorists. Aware of this disadvantageous position, terrorists usually attempt to compensate by making the assault as difficult as possible by booby-trapping the entrances to the location, as well as by the repeated declaration of their determination to die during the incident. However, according to Corsi's statistical analysis of hostage incidents recorded in the ITERATE database, while in 94 percent of incidents terrorists declared a willingness to give up their lives, only in 1 percent of the cases were they actually suicidal.[79] And even though this proportion is likely to be higher in the context of contemporary terrorism, dec-

larations of readiness to "be martyred" should still be treated as a rather rational course of action aimed at denying the counterpart threat level: the proclamation of the desire to die weakens the deterrent value of threats by the government to resolve the situation forcefully.[80] Overall, the bargaining options of the terrorists are rather limited. While the perceived position of power allows them to dictate demands and deadlines, very few tools are at hand for the hostage takers to enforce their prompt fulfillment. Once the deadline approaches, the perpetrators have only two options: let the deadline pass or carry out their threats and kill hostages. This is a no-win situation, as passing of the deadline weakens the perpetrators' negotiating position by exposing their reluctance to kill, while killing of a hostage is likely to trigger a forceful resolution of the incident. This is one of the reasons why terrorists rarely kill hostages in barricade incidents – with the exception of a very few notable cases, such as the 1995 hostage crises in Budyonnovsk, hostage takers have historically not been able to withstand armed rescue operations. As a result of this weak bargaining position along with the increasing experience and professionalism of hostage rescue teams, barricade hostage incidents are becoming an increasingly ineffective means for achieving substantive demands.

The third type of hostage incident which deserves attention is skyjacking. While hijackings of various vehicles including cars, buses, trains, ferries, cruise ships and helicopters have all taken place in the past, no other type of hijacking has been as influential as skyjackings. The first recorded incident occurred in 1931 in Peru, when the American pilot Byron D. Rickards was hijacked with the aim to make him fly over Lima to distribute propaganda leaflets.[81] Since this incident, skyjackings have gained considerable prominence as a terrorist tactic. Contrary to popular perception, however, the absolute majority of skyjackings have not been carried out by terrorists, but by homesick Cubans living in the US for whom hijacking a flight was the only way to visit their country, as well as citizens of former Soviet Bloc countries for whom skyjacking was one of the few available routes to freedom. Overall, over 60 percent of hijackings since 1947 have been carried out by refugees.[82] A considerable number of skyjackings have also been carried out by lone actors, mentally disturbed individuals and criminals, such as the infamous Dan Cooper (a.k.a. D.B. Cooper), who in November 1971 hijacked an airplane and, after picking up $200,000 in ransom, parachuted over Washington state with the money to never be seen again. During the following year, at least 23 unsuccessful attempts to duplicate this effort took place worldwide, underscoring what has sometimes been referred to as the contagion effect of terrorism. As a political extortion tool, however, skyjacking did not achieve international prominence until July 1968, when three members of the Popular Front for the Liberation of Palestine (PFLP) hijacked an El Al Boeing 707 from Rome to Algeria. This skyjacking has been credited with being the groundbreaking event that marked the commencement of the age of international terrorism. Two years later the

PFLP carried out perhaps the most spectacular hijacking operation of the twentieth century when it conducted a synchronized hijacking of four airliners, two of which were later blown up at Algeria's Dawson air field. The PFLP and its associate groups, including the Japanese Red Army, Baader Meinhof group and Carlos "the Jackal," would become the most spectacular skyjacking network in history.

Skyjacking as a tactic carries many of the advantages of a barricade hostage situation, with several additional benefits. First the ability of hijackers to relocate from the site where they are surrounded by security forces to a friendly territory because they are occupying a mobile platform allows the terrorists to deny threat level to the government and thus strengthens the hijackers' bargaining position.[83] Second, the hijacking of an airplane was until recently achievable with a minimum amount of force, as documented by the fact that successful hijack weapons have included items such as razor blades, colored water, sharpened toothbrushes, colon bottles, ropes, dining knives and cigarette lighters. Since an airplane at a high altitude can easily be crashed killing everyone on board, gaining control over it gives terrorists' threats considerable credibility. Furthermore, the fact that the aircraft is several thousand meters high up in the air eliminates the need for concern regarding hostage escapes or the threat of a rescue mission. On the down side, the flying aircraft needs periodical refueling which can effectively be refused by denying landing rights via the blockage of runways. This is why skyjacking requires a greater determination to kill and die during the incident than any other type of hostage event. Also, during refueling stops the plane is vulnerable to government action, which usually consists of piercing the aircraft tires with sniper fire effectively transforming the incident into a barricade hostage scenario. And while terrorists virtually always claim to have explosives on board and express their willingness to die and take as many hostages with them as possible, such a development has historically occurred in only in a handful of cases, the most significant one being the 1986 hijacking of Pan American World Airways flight 73 in Karachi, in which the terrorists consciously threw their grenades and fired two clips of ammunition into the hostages, killing 22 and injuring 100 others.[84]

Overall, hostage-taking events have experienced several concurring trends, among them the continual decrease in skyjackings, the relatively constant rate of barricade hostage incidents, and the rapidly increasing number of international kidnappings. These trends are likely to experience further changes in light of two specific events that have occurred in recent years. First, the 9-11 hijackings have rapidly changed the way people think about their safety during skyjackings. Unlike in the past when the official guidelines insisted that hostages should keep calm, comply with the terrorists' instructions, and wait for their freedom to be negotiated for, prospective hostages on flights in the post 9-11 world are likely to perceive their chances of survival as slim, and are thus more likely to attempt to overpower the hijackers than in the past. This is likely to lead to a decline in successful

skyjacking attempts. Second, further implications may stem from the response to the Moscow Theater hostage crisis of October 2002, when Russian forces accidentally killed 129 of the hostages with a derivative of the opioid fentanyl which was deliberately released to aid the rescue attempt. While this incident will not be as influential as 9-11, it does carry several important implications for the future. First, having seen the casualties resulting from the Russian response, future barricade hostages may also decide that their chance of survival are so low that attacking the hostage takers or attempting to flee is worth the risk. This effect is similar to the mindset of airline passengers after 9-11, but while fighting back on an airplane may be a good idea simply because the attackers are unlikely to be very well armed, doing the same in barricade incidents will likely result in the deaths of many hostages. This in turn will complicate subsequent negotiation efforts by tarnishing the hostage-takers' "clean record" in terms of killing hostages, which is one of the strong persuasive elements negotiators use to facilitate surrender in the final stages of the incident. Further, the commanders of hostage response teams become less amenable to pursuing the negotiation option once hostages have been killed. Another implication of the Moscow incident is that the possibility of gas being used in a rescue mission will undoubtedly translate into preparations for this measure on behalf of future hostage takers. As a result, we are likely to see gas masks among the terrorists' equipment in future hostage incidents, which will contribute to the increasing challenge that terrorist barricade hostage operations will pose.

Sabotage

Another tactic occasionally used by terrorists is sabotage, constituting mainly a supplement to a larger campaign. Consequently, this tactic is much more frequently found in the repertoire of politically ambitious groups engaging in larger guerilla campaigns, than in the case of small ideological urban terror groups or religious fundamentalists. Still, while certain acts of sabotage have the capability of causing significant material damage to the adversary, most organizations prefer attacks that involve violence or the threat of violence against people. And even though it is true that many organizations such as the PLO, the Red Brigades or the Shining Path have used sabotage as the primary mode of attack in the commencement of their campaigns, the natural escalation of terrorism has soon led to the shift of targeting gravity toward civilians. An exception to this rule seems to be single issue groups in North America, specifically anti-abortion, animal rights and environmentalist groups. While anti-abortion organizations such as the Army of God have occasionally killed doctors, their preferred mode of attack has been to release butyric acid – a chemical producing a long-lasting noxious smell – into abortion clinics and Planned Parenthood offices in order to cause a temporary shutdown, or to send letters containing a white

powder and the word "anthrax" to the same institutions in order to cause panic and denial of services. For comparison of the prominence of these two tactics, in the peak year of 1998 butyric acid attacks reached 20 such incidents, while the anthrax hoaxes immediately after the anthrax crisis of 2001 peaked at 550.[85] Similarly, environmentalist groups such as the Earth Liberation Front have also used the destruction of property as their main tactic, such as the Colorado arson attack mentioned earlier, or the contamination of products of companies such as Nestlé or Mars. Likewise, members of the radical groups such as Earth First! or Hardesty Avengers have used the sabotage method of "monkey wrenching," which involves driving long metal spikes into trees scheduled for harvesting with the intention of deterring lumberjacks from doing their job. After timber companies attempted to counter this tactic by using metal detectors to locate the spikes, certain groups responded by using ceramic or stone nails instead.[86]

The benefits of using sabotage for single issue groups are clear. Sabotaging companies or facilities does not only bring the attention of the ignorant public to the issue at hand, but above all causes damage to the adversary. Sabotage also provides a discriminate way for single issue groups to target the "guilty party," without necessarily earning negative public labels associated with killing. As mentioned above, sabotage has also been popular with separatist or left-wing guerilla groups such as LTTE, the early PLO, the FARC, the Shining Path, and the PKK, among others. For such organizations, sabotage serves as an excellent way of weakening the opposing government in the eyes of the general public. Despite the fact that the inconvenience caused by the given attack was perpetrated by the terrorists, the general population usually ends up blaming the government for its inability to maintain order. To such a frustrated populace, terrorist propaganda typically based on a negative portrayal of the authorities gains in credibility and prominence. Just as importantly, in many contexts the destruction of infrastructure and basic services such as transportation, electricity or running water supply can also create a perception of instability and inconvenience to foreign investors and tourists, resulting in their decision to avoid the respective area. Especially in countries dependent on tourism and foreign investment this can cause a widespread economic crisis, which creates even more instability and frustration among the population. The end result in many cases has been the increased popular support for the insurgency.

Guerilla sabotage tactics can be divided into three main categories. The first category is mechanical sabotage. Examples include blackouts caused by blowing up electrical pylons and cutting wires used frequently in insurgencies in Peru, or the blowing up of oil pipelines in order to cause damage to foreign investment. In Colombia for instance, the Marxist rebels blew up the Cano Limon oil field's 480-mile pipeline at least 77 times in 1999 alone.[87] Further examples of mechanical sabotage include derailment of trains used by groups such as LTTE and *Babbar Khalsa*, or the physical destruction of

data at two computer centers by Direct Action in 1980, which caused over a quarter of a million pounds in damage per attack.[88]

Another type of sabotage is the contamination of products, such as the ones used by single issue groups mentioned earlier. One of the best examples of a large consequence campaign involving food contamination includes the injecting of Israeli export oranges, lemons and grapefruits by PLO sympathizers three times in the 1977–1979 period.[89] After the fruits were discovered following the nonfatal poisoning of 11 people in seven European countries, Israeli fruit exports decreased by 40 percent resulting in substantial economic losses to the Jewish state. Similar albeit not as successful, campaigns occurred in the following two decades in other countries including South Africa, Chile and the UK. Another form of low level contamination has been, for instance, the reciprocal dumping of sewage into each other's water supplies by the Jewish settlers and Palestinians living in the occupied territories.

The final type of sabotage is cyberterrorism. While chilling scenarios for cyber attacks have been painted in the media over the last decade, cyberterrorism remains a tool more frequently used by criminals and overenthusiastic hackers who like to test their skills against various top security systems. And even though many terrorist groups have shown that their operatives are savvy in using information technology for communication purposes and operational planning, instances of cybersabotage carried out by actual terrorist groups have been extremely rare, possibly due to the reduced level of gratification associated with an indirect way of attack. One of the first instances of cyberterrorism was the 1988 dissemination of a data destructing virus at the Hebrew University in Jerusalem, allegedly by a terror group.[90] The most significant cases were the August 1997 "suicide e-mail bombings" by the Internet Black Tigers, a faction of the Liberation Tigers of Tamil Eelam (LTTE), which consisted of swamping the e-mail accounts of Sri Lanka embassies in Seoul, Washington DC and Ottawa with junk e-mail.[91] The final incident worth quoting was the 1999 low-level cyber attack against the NATO Web site, in which hackers from Belgrade sent thousands of "pipings" (i.e. "identify yourself" computer instructions) against the site and overloaded its ability to respond.[92] In this instance, however, the attack was never linked to any established terror group.

Overall, sabotage constitutes a noteworthy terrorist tactic, especially for single issue groups to whom it represents the primary mode of attack, and for guerilla groups that use such tactics as a convenient destabilization supplement to a larger armed campaign. And even though sabotage attacks are often overlooked in light of more lethal tactics, they can pose a significant security threat in the future, especially in the realm of cyberterrorism where our ever-increasing reliance on information technology makes us increasingly vulnerable. A cyber attack that could disable all emergency phone lines or airport communications systems could no doubt result in heavy casualties. Whether terrorists seeking to kill many people will select this route over other mass-fatality capable tactics is another question.

Bombings

Since bombings account for roughly one-half of all terrorist violence, explosives have by far been the most important type of weapon in the arsenals of terrorist groups.[93] Further, bombings have produced an unparalleled level of destruction – the vast majority of high fatality terrorist incidents have all been bombings. The first recorded attempt to use explosives in an act of political violence perpetrated by a nonstate actor was the Guy Fawkes Gunpowder Plot of 1605.[94] The next bomb plot did not occur until 1800 (French royalist attempt to kill Napoleon Bonaparte), again leaving a curious lag of 195 years as in the case of firearms. The low frequency of the use of explosives for terrorist purposes changed rapidly with the discovery of dynamite in 1867. Through the brilliant work of Alfred Nobel, who was the first to discover an effective detonation technique for nitroglycerine by using the explosion from a small amount of gunpowder and who later discovered Kieselguhr as the ideal absorbent material which made nitroglycerine much safer to handle, terrorists obtained what at the time was regarded as the ultimate "super-weapon."[95] The Irish Fenian Brotherhood and *Clan na Gael* were the first terrorist organization to use dynamite, quickly followed by the Russian *Narodnaya Volya* and by the transnational Anarchists.[96] All of these early users regarded dynamite as the ultimate revolutionary "weapon of the people" that would topple the old world order and bring about the new secular millennium through its scientific, superiorly humane, and even mystical powers.[97] Later, the increased manufacture of TNT during and after World War I, along with the increased attention toward the development of plastic explosives like PETN, RDX, C4 and Semtex, have significantly increased the size and potency of terrorist arsenals. Semtex in particular has become a terrorist favorite after Libya made huge quantities of this plastic explosive available to various revolutionary movements from around the world, following the purchase of much of the surplus from what was originally made in Czechoslovakia for the North Vietnamese during the Vietnam War.[98] The one incident that has made Semtex infamous has been the 1988 mid-air bombing of Pan Am flight 103 over Lockerbie. Less than one-half of a pound of the explosive hidden in a tape-recorder succeeded in bringing down the aircraft, killing all 259 people on board and 11 others on the ground. What made Semtex particularly dangerous was the fact that until the 1988 Czech agreement to start "fingerprinting" Semtex via various additives, the explosive was virtually undetectable by X-ray or sniffer dogs, as it was colorless, odorless and could be molded into any shape in order to make it look like a legitimate item.

Besides obtaining explosives from states sponsors or through theft, terrorists have also repeatedly demonstrated their ability to manufacture their own explosive devices from readily available materials. For instance, only legitimate precursors are needed to make triacetone triperoxide (TATP), a volatile explosive that has frequently been used by HAMAS in the occupied

territories as well as in the 2005 London metro bombings. Similarly, ammonium nitrate – a common fertilizer ingredient – and fuel oil (ANFO) mixture has been used in a number of high mortality terrorist incidents, including the 1995 Oklahoma City bombing which killed 169 people. Other alternatives have included ammonal, the explosive mixture of ammonium nitrate and powdered aluminum, which has been favored by the Basque ETA. Fertilizer is an extremely cost-effective blasting agent, since its manufacture costs on average only 1 percent of the same amount of a plastic explosive.[99] Overall, the Improvised Explosive Devices (IEDs) most commonly employed by terrorists have been quite simple, using standard commercial or military explosives, or alternatively, improvised blasting agents made from legally obtainable precursors by following widely available traditional recipes.

As a tactic, terrorist bombings can be divided into several categories. By far the most commonly used category has been land-based bombings. These have ranged from explosion of simple devices such as the Molotov cocktails and improvised hand grenades popular with various revolutionary movements, the limpet mines frequently used by the African National Congress (ANC), letter bombs of the Black September, IRA, PFLP-GC and various individual serial bombers, the pressure cooker and propane gas canister bombs of the FARC and the GIA, suicide body suits popular with LTTE, HAMAS, PIJ, RAS and more recently the *Jemaah Islamiya* (JI), to car bombs preferred by groups such as the PIRA and ETA.

The most destructive land bombing attacks, however, have utilized large explosive charges loaded onto trucks and detonated by remote control or by a suicide bomber, such as the ones so frequently used by virtually all warring factions of the Lebanese civil war, or the LTTE and AQ's associate groups today. Trucks are an attractive method of delivering the explosive to the site of the attack, not only because they can carry a large amount of explosives, but also because they can easily be converted into a shaped charge in order to concentrate the blast effect into a particular area.[100] This element along with the placement of the explosive device is crucial, as the key to obtaining the highest possible number of casualties lays in collapsing the structure of a densely occupied building. As previously noted by Quillen, bombings have been deadliest when employed against airliners where most people die from the crash, and high-rise buildings where the majority of the fatalities occur during the collapse. Both of these elements were combined in the 9-11 attack.[101]

This brings us to the next category of air-based bombings. The most frequent type of air-based bombing has been the mid-air explosion of commercial airliners. These have had an especially favorable cost-per-casualty ratio, given the fact that as little as 200 grams of explosives has been able to take down an airliner killing everyone on board. To date at least 70 such attacks have taken place, in most cases involving explosive devices brought on board the aircraft by passengers who disembarked at a transfer stop leaving the

explosive behind to be detonated by a timer. Alternatively, the devices were smuggled on board using mules, in most cases young women transporting pieces of luggage for their Middle Eastern boyfriends who promised to join them later. A less frequent means of attack has included suicide bombers, although only three such cases – the 1994 Ansar Allah attack on a twin engine plane in Panama, the 2001 Richard Reid attempt, and the 2004 double RAS attack in Russia – can safely be attributed to terrorists. Another alternative has been the posting of explosive devices via air mail in order to circumvent screening procedures, using a barometric pressure activator for detonation at a given altitude.

The next form of air-based bombing has involved the dropping of explosive devices from small aircraft onto a given target. The first such incident occurred in 1963, when members of an anti-Castro Cuban exile group, the Cuban Freedom Fighters, unsuccessfully attempted to bomb oil refineries in the vicinity of Havana by dropping a 100-pound bomb and several smaller ones from a two-engine plane flying from an unidentified Caribbean island.[102] Two similar attempts were carried out by the IRA in 1974, which attacked a police station and an army base with milk churns filled with explosives dropped out of a hijacked helicopter and a small plane. In the first incident the bombs missed their target and failed to explode, while the latter case was even more embarrassing – the first bomb struck a wing of the plane, and the other three bombs could not be pushed through the hatchway, causing the hijackers to give up the attack.[103] This was the last time the IRA would opt for such a tactic. The final form of air-based bombing has been the flying of aircraft into buildings in order to cause destruction. This tactic, of course, achieved notoriety only after 9-11, but it must be emphasized that while the execution and planning in this case was superb, the idea itself is far from new. Between 1973 and 2001, the plan of flying airplanes into buildings had been cited on at least 22 occasions, with two attacks actually having materialized (see Table 2.1). The first one was a 1976 incident in which a Japanese porn actor crashed his Piper Cherokee into the home of Yoshio Kodama, a rightist leader accused of accepting payoffs from the Lockheed Aircraft Corporation. The pilot wore a kamikaze pilot's headband and shouted the ritual cry over the radio just prior to crashing into his target.[104] The second instance occurred in the US in 1994, when a heavily intoxicated and drugged suicidal individual crashed a stolen single-engine Cessna 150 onto the South Lawn at the rear of the West wing of the White House.[105]

The last bombing category consists of sea-based bombings. The idea dates as far back as the 1870s, when the Fenian Brotherhood invested over $20,000 into building the "Fenian Ram," a submarine intended for attacking British ships in harbors.[106] Other sea-based schemes have included the planting of explosives on board ships, such as in the 1975 incident in which the *Montoneros* sank a $70 million Argentine naval destroyer under construction in Buenos Aires by planting a powerful bomb in the engine room.[107] An

Table 2.1 Terrorist incidents involving the crashing of airplanes into targets

Year	*Incident summary*
1945	During World War II, over 4,600 Japanese men die by crashing airplanes into enemy targets.
1973	After shooting down Libyan Boeing 727, the Israelis claim that numerous threats had been made by Black September terrorists to hijack an airliner and crash it into Tel Aviv.
1975	Attempt to seize an aircraft by an individual in the US, who later claims that he intended to crash an aircraft into a terminal tower as a protest against abortion.
1976	A young star of pornographic films crashes his Piper Cherokee into the home of Yoshio Kodama, a rightist leader accused of accepting payoffs from the Lockheed Aircraft Corporation. The pilot wore a kamikaze pilot's headband and shouted their cry over the radio just prior to crashing into his target.
1984	After intelligence agencies detect the suspicious movement of light planes and helicopters in Iran, Syria and Lebanon, the Pentagon, fearing kamikaze-type attacks, ships Stinger missiles to US Navy ships in the region.
1984	Interpol reports that an Iranian suicide squad was planning to fly an explosive-laden small airplane into the US embassy in Cyprus. Anti-aircraft weapons were installed on the embassy's roof.
1984	The CIA reportedly warns the Reagan administration of a kamikaze-style attack against a US target in the Middle East.
1985	During negotiations, a Lebanese hijacker threatens to crash the plane into the presidential palace in Beirut.
1985	The media in Cyprus report an "unconfirmed rumor" that Kamikaze-style attacks are planned for US and Israeli embassies.
1985	Following the Abu Nidal shooting sprees at Vienna and Rome airports, the Austrian government reported that the terrorists intended to hijack an El Al airliner and crash it into Tel Aviv.
1986	The hijackers of Pan American World Airways flight 73 in Karachi confessed that they had plans to blow up the aircraft over an Israeli city, following the completion of the demanded prisoner exchange.
1986	Columnists in the US report the training of kamikaze pilots in Iran to hit US targets.
1986	One of the 21 Libyan students being deported from the UK is found to be a pilot trainee who vowed to carry out a kamikaze raid on US installations.
1988	Brazilian police spokesman announces that during a recent hijacking, the hijacker planned to crash the plane into a building in Brasilia.

continued

Table 2.1 Continued

Year	*Incident summary*
1989	*Washington Post* reports that it had received "credible warnings" that Iranian-trained kamikaze terrorists may be planning to dive an explosives-rigged plane into the White House.
1990	Hamburg police report that "the Palestinian Liberation Front of Abu Abbas is preparing an attack with light aircraft."
1994	A heavily intoxicated and drugged suicidal individual crashes a stolen single-engine Cessna 150 onto the South Lawn at the rear of the West Wing of the White House.
1994	After four Algerian Islamic extremists disguised as maintenance men hijack an Air France Airbus 300 jumbo jet on the ground, the authorities received two anonymous tips indicating that the hijackers planned to blow up the plane over Paris. The suicide story was supported by the hijackers' demand to fill the gas tanks of the plane with far more than was needed for the Marseille–Paris flight. Authorities also found 20 sticks of dynamite in the plane.
1995	Philippine police announce that Ramzi Yousef had planned to crash dive a bomb-laden plane into the headquarters of the United States Central Intelligence Agency in Langley, Virginia. The CIA attack was to be carried out by Saeed Akhman, a Yousef associate.
1998	The Turkish government detains 23 militant Muslims who planned to crash an explosives-laden plane into the Ankara mausoleum of Mustafa Kemal Ataturk, the founder of the state. The suicide attack was planned for the 75th anniversary of the republic.
1999	Mas Selamat Kastari plans to hijack an Aeroflot flight from Bangkok and to crash it into the terminal tower at Changi airport in Singapore.
2001	Three hijacked airliners crash into both World Trade Center towers and the Pentagon, a fourth crashes in Pennsylvania after the passenger confronted the terrorists.

alternative approach has been the placement of the explosive under the water line by frogmen, as in the 1981 bombing of a Spanish Navy destroyer by the ETA,[108] or the 1980 bombing of a Libyan gunboat anchored in Genoa by the Maltese Liberation Front.[109] Another relatively frequent form of attacking ships has been the use of underwater mines, popular with groups such as the Islamic Jihad and the LTTE. The final and the most destructive form of sea-borne bombings has been sea suicide bombings. Pioneered and perfected by the LTTE in Sri Lanka, this tactic has gained notoriety after the 2000 bombing of the USS Cole off the coast of Yemen, in which two AQ-linked terrorists in a specially customized fiberglass boat full of lightweight C4 explosives rammed into the side of the ship killing 17 soldiers and causing

over $240 million dollars worth of damage. Two years later, the PIJ became the third organization to use the tactic when two suicide bombers detonated an explosive placed in their fishing boat after pulling alongside an Israeli patrol boat in Gaza, injuring four soldiers.[110]

It has already been mentioned that bombings are by far the most frequently used terrorist tactic. In order to pinpoint why that is the case, one must first look at several distinct advantages of bombings over other forms of attack. First, whether detonated by a long fuse, a timer or remote control, the very nature of explosives enables the perpetrators to carry out an attack without actually being present at the site for detonation. This naturally makes bombings a relatively safe tactic with regards to the threat of capture, but also makes for a comparatively easy kill when contrasted with shooting or knifing attacks. In essence, since the perpetrator does not have to be present at the site during the time of the explosion, it becomes psychologically easier to kill, because the perpetrator does not need to witness the potentially traumatizing deaths of the victims. Second, explosives have a terrific fear-inducing component, not just by the level of sheer destruction but also due to the imposing sound effect associated with a blast. In this sense, the explosion can also be seen as a symbolic act representative of the channeling of the perpetrators' internal rage. Probably for this reason, some psychologists have equated the preceding tension followed by a dramatic release of energy in the explosion to the physical and psychological processes accompanying an orgasm.[111] Another attractive characteristic of an explosive device is the capability of causing dramatic damage without necessarily producing casualties, which for a long time had been the objective of some groups. The Corsican FLNC, for instance, had always taken great pride in going out of its way in order to eliminate the risk of casualties during its bombing campaigns, while other groups have used prior notifications via warning phone calls for the same purpose. The final advantage of bombings is their cost-effectiveness and the fact that many powerful explosive mixtures can be assembled with very little previous knowledge out of ordinary household products. As a result, for almost anyone who wants to cause destruction while avoiding the risk of being captured, bombings provide the ideal tactic.

Suicide bombings

Suicide bombings have been separated into a distinct category, mainly because they have in recent years become the ultimate terrorist tactic. Since its commencement some 25 years ago, the phenomenon has spread around the world at an unprecedented pace – at the time of writing in 2005, there have been over 700 suicide bombings carried out by at least 30 organizations in 31 different countries (see Table 2.2). Another reason why suicide bombings deserve special attention is the fact that they represent one of the deadliest terror tactics: out of the 30 most lethal attacks carried out since 1990, a whopping 22 have involved suicide delivery.

Table 2.2 Suicide bombings – group overview

Name of group	*Time period*	*Approximate count*	*Countries*
Hezbollah	1983–1994	25	Lebanon, Argentina, Panama
al Dawa	1981–1985	3	Kuwait, Lebanon
Liberation Tigers of Tamil Eelam (LTTE)	1987–2004	200+	Sri Lanka, India
Kurdistan Workers Party (PKK)	1996–1999	15	Turkey
al Qaida network	1987–2004	19	Kenya, Afghanistan, Tanzania, Pakistan, Afghanistan, Yemen, US, Saudi Arabia, Turkey, Iraq, Qatar, UK, Egypt
Lebanese secular groups	mid-1980s	25	Lebanon
Riyadus-Salikhin Suicide Battalion (RAS)	2000–2004	28	Russia
Islamic Resistance Movement (HAMAS)	1994–2004	70	Israel
Palestinian Islamic Jihad	1994–2003	36	Israel
al Aqsa Martyrs Brigade	2002–2003	26	Israel
Popular Front for the Liberation of Palestine	2002–2003	3	Israel
Egyptian Islamic Jihad	1995	1	Pakistan
Egyptian Islamic Group	1995	1	Croatia
Babbar Khalsa	1995	1	India
Lashkar-e-Toiba	2005	3	India
Hizb-ul Mujahideen	2002–2005	2	India
Jaish-e-Mohammed	2001	2	India
Mujahideen Shura Council + other Iraq-based groups	2003–2004	200+	Iraq, Jordan
Moro Islamic Liberation Front (MILF)	1997–2003	2	Philippines
Revolutionary People's Liberation Party-Front	2001–2003	3	Turkey
Tunisian Combatant Group	2002	1	Tunisia
Assirat al Moustaqim	2003	3	Morocco
Jemaah Islamiyah	2002–2005	7	Indonesia
Vietnamese communists	1951	1	Indochina
Islamic Movement of Uzbekistan	2004	2	Uzbekistan
Armed Islamic Group	1995	1	Algeria
Jamayetul Mujahideen	2005	4	Bangladesh
Taliban	2003–2006	16	Afghanistan

For the purposes of this book, a suicide terror attack is defined as a premeditated act of ideologically or religiously motivated violence, in which the success of the operation is contingent on self-inflicted death by the perpetrator(s) during the attack. Perhaps the first recorded attack that fits the above definition is the biblical story of Samson, who tore down the pillars of the Temple of Dagon killing himself along with several thousand Philistines. The first modern suicide bombing by a terror group then occurred in 1951, when a young communist suicide volunteer assassinated French Brigadier General Charles Marie Chanson in Sadec, Indochina, by detonating a grenade in his pocket. The current wave, however, has been triggered only after the 1981 suicide truck bombing of the Iraqi embassy in Beirut by a member of al Dawa, which killed 61 people and injured more than a hundred others.[112] Over the next ten years suicide bombings gained notoriety, mainly through high profile operations of the Lebanese Hezbollah such as the 1983 synchronized bombings of the US Marine camp and the French troops' barracks in Beirut, or the two attacks against the American embassy in the same city. The striking effectiveness of the tactic then resulted in its spread across Lebanon, having been employed by a number of secular pro-Syrian parties, including the Syrian National Party, Lebanese Communist Party, and the Socialist-Nasserist Party.[113] Further, Hezbollah also helped in introducing suicide bombings in Israel by training a number of the 415 HAMAS militants who were deported to Lebanon in 1992, only to be allowed to come back to Israel a year later.[114]

A similar role can be ascribed to AQ, which used suicide bombers for the first time during the 1998 US embassy explosions in Kenya and Tanzania. Since this incident not only have suicide operations become the principal AQ tactic, but the group has also been instrumental in transferring this capability to groups in Pakistan, Afghanistan, Yemen, the Philippines, Saudi Arabia, Turkey, Indonesia, Morocco, Tunisia, Qatar, Iraq and the UK. This list is likely to expand in the future. Of all the groups that have used suicide bombings, however, the often overlooked LTTE needs to be put forward as the true master of the tactic. Not only has LTTE carried out more suicide bombings than any other organization in the world; the group has also pioneered many new ideas, such as sea-based and air-based suicide attacks, or the concept of a suicide truck convoy. Further, LTTE has demonstrated an unparalleled level of organizational sophistication and patience, which can be documented by the example of the assassination of President Premadasa, whose assassin first infiltrated the president's household and became acquainted with the valet before carrying out the act.[115] Similarly the bomber who blew up the Independence Memorial Hall building in 1995 with a bomb placed on a coconut cart had been selling coconuts in Colombo for three years prior to the attack.[116]

Despite the heightened focus on suicide terrorism in the last two decades, ideologically and religiously motivated suicide is a much older phenomenon. Throughout history, acts of self-killing have been used as a methodical

demonstration of commitment (samurai *seppuku*), as an effective military tactic (*kamikaze*), and as a persuasive form of protest (self-starvation, self-ignition). What is crucial to realize is that the power of the modern act of suicide bombing stems from the fact that it combines all of the above-stated purposes of politics of suicide into a single act. The first obvious benefit of a suicide operation is its tactical advantage over other forms of attack. A suicide bomber has the ability to deliver the payload to places that would be difficult to attack successfully for someone hoping to stay alive. The fact that the bomber also has the capability of selecting the location, time and exact circumstances of the attack results in the remarkable effectiveness of suicide attacks in terms of delivering a high number of casualties.[117] Suicide attacks are also attractive for terrorist organizations because they eliminate the need to plan an escape route, and they practically remove the danger of capture and subsequent interrogation of the terrorist. In some cases, this tactic has also been used partly because of its cost-effectiveness. According to a recent invoice from al Aqsa Martyrs Brigades found by Israeli troops at the Palestinian Authority's headquarters during Operation Defensive Shield, the "electrical components and chemical supplies needed to produce a suicide bomb" were estimated at about $150.[118] The relatively low expenditures involved in the acquisition of explosives make the costs-per-casualty ratio of a suicide operation a rather favorable one. In addition, suicide bombings are extremely difficult to defend against, and elimination of their indiscriminate use is virtually unattainable without extensive suspensions of civil rights, which in turn can have far-reaching secondary effects on the target population. Finally, the universality of the suicide bomber's possible target causes a widespread feeling of uncertainty and vulnerability among the general public. And even if the local population does eventually become desensitized to the idea of being a target, a well-organized terror campaign can still significantly damage a country's attractiveness for international tourism, resulting in economic harm to the local population.

The seeming irrationality and high casualty rate of suicide bombings are also factors responsible for the extensive media coverage these operations attract. The incomprehensible nature of the attack also can have a legitimizing effect on the cause of the terrorists in the eyes of the international community – the organization gains the status of a resolute actor whose grievances cannot be ignored. As people around the world try fruitlessly to comprehend the motivations of such an act, they are left wondering about the systemic foundations of the enormous dedication and hatred demonstrated by the bomber. The group can than gain the image of committed believers who will do anything to reach their goals, also implying that the present environment is so humiliating and so unacceptable that death is preferable to life under such conditions.

The message conveyed by suicide operations is also directed inward. Organizations such as the PKK or the LTTE, for example, have initially adopted this tactic with the principal goal of solidifying group morale.[119] An

act of self-sacrifice in the name of the organization's cause is a uniting factor. Overt praise of the martyr's accomplishment by prominent members of the group can also increase the self-sense of group prestige and can inspire future volunteers. The willingness to die for a cause is sometimes also used as evidence of superiority of the groups' members over their adversaries, who are portrayed as pleasure-seekers and who in spite of their military dominance are essentially weak.[120] The resulting perception among the group is that due to superior determination, their final victory is inevitable.

The tactic of suicide bombings can, of course, have negative effects on the goals of an organization as well. The lack of understanding of "martyrdom operations" in the Western culture can cause the group to be viewed as irrational fanatics, drawing the public opinion closer to the adversary. Further, a prolonged suicide terror campaign against civilians is likely to make the target population more radicalized and less willing to compromise. On the other hand, an emotional military overreaction by the attacked government can suit the terrorists' purposes by providing support for their claims of being the victims. It does not matter who started the circle of violence, as long as innocents die from the government's violent counterterrorism efforts (and they always do) the terrorists have a hope of attracting popular support against the government. Finally, the establishing of a cultural norm in which suicide bombers become idols to be followed may have serious consequences on the psychological health of the society for generations to come. Nevertheless, the organizations that use suicide operations today have come to the decision that the benefits of these operations outweigh the costs.

As we can see from this overview, any group that can create a culture of martyrdom within its ranks gains a powerful terror potential. In fact the advantages of the suicide bombing tactic are so great that a number of groups have attempted to reap its specific benefits without necessarily resorting to the act per se. For instance, the IRA has on several occasions forced individuals to drive trucks packed with explosives via a certain route, later remotely detonating the explosive while the vehicle was passing near the target location. Comparably, terrorists in Chile have trained dogs to carry bombs to targets, while the FARC in Colombia has used horses, donkeys, dogs and even cats for the same purpose.[121] The FARC have even gone as far as constructing a remote control system for delivering moving truck bombs without the need to sacrifice live drivers. Similarly, terrorists in Kashmir have experimented with remote-controlled model planes and Unmanned Aerial Vehicles (UAV) to deliver explosives from the air. Besides the tactical benefits some groups in Latin America have attempted to reap the political benefits of suicide bombings, in terms of evoking images of desperation and ultimate sacrifice by including words such as "suicide command" or "suicide squad" into their names.

Chemical, biological, radiological and nuclear (CBRN) agents

Another tactic that has to a limited extend been employed by terrorist groups has been the use of chemical, biological and radiological agents. However, regardless of the grim scenarios that have been put forward in recent years, terrorists have not utilized such technology to the extent predicted.

One of the first incidents of chemical terrorism post-World War II has been the 1946 poisoning of bread designated for the US POW camp near Nuremburg by a group of Jewish extremists called Avenging Israel's Blood (DIN). The attacks in which arsenic mixed with glue was smeared onto the bottom of 2,500–3,000 loaves of bread succeeded in hospitalizing 207 former SS officers, but failed to kill a single person. Another noteworthy attempt was the unsuccessful 1986 plot by the apocalyptic white Christian supremacist group calling itself the Covenant, Sword, and Arm of the Lord (CSA) to poison the water supply of several large cities with only 30 gallons of cyanide.

The next form of CBRN terrorism includes biological agents. The first notable incident in this category was the unsuccessful 1972 plot by a tiny environmentalist cult calling itself R.I.S.E., to culture large quantities of *Salmonella typhi* with the plan to contaminate the water supply of several large cities.[122] The first actually successful bioterrorist attack then occurred in 1984 in Oregon, where members of the Rajneeshee cult spread S*almonella enterica* to the salad bars of several restaurants with the intent of influencing attendance at a local election. All of the above-stated incidents fall into the category of crudely delivered low-level attacks that have utilized primitive agents such as potassium cyanide, arsenic, salmonella, various pesticides, rat poisons and other dual-use items. These attacks have been comparatively ineffective when it comes to creating a large number of casualties, but have succeeded in achieving a disproportional psychological impact. Nevertheless, more potent unconventional agents have been used by terrorists only rarely. In fact, only two groups – Aum Shinrikyo and the unknown anthrax letter mailer(s) – have ever killed anyone by using an actual warfare agent. The most significant in this regard have been the activities of Aum, the Japanese apocalyptic cult that shocked the world in 1995 with its sarin attack on the Tokyo subway system, in which 12 people died and 1,039 were injured.[123] But despite the fact that the group possessed an estimated $1 billion in assets, some 26 university-trained chemists and microbiologists working in top-notch research facilities, and the freedom to conduct virtually unlimited experiments, their CBW activities were essentially a failure. After investing some $30 million in obtaining the highly toxic nerve agent sarin alone, Aum succeeded in killing only 12 people – a number that pales in comparison with the 192 persons who died in the 2003 suicide attempt on the Seoul subway, which was executed by a mentally disturbed individual

who used technology requiring only about a $3 investment: a paper milk container filled with gasoline and a cigarette lighter.[124]

Still CBRN agents can be attractive to a terrorist group for several important reasons. First, the acquisition of biological, chemical and radiological materials is relatively unchallenging due to the dual-use nature of many suitable precursors and agents.[125] Biological materials, in particular, can be very advantageous due to the ease of their procurement, which allows a potential perpetrator to start with only a small initial amount of the agent in order to obtain large quantities. Another possible advantage is the stealth nature of some agents such as the protein toxin ricin; for an organization that does not necessarily want to be implicated in an attack, such agents would provide an excellent tool. The next possible advantage is the prestige element involved in using exotic weaponry, which would allow the perpetrator to receive disproportionately high public attention. Finally, possibly the biggest advantage of using CBRN agents is their psychological impact on the population. The fact that virtually any occurrence of a toxic agent in the hands of terrorists is publicly mislabeled as a "weapon of mass destruction" often leads to the spread of an unparalleled level of largely unwarranted panic among the public.

However, the use of CBRN materials as a terror tool has many significant disadvantages as well. First, while striking as much disproportionate fear into the hearts of the enemy as possible constitutes the whole point of terrorism, the almost universal perception of "weapons of mass destruction" as superiorly immoral and inhumane makes this option unattractive for the majority of terror groups for image reasons. Second, procuring and handling toxic substances is highly dangerous and requires a comparatively high level of expertise, which has presented a great challenge for even the most resourceful of terror organizations. Third, while the acquisition of many agents is simple and relatively inexpensive, the same cannot be said with regards to their mass-casualty capable weaponization. As the above-mentioned example of Aum Shinrikyo demonstrates, even an organization with unparalleled resources was not able to develop delivery systems effective enough to produce mass casualties, despite all the effort and unquestionable intent to do so.

Nontraditional tactics

In order to provide a full scope of the tactics terrorists have used in the past, it is critical to include a category for attacks that do not fit into any of the preceding categories. I have decided to call this section "nontraditional tactics" simply because it includes methods that have been somewhat original and have not been used on a large scale. The first type of attack in this category is the case in which terrorists have targeted animals – as opposed to people or infrastructure – as their primary target. In Kashmir for instance, Islamic fundamentalists have on several occasion slaughtered cows in front of

Hindu temples causing great turmoil and provoking clashes with the Hindus, for whom cows are sacred animals. Similarly, there have been cases of Jewish extremists throwing pigskins into mosques during prayers in the attempt to cause an escalation of violence. In another context, the Shining Path hung the corpses of dogs from Lima lampposts at the beginning of its campaign in 1980, with the goal of intimidating the local population.[126] The same group also used dogs during the 1992 celebration of Mao Zedong's birthday, when it attached sticks of dynamite to more than 20 dogs in various Lima suburbs, some of which exploded.[127] What is interesting about these incidents is the fact that in Western society where television programs are filled with "people violence," many viewers are more emotionally affected by animal cruelty than by the images of dead people. This has been clearly demonstrated by the public reactions to the televised AQ tape which depicted the gruesome deaths of several dogs during the group's experiments with hydrogen cyanide. While humans can be seen as more or less guilty in any conflict, for many people terrorist violence directed at innocent animals has a ring of unconditionally unwarranted cruelty. For this reason, attacks against animals may become more frequent components of terror campaigns in the future; not only to provoke confrontation, but also to intimidate and traumatize the adversary. At the same time, the experience may be traumatizing for some terrorists as well, as in the example of several Aum Shinrikyo members who had no moral qualms about the prospect of killing millions of people, but have expressed great remorse after killing 29 sheep during the 1994 sarin tests in the Australian outback.

A variation in attacking nonhuman targets has been the use of various artifacts in place of human hostages. For instance, in 1963 members of the Venezuelan FALN armed with submachine guns held Cézanne's "The Bathers," Braque's "Still Life with Pears," and Van Gogh's "Lilies in a Copper Vase," and still lifes by Picasso and Gauguin hostage, promising to release the paintings after Venezuela's oil was "freed from the United States."[128] Another similar incident occurred in 1974 in Ireland, where the IRA stole 19 paintings valued at $19.2 million from the home of Sir Alfred Beit, a British millionaire, demanding the transfer of four convicted IRA members from England to Ulster jails and $1.2 million cash ransom.[129] Several weeks later, Rubens's "The Adoration of the Magi," one of the world's most valuable paintings held at the time in the UK was vandalized by an unknown individual who scratched the letters IRA across its face.[130] In yet another interesting case in 1987, grave robbers cut off the hands of the embalmed body of President Juan Peron in the Chacarita cemetery in Buenos Aires and demanded $8 million ransom.[131] In essence, taking artifacts hostage has several distinct advantages over holding humans. One is that the hostage takers do not need to take care of the victim, do not have to guard him, feed him, or worry about his health. Second, the world's most valuable artifacts are items truly unique and unlike most people they cannot be replaced. And while the life of a human being is certainly worth more

than any painting in the world, in reality hostage takers threatening to destroy an exclusive artifact may be able to exert more pressure to comply with their demands depending, of course, on the target audience.

The next interesting nontraditional tactic that has occasionally been used by right-wing militias in the United States is what has sometimes been called "paperwork terrorism." Especially the Texas militia has used this tactic, submitting a large number of fake land claims and law suits with the hope of administratively overwhelming the judicial system. Similarly in 1998, three members of the anti-government Montana Freemen had been sentenced for organizing an assault on the US banking system through the circulation of falsified financial instruments.[132] And although paperwork terrorism is not likely to gain prominence in most terror campaigns, it is possible that it might be used by some groups as a form of sabotage or as a diversion from violent activity. Another form of nontraditional tactics has been propaganda terrorism. An instance of this phenomenon occurred in 1987 in Colombia, when the 19 April Movement (M-19) successfully jammed a New Year's television speech to the nation being delivered by President Virgilio Barco. The sound was interrupted on four occasions, during which a propaganda broadcast saying "A new year, a new fatherland. This year the stride will be greater because there is a greater will" took place.[133] Similar, although less sophisticated, operations were carried out in 2002 by the Chechen rebels, who succeeded in broadcasting their videos on one of the national television channels after physically taking over the signal transmitter.

Other incidents that would fall into the category of nontraditional attacks could be cited, especially various assaults, such as the Jewish Defense League's (JDL) crashing of diplomatic receptions in the 1970s in which the attackers poured blood on the heads of Soviet officials, or the 1966 attempt to drop a 30-pound concrete block on a car carrying Queen Elizabeth II and Prince Philip through Belfast.[134] Much more deadly, although not as widely used, have been incidents in which attacking drivers have used their vehicles to run over crowds of people, such as the 1971 incident at the Karachi airport, or the PIJ attacks in Israel in the early 1990s. A variation of this tactic has been the suicidal taking over of a passenger bus and steering it off the road into a steep fall, as in the 1989 case in Israel in which 16 people were killed and 25 others injured.[135] What is surprising is that similar operations have not been used with greater frequency, considering the fact that unlike conventional suicide bombings, these can be easily accomplished by individuals without great preparation or extensive planning, while retaining the capacity to achieve a comparable number of casualties.

Analysis

One of the most critical components of the trends in terrorism has been the continuous decline of the number of recorded terrorist incidents, accompanied however by a continuous incline in the number of overall casualties in

those fewer incidents. In other words, the lethality of terrorism has been continually increasing. Some of the commonly cited reasons why this has been the case include the terrorists' constant quest for attention, the increased prevalence of state sponsorship, and proliferation of terrorist groups motivated by a religious imperative, but also the developments in terrorist weaponry and the increasing sophistication of professional terrorism.[136] However, as we have seen in the course of this chapter the scope of tactics and technologies that have been used by terrorists to date has not been particularly rich. Further, the proportional distribution of tactics has for the past 40 years remained relatively constant. What then have been the critical global trends in terrorists' tactical and technological innovation?

The trends in terrorist weaponry show that terrorists have essentially followed the developments of the low-end weapons technology used by state actors. This is logical, considering that most weapons used by terrorists are acquired from state sponsors, through theft from army and police armories, or via purchase on the black market. Some technologies can also be obtained on the open market, such as precursors for blasting, chemical, biological or radiological agents, many of which have legitimate uses. Similarly, commercially available modern communication technologies such as mobile phones, computers, satellite phones, GPS or encryption software have also been used by modern-day terrorists fairly extensively. Occasionally but not typically, some terrorist organizations have demonstrated a considerable willingness and ability to adopt new technologies. For example, in contrast to the relatively low level of innovation in the area of explosives per se, some terrorist organizations have demonstrated a significant capability with regards to developing novel methods of explosives detonation and concealment. These innovations, however, did not serve the role of introducing new technology per se, but rather consisted of creative utilization of technologies that already existed in the conventional realm.

For instance, one of the first timed detonation techniques was invented by the Irish *Clan na Gael*, who as early as the 1870s used a clock-linked pistol to initiate their explosions.[137] A similar timer mechanism was also utilized by the Jewish *Irgun* during the 1946 King David Hotel bombing, along with the addition of another innovation in the form of an anti-handling switch.[138] Remarkably, similarly crude techniques using rudimentary bombs detonated by fuses or ordinary cooking clocks dominated terrorist explosions all the way up to the 1970s. The devices of this era were of questionable reliability, often exploding prematurely and causing harm to the terrorists themselves.[139] The IRA, for instance, has lost more than 120 of its members to premature bomb explosions, with the greatest number of deaths occurring in the early 1970s when the group was still relatively inexperienced in handling explosives.[140] Another delivery method frequently used in the early 1970s other than fuse or timer, were letter and parcel bombs. Even though the first confirmed case of a letter bomb dates as far back as 1895, it was the year 1972 that somewhat curiously became the "year of the letter bomb,"

after the IRA, PFLP-GC and the Palestinian Black September sent hundreds of envelopes containing explosive devices to officials around the world.[141] One of these envelopes even contained 40 grams of cyanide powder, with the alleged intention of producing hydrogen cyanide gas upon its contact with oxygen. The sudden 1972 increase in the use of letter bombs declined just as dramatically at the end of that year.

The 1970s also saw the introduction of remote-controlled detonation pioneered by the West German Revolutionary Cells and the Provisional IRA (PIRA).[142] This technique, however, was highly dangerous at its early stages, as the explosives were often accidentally detonated by outside signals transmitted from various amateur sources such as remote controls used to guide model aircraft.[143] In the case of the PIRA, another problem was presented by governmental countermeasures, which included the development of electronic detection and jamming techniques. The PIRA later responded by introducing sophisticated electronic switches that negated these countermeasures. In what could be described as a 25-year mini-arms race the British defense specialists reacted again by developing a system of electronic scanners that could detect and neutralize a radio signal just seconds after the radio control had been turned on.[144] This defensive measure was countered once more by the PIRA, who introduced radar detectors that are commonly relied on by motorists to provide early warning for police speed traps. These commercially available detectors could be activated by laser guns, the same kind that the police use to thwart detection of their speed traps by the motorists. As a result, a bomb could be detonated almost simultaneously with the laser gun being turned on, which eliminated the ample time that could be used by the security forces to disrupt the signal.[145] This process clearly shows how the advances in the unstoppable development of commercial electronics have aided both the authorities and the terrorists.

Another highly sophisticated method of detonation used by terrorists has been the barometric pressure device first employed for bombing two airliners in mid-course flight in 1970 by Ahmed Jibril's Popular Front for the Liberation of Palestine – General Command (PFLP-GC). These barometric pressure devices, incorporated into the bomb by the PFLP-GC master bomb maker Marwan Kreeshat, were designed to activate a timing device at a specific altitude, which would then detonate a small amount of plastic explosives.[146] In this way the PFLP-GC obtained not only the ability to bring down commercial airliners in mid-course flight, but also the ability to do so at a particular point of the flight ensuring the complete destruction of the aircraft itself as well as that of the evidence.[147] Despite being constructed as far back as the late 1960s, Kreeshat's barometric pressure device remains one of the most sophisticated inventions by a terrorist organization to this date. It may be interesting to note that high technologies such as this one have never achieved widespread popularity, despite their effectiveness.

In fact, recent trends suggest that while conventional technologies allowing the construction of sophisticated detonation systems have become

widely available, many terrorist organizations have adopted what could be described as a backward approach to improving their detonation capabilities by adopting rather crude delivery methods for their bombs: suicide bombers. What is striking about this progression is the fact that the organizations that have employed suicide bombings at the same time belong to the category of the more sophisticated terror groups. One should therefore resist jumping to the conclusion that the choice to employ suicide bombers has been the product of an inability to master the technique of remote detonation, as some authors have suggested.[148] Overall, suicide bombings and *not* sophisticated remote detonation systems have been the fastest spreading and the most dominant tactic of recent years.

Suicide bombings have been delivered by various means, including suicide bombers traveling on foot, pushing carts, riding bicycles, cars, trucks, aircraft, small boats, donkeys and even suicide torpedoes. From a tactical perspective, suicide bombings have recently witnessed a number of important trends. First, it has been the increasing internationalization of the phenomenon, not just in the sense that the tactic has spread to new countries, but also in the sense that terrorist organizations have demonstrated an increasing ability to mount suicide operations outside of their common area of operation. Examples include the Hezbollah's operations in Argentina and Panama, the LTTE's in India, the Egyptian groups' in Pakistan and Croatia, Jaish-e-Mohammed's in India, Chechen groups' in the Russian capital, and AQ's in a variety of countries that span over four continents. The second disturbing trend has been the increasing synchronization of suicide bombings with the clear intention of causing as many casualties as possible. In some instances, suicide bombings have involved secondary and even tertiary devices, the detonation of which occurred in a calculated delay in order to target first-responders and crowds of onlookers. Another recent technological innovation has been the addition of CBRN materials into the explosive devices that we have seen in Israel, where traces of pesticide and even cyanide have been detected on the remains of at least six bombs used in HAMAS suicide attacks.[149] In addition, attacks against hard targets such as embassies have recently seen the introduction of suicide truck convoys, which include suicide shooters or bombers whose role is to clear the way for the suicide truck. As a part of this tactic, terrorists have also recently begun using additional bombers in the suicide truck in order to insure that the explosive is detonated even in the event of the driver being killed by the security guards during the assault. Similarly, the explosive devices carried by suicide bombers have increasingly seen the inclusion of a remote detonation mechanism, in order to insure detonation in case of the bomber's elimination or change of heart. Overall, worldwide suicide bombings have shown an increasing level of organization, planning, patience, synchronized execution and lethality.

The concepts of synchronization and combination of different terrorist tactics into a single attack are, of course, not limited to suicide bombings. In

fact these two elements by themselves constitute a developing trend, which apparently serves as one of the main routes through which groups channel their creativity toward innovation and escalation. In essence, the global trend is moving toward multiplication and synchronization of traditional tactics, rather than the use of new tactics or weaponry. There are several reasons why coordinated attacks are gaining prominence, among them the quest for the demonstration of superior capability and omnipotence, which has the effect of increasing deterrent value of the organization's threats as well as attracting greater media attention. Moreover, synchronization of attacks can lead to a large number of casualties, especially in the case of employment of secondary and tertiary devices, where the whole premise is to attract a large crowd as close to the location of a large explosive device as possible. At the same time, groups typically prefer synchronization of attacks occurring in diverse locations over synchronized attacks taking place at one spot, precisely for the aforementioned image effect.[150] And finally, combining various forms of attack into a single *modus operandi* allows groups to reap the benefits of each tactic in a single grandiose event. One of the main reasons why 9-11 was the ultimate terrorist attack was the fact that 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.

The case of aviation terrorism

The attacks of 9-11 are also instrumental in demonstrating the tactical evolution in terrorist attacks against civil aviation, the one area that has frequently been cited in the terrorism literature as an illustration of the trends in terrorist innovation. The main argument in this respect has been that terrorist organizations have an "operational memory" and always seek to exploit the weakest link. As a result, aviation security has been seen as a ceaseless contest between aviation security agencies and terrorists. The example of attacks on civil aviation in the US seems to confirm this assertion. The first major wave of hijackings in the country occurred in the early 1960s, when dozens of hijack attempts by homesick Cubans took place. As a response, the first set of countermeasures was adopted by the Kennedy administration in 1961, consisting of placing armed Border Patrol agents on select flights and equipping cockpit doors with locks. In addition, the US Congress also approved the death penalty for air piracy. These measures apparently paid immediate dividends – the next successful hijacking after 1961 occurred only in 1968, just several months prior to the first terrorist hijacking by PFLP.[151] After 1968, the US State Department attempted to counter by announcing that free space would be made available on planes for all Cubans who wished to return to Cuba. Not a single person applied.[152] During the

next year, hijackings skyrocketed again and even reached their historical peak with 82 hijack attempts worldwide, which constituted more than twice the total for the whole period 1947–1968. Of these 82 attempts, no less than 37 occurred in the US.[153]

In response, another program of anti-hijack measures was adopted in 1972, consisting of a mandatory installation of metal detectors and other devices for boarding gate screening of passengers and luggage at all US airports. In addition a bilateral agreement was singed with Cuba, in which both countries agreed to return hijacked craft and to extradite certain categories of hijackers.[154] During the first year after these measures were enacted, US hijacking attempts dropped from 31 to three.[155] The success of these measures prompted many other countries to follow suit, which in combination with the successful hostage rescue raids of Entebbe and Mogadishu and the increasingly tougher stance of many governments on the issue of granting concessions to hijackers, have made the hijacking of an airliner an increasingly challenging task. According to studies using statistical data analysis, terrorists never succeeded in overcoming these security measures, resulting in a statistically significant decline in hijackings.[156] Some authors have suggested, however, that terrorists did not stop attacking commercial aviation – they simply adapted to the situation by switching from hijackings to bombing aircraft in mid-flight by the means of bombs smuggled on board in carry-on or checked-in luggage.[157] This assertion has been supported by statistics, which suggest that in the decade between 1960 and 1969 there were only nine sabotage attacks against airliners resulting in 286 deaths, while the 1980–1989 period saw the numbers reach 12 attacks in which the casualty levels rose to 1,144 deaths.[158]

However, this generalization about such a tactical substitution is difficult to accept, for several reasons. First, there are tremendous differences in the adaptations demonstrated by terrorists and other types of hijackers, given the fact that unlike refugee hijackers whose objective is simply to get from one location to another, the terrorist hijacking is designed to stage a dramatic "theater" event in which the hostages are transformed into a commodity which is then used for trade. While non-terrorist hijackers have to a great extent been deterred by the aforementioned security measures, they have over time invented new effective methods to circumvent these precautions in order to achieve their objective of flight. For instance, while hijackings from the US to Cuba declined significantly after the installation of metal detectors at airports, in August 1980 hijackers introduced a new method of circumventing the protective measures by using a bottle of gasoline that was poured over a stewardess accompanied by the threat to set her on fire with a lighter.[159] This incident apparently inspired many other hijackers, as documented by the fact that in the next two weeks at least a dozen attempts to hijack airplanes with the same technique took place.

Other alternatives have included the smuggling of pistols on board by hiding them in legitimate metal objects such as a baby stroller, a trick that

was described in the Dick Tracy cartoon strip directly inspiring at least two hijackers in 1980.[160] The most frequent adaptation used by non-terrorist hijackers, however, has been the use of non-metallic objects that the perpetrators later claimed to be explosives or firearms, as well as simple sharp objects such as bottles or sharpened toothbrushes. Here lies the main difference between terrorist and other hijackers – terrorists have not resorted to the use of fake weapons despite the difficulties of overcoming airport security measures by other means. There are several possible reasons why this has been the case, above all the apparent fear of a substantial drop-off in the deterrent value of the group's threats and actions following the likely event of discovery of the fake. Further, it is possible that the absence of an actual weapon in a hostage scenario, which would leave the perpetrators helpless with regard to both carrying out their threats and their ability to defend or kill themselves during a rescue operation, is simply too stressful for terrorists. Other reasons may include the nature of terrorism as an armed and violent activity – for most terrorist groups, at least the ones that have made the decision to include skyjackings in their tactical repertoire, an act of terror without a real weapon does not seem to provide sufficient feelings of empowerment and psychological gratification. This underscores the fact that unlike refugee or criminal hijackers whose only objective is the end result, for terrorists the *process* of achieving the outcome is just as important. Consequently, it would be a mistake to see terrorists' tactical and technological innovation as a product of purely rational behavior.

Another difficulty in the generalization of terrorist response to aviation security measures as the shift from hijackings to sabotage bombings is the variance in the reactions demonstrated by individual groups. For instance, some organizations have in fact been deterred from attacking aviation targets altogether and shifted to alternate targets, as documented by the statistically evidenced decrease in skyjackings accompanied by a proportionately corresponding increase in other hostage incidents.[161] Other groups did in fact adapt to the new realities, but again in very distinct ways. For instance the PFLP – the most active political group in terms of terrorist hijackings – responded to security measures by seizing control of planes after boarding them at the last minute in order to circumvent screening procedures, by simply running through the checkpoints with arms and immediately taking hostages, or alternatively, by entering airports via climbing over the perimeter fence or crashing through the gates with a truck. In addition, groups contracted by the PFLP have attempted to attack airliners with RPGs and SAMs, along with staging indiscriminate small arms attacks on passengers in airports. As we can see from this list, however, the PFLP has never resorted to bombing airliners in mid-course flight, not even as a response to security countermeasures. In contrast, the PFLP-GC, the May 15 Organization, or the Colombian "Extraditables" – the groups that have staged the greatest number of airliner bombing attacks – have never resorted to hijackings, and thus their preference for this tactic also cannot accurately

be interpreted as a response to aviation security measures. Another important detail is that bombings of airliners in mid-course flight were hardly an innovation in light of the increasing difficulty of successfully hijacking airplanes – in fact, at least 46 such incidents had taken place during the 25 years *prior* to the installation of the first metal detectors at airports.

As we can see from all of the points mentioned above, it would be difficult to accept the commonly cited claim that the sabotage of airliners has been an innovative terrorist response to tightened security measures at airports. At the same time, it is true that after the bombing of Pan Am flight 103 over Lockerbie, the overarching perception was that the role of hijackings as a terrorist tactic had greatly diminished, and that the focus of aviation security had shifted from hijacking to sabotage bombing.[162] This has, unfortunately led to a misguided assessment of future threats, directly contributing to increasing the openings in the anti-hijack security system. For instance, prior to 9-11 it was perfectly feasible to bring items such as knives and other bladed weapons *overtly* on board domestic flights in the US, under the condition that the length of the blade did not exceed four inches. On 11 September 2001, 19 hijackers using the process of backward innovation exploited our misjudged dismissal of the hijack threat, and by using a tactic that has already been overlooked as nearly obsolete, they succeeded in perpetrating the most destructive terror attack in history.

Conclusion

Chapter 2 has attempted to provide an overview of the different types of terrorist tactics and technologies, along with covering the basic trends in their employment in various contexts. 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*. This seems to confirm the observation cited in the introduction that terrorists are conservative by nature. The main advances that we have seen in both tactics and technologies have consisted of incremental innovation, in the sense that terrorists have arguably improved in using traditional tactics and have made a better use of already existing dual-use technologies. In this sense technological innovation in terrorist campaigns has been a direct result of what Rosen terms "technology push"- the situation in which advances in civilian technologies drive military innovations, as opposed to the "demand pull" – the scenario in which military innovations drive advancement in civilian technologies.[163] Additional points of incremental innovation have included the increasing range of homemade artillery, miniaturization and improvements in detonation of explosive devices, and the greater incorporation of commercially available technologies such as the Internet, mobile phones, computers and GPS into terrorist operations at the planning and execution phases. Another important tactical trend has involved the synchronization of attacks and the incorporation of

various tactics into a single operation. Somewhat surprising may be the observation of another emerging trend, and that is the increasing emphasis of modern terrorism on *technologically crude* modes of attack, as documented by the global rise of suicide bombings, the emerging preference for televised beheadings, or the hiding of roadside explosive devices in corpses of dead dogs and sheep. This suggests that the current global wave is not moving in the direction of high technology, confirming Hoffman's earlier prediction that "terrorist devices will be innovative in their simplicity."[164]

Several important implications stem from these findings. First, as we have seen above, the business approach to innovation arguing that terrorists always seek new technologies in order to boost the ever-increasing lethality of their attacks is fundamentally flawed. Moreover, the example of attacks against civil aviation further documents how non-linear the trends in terrorist innovation have been and how vastly the approaches selected by different terrorist organizations have varied. Consequently, it seems difficult to paint an abstract global picture of terrorist innovation without losing a great deal of accuracy and representativeness in the process. This is the main reason for the selection of a case study approach for this book: it is simply impossible adequately to assess what form the terrorist threat will take in the future by treating "terrorists" as a single entity. Individual organizations have followed their own specific innovation trails. On the one hand we have groups like PIRA, which can pride itself with many innovations such as the invention of the car bomb, the pioneering work in time delay and remote detonation, and the employment of blast accentuators and booby traps.[165] On the other hand we have groups like *Sendero Luminoso*, whose greatest invention was a home-made grenade produced from a drink cans packed with gunpowder and nails and fired from *huranos* – traditional sling shots.[166] Exploration of the reasons behind the differences in the approaches of different terrorist groups to innovation will be the objective of the upcoming chapters, where four case studies will explore the innovation patterns of four very different terrorist organizations in detail, followed by an evaluation and explanation of the factors responsible for the variance in the level of innovation demonstrated by each individual group.

3 Aum Shinrikyo

The purpose of the case studies presented in this section of the book is by no means to provide an exhaustive profile of the given group. Rather, the cases are structured in a way that allows the most efficient examination of the phenomenon in question. The first part of each case study is designed to provide the background in operational progression of the given group, with key focus placed on identifying the significant points of shift in *modus operandi*. The second part of each case study then consists of an analysis of the relevance of each individual variable, followed by an overall assessment of the factors that played the most critical role in the innovation patterns demonstrated by the respective group.

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 some 100 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 kill indiscriminately 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.[167] 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 to 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 Aum Shinrikyo.[168] Interestingly, according to a former Aum member, the group's belief system prior to this moment was not religious at all.[169] 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."[170] 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 salvation was the global spread of the training system of Aum.[171]

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 immersion into extremely cold water.[172] 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.[173] Overall, it is estimated that throughout the seven 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.[174] The seriousness of the cult's ambitions can be documented not only by the aggressive nature of its campaign, but also by the $7 million investment made toward this effort.[175] 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.[176] 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 led 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 perish, 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.[177] 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 US Navy bases in Yokohama and Yokosuka, Narita airport, the Diet and the Imperial Palace.[178] 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 Ishigaki Island during the time of the attack.[179] 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."[180] During their trip to Zaire, the delegation visited six hospitals, three of which had treated Ebola victims.[181] 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 percent lethality) hemorrhagic fever is truly alarming.[182]

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.[183] 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.[184] 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.[185] 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 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.[186] 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 three 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.[187] 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.[188] 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 for its release near the

legislative building in central Tokyo.[189] 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 meantime, 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 leaks 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 imminence of his own death.[190] "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.[191] "There is no choice but terrorism from now on."[192] 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*.[193] On the first occasion, the sprayer mounted in the 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.[194] 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.[195] 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.[196] The delivery system was based on the manual dripping of the agent on to 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.[197] However, since the equipment weighed over 1,000 pounds the vehicle could only travel at a 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.[198] 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.[199] 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.[200] 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 perish. Not only did this event provide the 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.[201]

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 briefcases equipped to spray botulinum toxin near the ticket barriers of Tokyo's Kasumigaseki subway station.[202] 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.[203] 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 to 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.[204] The target selection was of significance: all of the trains met at 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.[205] In addition, Kasumigaseki was the closest station to most government agencies including the police headquarters.[206] 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.[207] Overall, 159 ounces of 30 percent pure sarin were used, although only eight of the 11 plastic bags were pierced successfully. The end result of the largest non-conventional terrorist attack in history was 12 people dead, 1,039 injured and an additional 4,000 worried well. Then in order to 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.[208]

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.[209] 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 attached 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.[210] One of the bags contained 1.5 liters of dilute sulfuric acid while the other contained two liters of powdered sodium cyanide. The two chemicals, when combined, produce 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 ate through the latex and combined with the sodium chlorate to produce fire.[211] 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 2,700 new followers with 700 becoming full-time renunciants.[212] 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.[213]

Analysis

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, where the variables hypothesized to be the key factors influencing the level of terrorists' innovation will be put to the test.

Role of 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.[214] 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?

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.[215] Asahara's abundant self-pity and sense of unjust victimization, along with the unfulfilled political ambitions, combined to form 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 perish, 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 Armageddon was less than a self-fulfilling prophesy – it represented merely one of the means through which the cult tried to achieve its top objective: the attainment of power. In the beginning of its campaign Asahara had a recipe for salvation from Armageddon – the proliferation of Aum communes or "Lotus Villages." These villages would only be possible if there were no other people than Aum believers, who would essentially become his clones.[216] The only path to salvation was thus the attainment of political power, which

would allow the spread of Aum's teachings to as many 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.[217] 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 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 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.

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 shows 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 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.

With regards to the frequency of attacks as a possible determinant of both the desire and the ability of terrorists to innovate due to a possible need to employ new weapons on the battlefield, as well as greater experience with handling weapons and more ample opportunities to test new innovations, there appears to be a positive correlation between Aum's low frequency of attacks and a high failure rate at the capability side of the equation, but certainly not in terms of motivation to innovate. In other words, the group was highly motivated to innovate despite the lack of a need to obtain advanced weaponry to use on the battlefield. Overall, while the role of some aspects of the "dynamics of the struggle" variable cannot be discounted completely, this factor alone fails to provide a viable explanation for why Aum's innovation practices were so incredibly different from those of other terrorist organizations.

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.

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.[218] As in most terrorist attacks, the use of violence in this scenario is essentially altruistic, with the critical difference that the constituents 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.[219] 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.[220] 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 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 4,000 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.[221] 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."[222] 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.[223]

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.[224] Not only did the war machines of both of these leaders produce sarin; the Iraqi stockpiles also included mustard gas, 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.[225] This suggests a possible link between Aum and the already discussed *Thuggees*, the Indian Kali worshippers who believed that if they did not shed blood, their victims would go to paradise and thus used strangulation as their 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.*[226]

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 group called by nicknames such as Magic, Witch or Sally.[227] 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.

Group dynamics

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 act passionately in several school plays, Asahara even wrote one about the flawless and powerful character of Prince Ganji, a role he designated for himself.[228] 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.[229] 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.[230]

Aum's leadership structure itself was modeled on 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."[231] Fascinatingly, Aum would pursue Asahara's unrealistic science-fiction weaponry and childishly utopian technological ideas despite the fact that most of these people were accomplished scientists, who one might expect to bring in a more sobering perspective. This only underscores Asahara's absolute and indisputable 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.[232] The unsurprising lack of success in 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 the 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.

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 same time, the fact that Aum's competition with other groups was an ideological and not an operational one means this factor contributes little to the explanation of Aum's extremely innovative tendencies.

Since its founding in 1987, Aum 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 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*.[233] 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 innovation 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.

Resources

Aum seems to confirm directly 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 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.[234] 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.[235] 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.[236]

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 precondition 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.[237]

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.[238] 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.[239] 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 a 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 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 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 in the purchase of a green light laser, $500,000 in a lens grinder, and $36,000 in two drone aircraft (which were crashed during the first

training), not to mention the amazing $30 million invested in the sarin program alone.[240] All of these investments were undertaken under the optimistic assumption that the cult's human resources could make good use of them in the pursuit of 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.

Openness to new ideas

With regards to this variable, it has been hypothesized that organizations that are in 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.[241] 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 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 leaks 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."[242] 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 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.

Durability

With regards to the durability factor it has been hypothesized that organizations that last longer are likely to have more time to progress in terms of their motivation to innovate, as well as the opportunity to gather enough

experience to facilitate success of this process. In the case of Aum, this assertion does not seem to hold on the motivational side, as Aum progressed to biological agents after only three years of existence, not to mention the fact that it went straight for these agents without gradually progressing from lower-end weapons technologies. Further, Aum's case does not seem to support the learning curve hypothesis, as the cult did not become sufficiently more successful with its weapons technologies over time – in fact, since it was unable to improve by further innovation, Aum had to scale down to relatively less technologically challenging weaponry, both at the level of production and delivery. Overall neither component of the durability factor shows causal significance in the Aum case study.

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 blown 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 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.[243] Despite reports to 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.[244] Aum's tabun, mustard, phosgene and soman programs did exist, but none of the agents was ever produced in sizable quantities.[245] 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 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 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 of 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 12 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 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.

4 Popular Front for the Liberation of Palestine – General Command

The Popular Front for the Liberation of Palestine – General Command (PFLP-GC) is a Palestinian terrorist organization founded in 1968 as a breakaway faction of the Popular Front for the Liberation of Palestine (PFLP) by a former Syrian army captain and demolitions expert Ahmed Jibril.[246] The group's operations, which reached their peak between 1970 and 1988, were characterized by daring attempts to introduce new forms of attack, emphasis on technology, innovation and high lethality. Overall, the PFLP-GC's terrorist activity resulted in the deaths of at least 300 civilians and injuries to hundreds more, a staggering number considering that the group was one of the smallest factions of the Palestinian struggle. Among the main 13 Palestinian groups the PFLP-GC was characterized by several unique elements, among them the lack of any distinct political ideology, the emphasis on both tactical and technological innovation and military strength, and a virtually unconditional allegiance to Syria. Along with Jibril's shyness toward the media and absence of a foothold in Gaza or the West Bank, the group's relationship with Syria was a key factor why Jibril never achieved the level of prominence that one might expect based on his military excellence and a touch for spectacular attacks. Nevertheless, the PFLP-GC serves as an excellent example of a highly innovative terrorist organization, which has pioneered tactics such as the use of barometric pressure devices to detonate bombs on-board civilian aircraft in mid-course flight, the use of modern communication technologies, booby-trapping the equipment of fighters in high risk operations, and the use of a motorized hang-glider to infiltrate enemy territory.

History of operational progression

In order to understand fully the tactical and technological trail of PFLP-GC operations, it is key to factor in attacks perpetrated by entities around Ahmed Jibril, as opposed to focusing solely on the PFLP-GC itself. Jibril's original involvement in terrorist activity predates the formation of the PFLP-GC; in 1961 he and several other Palestinians formerly serving in the Syrian army founded the Palestine Liberation Front (PLF) in Cairo.

The group's original activities concentrated on propaganda, recruitment of students and the obtainment of financial support from the Palestinian diaspora. For most of 1961, PLF members flooded Cairo with propaganda leaflets and posters promising the immediate liberation of Palestine. It would not take long for the group to obtain the capability to back up words with actions. Having received training in camps established by the Damascus government, Jibril's men began preparing for armed operations.[247] Between 1964 and 1967 the PLF would become known as one of the most violent factions within the Palestinian liberation movement, having conducted at least 95 cross-border raids into Israeli territory from Jordan and Syria,[248] in which the group claimed to have inflicted a ridiculously overstated 3,500 casualties.[249] These raids, usually highly coordinated and synchronized and making use of sophisticated radio equipment, would become an operational constant for Jibril and the PFLP-GC for years to come. In December 1967, following the debacle of the Six-Day War, the PLF merged with the Heroes of the Return Group and The Youth of Revenge Group to form the Popular Front for the Liberation of Palestine (PFLP) under the leadership of George Habash. This marriage of convenience would only be short lived. Following internal disputes and disagreements about ideology and operational considerations, but also private ambitions of dominant personalities, Jibril split from the PFLP in April 1968 and formed his new organization – the Popular Front for the Liberation of Palestine – General Command (PFLP-GC).[250] The name itself would signal Jibril's love for action and his dissatisfaction with rhetoric, which he argued would fall short of accomplishing a free Palestine. Further, the name also signaled Jibril's desire to add a conventional military dimension to the Palestinian forces as a necessary part of taking the struggle to the next level, a task he would take on himself for the duration of his terrorist career.[251] From early on, Jibril's rhetoric was full of optimism regarding the immediacy of an eventual victory, and was filled with promises of spectacular operations. Throughout the following 30 years, he would fulfill at least the second part of his promise.

In the heyday of PFLP-GC's activities in the early 1970s, one of Jibril's obsessions became the targeting of civil aircraft. In contrast with his former colleagues from the PFLP whose *modus operandi* of hijacking airplanes would become legendary, Jibril saw hijackings as worthy only of people too weak actually to pull the trigger.[252] As a result, shortly after the influential PFLP hijacking of an El Al airliner from Rome to Algiers, Jibril made the decision to raise the stakes by bringing an airliner down in mid-course flight instead. As early as late 1968, Jibril reportedly ordered his top bomb maker, Marwan Kreeshat, to construct a novel and diabolical device: the altimeter bomb.[253] After working for several months in a Sofia safe house, Kreeshat succeeded in constructing two devices that were then tested on the top of the Feldberg mountain in Germany.[254] Having found the devices functional, PFLP-GC operatives then set the barometric pressure mechanisms to be activated at

the altitude of 14,000 feet, disguised the bombs in transistor radios, and mailed them to Israel from a Frankfurt post office. The packages made their way on board two airliners on 21 February 1970, when 15 minutes after takeoff the Swissair flight 330 crashed in a forest near Wurenlingen, Switzerland, killing all 47 on board. On the same day, an Australian Airlines plane flying from Frankfurt to Vienna with 33 passengers and five crew was rocked 20 minutes after takeoff by an explosion that blew a hole through the bottom of the fuselage. Fortunately for the passengers, the mailbag containing the device was placed between layers of tightly wadded newspaper which absorbed most of the shock, allowing the plane to land safely in Frankfurt.[255] In Beirut, PFLP-GC spokesman Abu Meriam took credit for the Swissair operation and the PFLP-GC was on the map.

Having successfully perpetrated its first large-scale operation against civilian targets the PFLP-GC set a high standard for itself, also signaling that the group's campaign would be an unusually bloody and indiscriminate one. This fear was confirmed four months later, when on 22 May 1970 a PFLP-GC commando team crossed 500 yards from the Lebanese border near Moshav Avivim, Israel, and simultaneously fired four bazooka shells at a school bus, killing 12 children and wounding 22 more.[256] This audacious operation would have a long-lasting impact on both sides of the conflict. From the Israeli side, the immediate reaction was the shelling of four Lebanese villages, which resulted in the deaths of 20 people and injury of many more.[257] This overreaction along with the need to outshine the PFLP-GC then drove the PFLP into one of the most impressive hijacking operations to date, the 6 September 1970 "Skyjack Sunday," which in turn again provoked a reaction that would have a long-lasting impact on the entire Palestinian liberation movement. Only two days after the hijacking, King Hussein of Jordan unleashed his Bedouin army against PLO positions in Jordan, commencing a bloody fratricidal exchange known as the "Black September." After the expulsion and subsequent weakening of formerly Jordan-based Palestinian organizations, Ahmed Jibril, whose bases in Lebanon and Syria remained intact, saw a chance to emerge as a leading voice of the Palestinian movement. In the following 15 months, his group would launch several cross-border attacks, which besides shooting assaults included the planting of land mines that later resulted in the deaths of five civilians.

Around the first anniversary of the Swissair operation, Jibril decided to launch another such offensive in Europe. However, the original tactic that the PFLP-GC used to get bombs on board would no longer work, as air cargo security checks of packages heading for Israel had been considerably tightened since the attacks. The PFLP-GC solved this problem by introducing another innovation – the use of mules. Perhaps inspired by the case of Jack Graham who in 1955 killed 38 passengers by planting an explosive in his mother's suitcase, the group decided to employ unwitting passengers to bring the explosive on board.[258] In order to avoid suspicion based on common profiles, the mules would be selected to embody the exact opposites

of people that might be suspected of involvement with Middle Eastern terrorist organizations – they would be women, usually from inconspicuous countries such as the Netherlands, Peru or Great Britain. The common *modus operandi* for attracting the mules was to send young, well-dressed and good-looking members of the group into Europe to form relationships with fitting candidates. Typically, the women would, after a few weeks of dating, be invited to visit the Middle East, with their boyfriends usually facing a last minute "business trip," but sending gifts for their families and promising to join the party in a couple of days. The first such attack occurred on 28 July 1971, when a PFLP-GC member sent a Dutch woman with booby-trapped luggage on board an El Al plane flying from Rome to Tel Aviv. Fortunately the device malfunctioned and the plane landed safely.[259] Only 37 days later, two women were arrested at Lod Airport for bringing explosives on board El Al planes flying from New York to Israel.[260] Another 15 days later, a booby-trapped suitcase belonging to a Peruvian woman passenger was discovered before it was loaded on board the El AL London to Tel Aviv flight.[261]

Following these three failures, the PFLP-GC needed to recuperate with another offensive, this time again adding another new twist. Perhaps trying to build on its successes with using the postal services, the group followed up by sending dozens of letter bombs to Israel from various countries. The first 15 letters were sent on 28 December 1971, from Vienna and Belgrade to addresses in Israel.[262] These letter bombs contained a small amount of explosive material placed inside an envelope or package, squeezed into a flat liner. When the respective package was opened, it released a spring soldered to a percussion-striking device that struck the detonating mechanism triggering the explosion.[263] Such a tactic had little hope of achieving a large number of casualties; at the same time it satisfied the group's need for introducing new technological elements into the struggle. In early January 1972, the PFLP-GC sent at least 65 letter bombs from various locations in Europe to prominent individuals in Israel, followed by another dozen bombs sent from Singapore in November of the same year.[264] Overall, the bombs succeeded in causing little damage, although one bomb disposal expert was injured while dismantling one of the devices.[265] In addition, the group resumed cross-border raids from Lebanon, the most significant of which took place on 20 June, and included the familiar technique of simultaneously firing rockets at an Israeli bus in the Golan Heights, killing two civilians and injuring several others.[266] And finally in August 1972, a Kreeshat bomb placed in a portable record player, which included the ingenious disguise of 200 grams of Semtex and the detonating mechanism in the machine's own electrical infrastructure, detonated in the baggage compartment of an El Al flight with 148 persons on board.[267] The blast caused a crack in the rear door and a hole in the baggage compartment but failed to bring the plane down, allegedly because of the preventive armoring of the baggage compartment introduced on El Al planes. As in the previous cases, the explosive had been

brought on board by two unsuspecting British women who had been given the radio by two Arab lovers they had met in Rome.[268]

But even after this intensified effort in 1972, the group still remained outshined by other Palestinian factions. Not only did the Japanese Red Army (JRA) and PFLP take away much of the spotlight by the May suicidal shooting spree at the Lod airport which killed 28 and injured 76 more, the PLO's secret wing Black September became even more of an international focus following its hostage-taking operations at the Munich Olympics and the Israeli embassy in Bangkok. As if that were not enough, the Black September even outshined the PFLP-GC in its very own tactic of using letter bombs.[269] So despite PFLP-GC's promises of an intensified campaign, the year 1972 ended in disappointment.

Following the defeat of Syria and Egypt in the 1973 Yom Kippur war, the divisions within the Palestinian camp intensified, with Arafat's PLO and allied groups advocating a negotiated settlement, and the rejectionist groups including the PFLP-GC arguing for the struggle to continue. This division became even more apparent on 11 April 1974, when only several days after Arafat appealed to the Palestinian groups to stop attacking Israel from Lebanese territory, three PFLP-GC terrorists entered Israel precisely via the Lebanese border and attacked an apartment complex in the border town of Kiryat Shmona.[270] Going from apartment to apartment, the attackers fired indiscriminately, killing 18 people and wounding 16.[271] In the immediate aftermath of the attack, the PFLP-GC released a statement that characterized the operation as "the beginning of a campaign of revolutionary violence within Israel aimed at blocking an Arab–Israeli peace settlement."[272] Another PFLP-GC communiqué stated: "our men carried out their instructions. They set off explosive belts they wore for the operation when the enemy stormed the building they were holding. They died along with their hostages."[273] According to some sources, the original plan was to take hostages at a nearby school, which was however closed due to the Passover holiday.[274] The attackers then improvised and switched targets, perpetrating one of the most brutal and cold-blooded attacks Israel has ever witnessed. If the allegation about taking hostages is true, it would mark a significant deviation from Jibril's belief that hostage takings were operations not worthy of his group. According to Katz, it was the demoralizing effect of the surprise attack that started the Yom Kippur war that changed Jibril's mind; the Israeli public would now be more susceptible to giving in to terrorist demands than ever before.[275] Either way, the Kiryat Shmona massacre became a seminal event for the PFLP-GC, as documented by the fact that even today a picture of the three "martyrs" who perpetrated the attack is hanging on Ahmed Jibril's office wall.[276]

Throughout 1974, the PFLP-GC was not the only group to initiate hostage-taking operations in order to secure the release of Palestinian prisoners from Israeli jails. Only a month after Kiryat Shmona, the Democratic Front for the Liberation of Palestine (DFLP) launched a similar raid in

Ma'alot, taking over 90 children hostage and demanding the release of 23 terrorists from Israeli jails. Half an hour before the deadline set by the terrorists was to expire, the Israelis launched a desperate rescue operation in which 21 children died and 65 were injured.[277] The effects of this failed operation on the Israeli psyche were devastating, and created a fertile ground for successful hostage-taking incidents in the future – since the Israeli government could hardly afford another Ma'alot, it could be more effectively forced to negotiate than ever before. The PFLP-GC was quick to react to this new situation, and on 13 June 1974, four of the group's operatives again slipped across the Lebanese border and attacked the settlement of Kibbutz Shamir. The plan was again to take hostages at a nursery and demand the release of Palestinians from Israeli jails. According to the leaflets carried by the militants, the demands would include the release of 100 prisoners including Kozo Okamoto, the only JRA terrorist to survive the Lod Airport massacre, whose release had also been demanded in Ma'alot. However, the takeover did not go as smoothly as expected, and in the initial gun battle six armed settlers killed one of the attackers. The surviving trio then ran into a factory building where they were surrounded, and after a brief shootout the attackers followed the path of their comrades from Kiryat Shmona and blew themselves up with grenades and explosives. In Beirut, the PFLP-GC spokesman praised the martyrs and announced that the attack was planned to coincide with the beginning of Richard Nixon's Middle Eastern tour.[278]

Successful or not, both the Kibbutz Shamir and Kiryat Shmona operations clearly reflected the objectives of disrupting the peace process – not only did they create a situation where it would be difficult for the Israeli leadership to compromise with the Palestinians, the group also succeeded in provoking armed Israeli retaliations against refugee camps in which hundreds of civilians died, undermining the Palestinian support for negotiations as well. The polarization among the Palestinian liberation movement with regards to the peace process then culminated in September 1974 with the founding of the Rejection Front, a conglomerate of anti-Arafat groups such as the PFLP-GC, PFLP, ALF and PSF, which vowed to launch armed attacks against "treacherous Palestinians."[279] In addition to the infighting, in early 1975 the Lebanese civil war broke out providing Jibril with yet another opportunity to rise to prominence. The PFLG-GC troops in Lebanon, although marginal in number, had a good reputation for their fighting skills. In addition, on 29 June 1975 the PFLP-GC introduced another new element when it conducted one of the first kidnappings in Lebanon with the abduction of Colonel Ernest R. Morgan of the US Army in Beirut, for whose release the group demanded the US government send humanitarian aid to the slum area of the city. Morgan was released 13 days later after a distribution of food was made by unknown parties.[280] This PFLP-GC operation further escalated the group's relations with the PLO, when Yassir Arafat threatened to send a Force 17 commando unit to rescue the hostage.[281] Then on 4 July 1975, Jibril's organizations allegedly perpetrated one of its first

attacks in an Israeli city, when a 20-kilogram time bomb packed in a discarded refrigerator exploded at Jerusalem's Zion Square, killing 15 people and wounding 62 others.[282] While the PLO and the Martyr Farid al Boubaly brigade overtly claimed credit, some sources suggest PFLP-CG was responsible, based on the sophistication of the timing device used.[283]

The year 1976 would mark another disastrous year for the PFLP-GC, due mainly to the developments in the Lebanese civil war. Following the 52-day assault of Tel al-Za'atar camp in June of that year in which Syrians cooperated with the Christian militia to kill over 2,500 Palestinians, the Palestinian schisms over Syria's treason escalated not only into a full-blown conflict between individual factions, but also into the breakup of the PFLP-GC itself.[284] Upset with Jibril's continuing loyalty to the Syrians, one of Jibril's top lieutenants Muhammad Zaidan (Abu Abbas) broke away and in April 1977 founded his own pro-Iraqi organization, the Palestinian Liberation Front (PLF).[285] Not only did Abbas pledge his allegiance to the PLO's Yassir Arafat, he also effectively declared war on the PFLP-GC. This development was a huge blow to Jibril, who not only lost many of his expert fighters in the split, but also received a slap in the face from Abbas who stole the name of Jibril's original group. In response Jibril vowed to use death squads to hunt down and punish the "traitors." In the future, the PFLP-GC and the PLF would engage not only in severe operational competition, but also in a direct bloody conflict.

The weakened and badly divided Palestinian movement took another blow in November 1977 when Egyptian president Anwar Sadat visited Jerusalem in a gesture that would mark the beginning of the process that would result in the Camp David accords. With the strongest Arab country approaching the Israelis to make peace, the Palestinian groups realized that their dream of a homeland could only be achieved by their own efforts. This resulted in the intensification of terrorist operations, such as the March 1978 Country Club massacre in which 36 people were killed and 85 others were injured, marking the deadliest terrorist attack on Israeli soil to date.[286] Again, the original objective of this abortive attack was to take hostages at a Tel Aviv hotel in an attempt to achieve the release of Palestinian prisoners from Israeli jails – the objective that had occupied the minds of most of the Palestinian groups for quite some time. Jibril would again be the one eventually to prevail. In April 1978, his group kidnapped an IDF reservist Avraham Amram, and 11 months later Jibril personally conducted negotiations that led to the exchange of Amram for 83 prisoners, which included a man who would later become a key PFLP-GC operative, Hafez el-Dalkamoni.[287] This success would pave the road for the most outrageous hostages-for-prisoners exchange formula for the future, in which Dalkamoni would play a central negotiating role.[288]

Following the end of the first phase of the Lebanese civil war, the PFLP-GC's two foiled attempts to attack the airport and a hotel in Copenhagen,[289] and the group's embarrassing failure to fight back during the 1982 Operation Peace for Galilee, Jibril decided to take a step back and shift his

focus to organizational rebuilding and conventionalization of his forces.[290] Then in the first operation in over a year, the PFLP-GC kidnapped IDF reservist Chezi Shai in the Bekaa Valley,[291] followed by a September 1982 assault on IDF positions near Bhamdoun, which resulted in the seizure of an additional eight Israeli servicemen.[292] After handing six of the hostages to the Fatah as a gesture of good will,[293] in May 1985 the PFLP-GC traded the three remaining hostages for the release of 1,150 Palestinians including 400 hard-core terrorists serving life-terms.[294] Having been publicly humiliated by Jibril, the Israelis initiated a massive manhunt against the PFLP-GC leader, which included the December 1985 attack against the PFLP-GC staging grounds in Lebanon and the May 1986 interception of a Syrian civilian aircraft on board of which Jibril was supposed to fly from a terrorist conference held in Libya.[295] Having escaped all of these attempts Jibril was quick to threaten retaliation, not only against the Jewish state but also against the US, whom he accused of assisting the Israelis. As Jibril ominously told the journalists: "from now on, there will be no safety for any traveler on an Israeli or US airlines . . . We do not have planes, ships, or radars but we will know how to strike."[296]

The retaliation would take a bit longer than expected. After an unsuccessful 1986 plot to send booby-trapped pens to Jewish leaders in Germany,[297] the group decided to launch another spectacular operation that would again confirm Jibril's undying tendency to search for unusual means of attack, and would also mark an example of fierce operational competition between the PLF and PFLP-GC. While the PLF failed three times to infiltrate Israeli territory via the means of hot-air balloons and hang-gliders, Jibril watched and learned. Then on 25 November 1987 the PFLP-GC launched Operation Kibya (also known as the Night of the Hang-gliders), in which four terrorists were sent to fly 80 kilometers on motorized hang-gliders across the Lebanon–Israel border to Kiryat Shmona, the site of one of the PFLP-GC's most significant historical attacks. Each terrorist was equipped with a helmet featuring wireless communication gear, infrared binoculars for night vision,[298] an AK-47, 12 30-round magazines, a dozen grenades, a silenced Tokarov 9 mm pistol and a bulletproof vest. In addition, the terrorists were fed with sugar, protein and even amphetamines to provide a necessary surge of energy on their suicidal strike, in which their gear was also booby-trapped in order to create additional casualties even after the terrorists' demise.[299] While three of the attackers failed to reach their target, Khaled Acker managed to infiltrate a nearby IDF camp slaying six soldiers and wounding seven before being killed himself.[300] The purported commander of the attack, Abu Sa'ar later claimed in *al-Shira'a* newspaper that the raid had been planned over a year and specific orders were issued not to kill civilians. Jibril added in an interview for the Lebanese newspaper *as-Sfir* that "the future of Israel [was] dim. The Libyans are now training our personnel to fly heavier aircraft for suicide missions against the Zionist enemy."[301] Overall the attack was a tremendous success, as it triggered the contagion of opti-

mism with regards to the Palestinian ability to target Israeli soldiers on their own turf. As even Jibril's bitter rival Yassir Arafat remarked: "The raid destroyed the myth of Israeli security."[302] This realization among the Palestinians then set the stage for the outbreak of a popular uprising in the occupied territories known as the *Intifada*, the political success of which would later ironically push Jibril even further out of the spotlight. Since the locus of Palestinian resistance and statehood had now moved to the occupied territories where PFLP-GC had only marginal representation, the group ended up on the sidelines and slowly faded into irrelevance.

On several occasions the PFLP-GC did re-emerge, mainly in relation to the 1988 arrests of a PFLP-GC cell in Neuss, Germany, in which four barometric pressure-activated explosive devices were found hidden in radios and a computer monitor, resulting in strong suspicions about PFLP-GC's involvement in the subsequent explosion of Pan Am flight 103 over Lockerbie.[303] Other operations included two train bombings in Germany, a 1990 ambush of a bus carrying Israeli tourists in Egypt, and an aborted sea-borne attack commemorating the third anniversary of Operation Kibya.[304] More recently, the PFLP-GC claimed responsibility for the intercepted arms shipment en route to Gaza in May 2001,[305] and a plot to blow up the Azrieli Towers in Tel Aviv with a suicide truck bomb.[306] Nevertheless, the group does not seem to be as operationally strong as in the past, and given the fact that the Islamist groups had effectively occupied the "rejectionist space" in Palestinian politics, the PFLP-GC is unlikely to revive its status anytime soon. Furthermore, this weakness is also reflected in the absence of any sort of "military operations" section on the group's official website, which now tends to be unusually political and non-violent.[307]

Analysis

Due to its inherent inclination toward the use of modern technology, indiscriminate targeting logic and highly ambitious *modus operandi*, the PFLP-GC falls into the category of the most tactically and technologically innovative terrorist organizations of its time. The reasons behind PFLP-GC's strikingly hi-tech approach to innovation will be explored in further detail in the upcoming section, where the variables hypothesized to be the key factors influencing the level of terrorist innovation will be explored.

Role of ideology and strategy

PFLP-GC's ideology and strategic outlook played a significant role in triggering the group's innovative tendencies, in the sense that the group's operational preferences corresponded directly to the emphasis on spectacular military operations in its ideology and strategy. In accordance with the traditional Marxist–Leninist rhetoric of the Palestinian fronts that saw the fight against Israel as a component of a larger anti-imperialist effort at

the global level, Jibril was an advocate of a popular struggle aimed at destroying the "roots of reaction." However, in PFLP-GC's belief system, political concepts and strategic planning seem to have been considerably less important than the *process* of the struggle itself. Perhaps most telling in this regard are the words of Jibril's chief aid Abu Fares, who once remarked that the group was "against issuing condemnatory statements. The convincing factor is the [group's] activities."[308] Jibril had in the past bitterly criticized Habash and Arafat for their academically ideological approach,[309] in which great emphasis was placed on values, proclamations and a clearly designed strategy for the attainment of the Palestinian independence, in addition to highly symbolic terrorist acts designed to attract publicity, spread panic and fear, but also to attract sympathy and support. The PFLP-GC would be much bolder. Its purpose was to "wage a war of nerves against Israel without boundaries" to use Jibril's own words.[310]

From the group's early days Jibril promised that independence would breed innovation, vowing to revolutionarize the Palestinian revolution. This would mainly be done at the level of spectacular armed operations along with the building of conventional military capability to fight the Israelis. In this sense, violence was not merely a means to an end, but also an end in itself – Jibril never had any specific vision about the nature of the Palestinian state, nor did the PFLP-GC strategy define any specific front for the struggle.[311] That being said, Jibril's approach nevertheless showed marks of clear political awareness and sense for opportunism, as documented by his ideological flexibility designed to please state sponsors. For instance, Jibril clearly used the Marxist rhetoric in order to align his group ideologically with the Soviet Union and its satellite states so as to attract support, an endeavor in which the PFLP-GC was more successful than any other Palestinian faction. Further, besides loyally playing the Syrian card, Jibril would in addition cleverly adopt key issues and grievances of other potential states sponsors in order to attract their support as well. For instance, Jibril was quick to denounce the 1986 American raids against Libya, achieving the sympathies and considerable logistical and material support from Colonel Kadafi. Similarly following the downing of the Iran Air flight 655 from USS Vincennes in which 290 civilians died, Jibril quickly started playing into the hands of the Iranians. In Iran's case, however, the desirable ideology was a religious one, which was inconsistent with PFLP-GC's Marxist–Leninist orientation. Jibril was again quick to adapt, having little choice after Soviet, Syrian and Libyan support had by 1989 decreased dramatically. Around this time Jibril became a born-again Muslim, observing many religious traditions he had previously ignored and praying five times a day.[312] Accordingly, Jibril's statements also became supplemented with Islamic phrases and in March 1989 he even pledged to carry out "the Islamic verdict, to protect Islam and its prophet" by killing Salman Rushdie.[313]

As we can see from these examples, PFLP-GC's innovation patterns correlate highly with the group's ideological and strategic objectives. PFLP-GC's

ideological orientation was a flexible one, and it changed accordingly based on the preferences of potential state sponsors. Due to the absence of a distinct ideological outlook and due to Jibril's ambition to challenge Arafat as the leader of the Palestinian revolution, the PFLP-GC decided to compensate for its own political marginality by launching attention-grabbing operations. As a result, the only ideological constant over the years was the group's reliance on spectacular operations and military strength, and the group naturally sought innovative means in order to satisfy these two tenets of its strategy. In this sense, this variable shows a high level of correlation with PFLP-GC's innovative tendencies.

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 variables that show a positive correlation in terms of contributing to the PFLP-GC's innovation patterns. First, the group operated in a classical guerilla mode having launched over a hundred cross-border raids out of bases and safe-havens set up in friendly countries. These bases provided important breathing space for the group, giving it an opportunity to train and experiment without fearing arrest in the case of failure. And while it is true that the group's most famous terror invention – the barometric pressure detonation mechanism – was produced in an urban area of Sofia, Bulgaria, the fact that the group operated there with the consent of the local establishment changes the dynamic with regards to the security considerations involved in experimenting in a confined city environment.

With regards to the frequency of attacks as a possible determinant of both the desire and the ability of terrorists to innovate due to a greater experience with handling weapons as well as more ample opportunities to test these innovations, there seems to be a positive correlation in the PFLP-GC case, as the organization's frequent incursions into Israeli territory and the group's participation in the Lebanese civil war apparently correspond to PFLP-GC's high level of innovativeness. But while this relationship appears to hold at the tactical level, none of the technological innovations the group had introduced for terrorist operations were ever used in the battlefield scenario.

Overall, the guerilla nature of the struggle aided in providing the motivation to introduce innovations, and the existence of a friendly environment in which the organization could conduct its experiments uninterrupted further aided the success of these innovations. But while these aspects of the "dynamics of the struggle" were apparently relevant, this variable alone fails to provide a viable explanation for why PFLP-GC's innovation practices were so different from other Palestinian groups that shared very similar working conditions. As a result, it seems safe to assume that the dynamics of the struggle served as a contributing factor, but were hardly a driving force behind PFLP-GC's innovative tendencies.

Countermeasures

PFLP-GC's decision to innovate seems to have been heavily influenced by this variable, in the sense that the group was frequently forced to introduce new methods in order to overcome the countermeasures designed to disrupt established terrorist *modi operandi*. For instance, following the strengthening of airport security measures throughout Europe after the 1968 PFLP El Al hijacking, PFLP-GC adapted its plan to blow up airliners in mid-course flight by sending disguised altimeter bombs through airmail as an ingenious way to compensate for the difficulty of smuggling them on board directly. Similarly, as soon as this tactic was discovered and the security shortcomings that allowed it to work were fixed, the PFLP-GC adapted by the use of mules, whose "non-terrorist profile" appearance along with the lack of knowledge about being a part of the plan effectively allowed them to pass through the routine questioning and searches at El Al check-in counters. As with the lack of screening procedures for airmail before 1970, airport security simply did not consider the possibility of an explosive device in the possession of actual passengers. Another example of how the PFLP-GC resorted to innovation in order to overcome defensive countermeasures includes the employment of motorized hang-gliders in order to resolve the increased difficulty of overcoming the Israeli–Lebanese border for cross-border raids. And finally, some evidence suggests that the PFLP-GC was preparing to breach yet another security precaution – barometric pressure chambers employed by Israelis to counter specifically the PFLP-GC technique of using mules. The aforementioned devices that were discovered at the group's safe house in Neuss, Germany, were designed to require a continuous pressurization for a period of more than 35 minutes to activate a timing device, which would then detonate the explosive.[314] Since airport security personnel could hardly subject a single piece of luggage to pressurization for such a long time, this measure would practically eliminate the effectiveness of pressure chambers. Further, even if the barometric pressure trigger were to be activated in the pressure chamber, the inclusion of a timer prevented the early activation of the bomb.

As we can see from these examples, the specific countermeasures employed by the adversary have provided at least a partial explanation for why the PFLP-GC was driven to innovate. Unlike many other groups that simply react to countermeasures by shifting their focus onto softer targets, the PFLP-GC took significant pride precisely in overcoming these countermeasures. As a result, the group had to embrace creativity and innovation in order to succeed at this task, lending credence to the hypothesis that those organizations whose *modi operandi* are frequently countered by the adversary by target hardening efforts will demonstrate a greater tactical and/or technological innovative drive than organizations whose tactics are not effectively countered.

Targeting logic

The hypothesis associated with this variable, that a highly indiscriminate and highly lethal targeting logic of a group would be associated with higher levels of innovation, seems vastly relevant to the PFLP-GC case study in the sense that the methods used by the group reflected the unusually indiscriminate nature of its targeting. More specifically, the fact that the PFLP-GC's first major attack took a completely indiscriminate form is particularly striking. When in 1970 the group sent barometric bombs via airmail, it had no idea on board which planes the bombs would end up – the only thing the PFLP-GC did know was that the plane would blow up on its way to Israel and that all passengers on board any such plane would be killed. Such a low level of discrimination in targeting is unusual, all the more so among newly formed terrorist organizations. And although Jibril and his top aides had gone through a number of years of terrorist experience prior to the formation of the PFLP-GC, the group still seems to have miscalculated its first major attack, as documented by the fact that popular revulsion led the group to withdraw its initial claim of responsibility.[315]

But this denial of accountability was evidently only a strategic move, as the organization would continue in launching attacks that for its time period were unusual in their scale and brutality, such as the killing of 12 children in an attack on a school bus, additional attempts to blow up civilian airliners in mid-course flight, or the massacre at Kiryat Shmona. This targeting logic was in place until about 1974, when the group shifted its focus from indiscriminate high-casualty attacks against civilians to cross-border raids and hostage-taking operations.[316] This shift was a deliberate strategic choice based on the perceived opportunity of gaining stronger political influence following the founding of the Rejection Front,[317] as well as the impact of the Yom Kippur war on the psyche of the Israeli population, which arguably made hostage exchange negotiations more likely to succeed than in the past. The situation changed again during the group's pullout from Beirut during operation Peace for Galilee (September 1982), when Jibril announced that the PFLP-GC would escalate the struggle against Israel and threatened that this would not be restricted to the occupied territories but rather would be carried out "in all international arenas where the enemy and its allies' institutions and interests can be found."[318] The group, however, failed to deliver on this promise, and continued with localized operations comprising cross-border raids and hostage taking. By 1993, Jibril even personally confirmed the de-escalatory pattern of the group's targeting logic, when he remarked that "PFLP-GC's top targets are Jewish settlements and Israeli soldiers," as opposed to airplanes full of anonymous civilians.[319] As we can see from this timeline, in contrast with most terrorist groups which usually scale-up the intensity and targeting of their attacks over time, the PFLP-GC experienced a reverse pattern.

In sum, the PFLP-GC was a highly indiscriminate group in its early

stages, a time period during which the group showed its highest propensity toward innovation. As PFLP-GC targeting de-escalated over time, so did the group's innovative tendencies – the more discriminate and less lethal PFLP-GC operations would become, the less innovativeness would be involved in their execution. Overall, the PFLP-GC case study 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.

Attachment to weaponry

One of the most important drivers behind PFLP-GC's innovative tendencies was an expressive attachment, though in this case not to a particular weapon, but rather to the process of innovation itself. Since a young age Jibril's hobby was tinkering; he loved devices and gadgets and considered himself an innovator, and had even allegedly registered several patents in Damascus.[320] This tendency to always come up with something new or unusual has led some to dub him as the world's first "technoterrorist."[321] Not only did the PFLP-GC construct the first barometric pressure detonation mechanism to blow up airliners in mid-course flight; other technological innovations have included various booby-traps, such as letter-bombs, pen bombs and sophisticated explosive devices to be placed inside load-bearing equipment where the fighters kept their gear.[322] At the tactical level, the PFLP-GC showed its innovativeness by using air-mail to smuggle explosive devices on board commercial aircraft, the use of mules for the same purpose, infiltration via motorized hang-gliders, the concept of suicide bombing, and the use of walkie-talkies and other wireless equipment to connect the fighters in the field to the command and control center in the forward position. In addition, the great expressive emphasis placed on conventionalization of his forces led Jibril to adopt means atypical of a terrorist group, such as a mechanized division, uniforms, and drills and parades.[323] These measures, while perhaps not unusual for conventional forces, have constituted one of the most pro-active tactical and technological approaches of the global terrorist theater.

Overall, Jibril's desire to differentiate his group from others based on operational capability along with a personal desire to be the best in his "field" combined for a strong motivational drive to place a great organizational emphasis on the use of innovative tactics and technologies. And while the group's operations in many ways had no real coherent strategic calculation behind them, the expressive logic of launching them served as a justification in itself. In this sense, the attachment to innovation was in many ways a stronger factor in operational planning than strategic and cost–benefit calculations, confirming the hypothesis about the high influence of non-rational factors on a group's decision to pursue innovative means.

Group dynamics

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. At the political level, the PFLP-GC had a fairly standard political party-like structure, with a General Secretariat, a Political Bureau and a Central Committee. Jibril himself was the Secretary General, with Talal Naji as his deputy and Fadl Shururu as the political bureau secretary.[324] Following the interrogations resulting from Operation Autumn Leaves, it also became apparent that the group had in the mid-1980's founded a foreign division, headed by Dalkamoni.[325] Unlike the political wing, this foreign division was a covert one and thus had a highly compartmentalized structure, consisting of a number of independently operating international cells that used coded language during internal communications.[326] With regard to the military structure, the impact of Jibril's military career and his preference for building up a conventional force are clearly apparent. The PFLP-GC forces, which never amounted to more than 500 fighters,[327] were organized into six conventional battalions attached directly to central military command,[328] an artillery unit armed with katyusha rockets, a naval frogman unit, a mechanized division, and even an air kamikaze unit comprising small piston engine aircraft, balloons and motorized hang-gliders.[329]

The most glaring aspect of the PFLP-GC's decision-making dynamics, however, was the highly ambitious and uncompromising nature of its leader, as indicated by the remark of Abu Abbas who once complained that Jibril wanted "all the spotlight to himself."[330] As a result, the PFLP-GC was a very contentious organization, which had great difficulty getting along with or even tolerating other Palestinian groups. Further, Jibril's uncompromising style often resulted into internal opposition. For instance, in 1977 Jibril's continuing loyalty to the Syrians drove a faction around Abu Abbas to split and found their own group. Similarly, in the late 1980s Jibril's increasing links with Iran generated internal opposition within PFLP-GC, when a faction under Talal Naji started advocating the rapprochement with the PLO instead. In this case the PFLP-GC remained intact after reaching a compromise in which collaboration with Tehran would continue, but Naji could veto political decisions that contradicted his views.[331]

In sum, the correlation of PFLP-GC decision-making dynamics with the demonstrated level of innovation is a positive one. First, the strong authority of Jibril as a leader who was very keen on inventing novel operational methods combined with the military background of his closest aides to form a strong driving force behind PFLP-GC's innovative tendencies, confirming

the hypothesis about the greater efficiency of highly structured groups, as well as the assertion about the decisiveness of the leader's preference in terms of initiating the innovation process. Second, the contentious nature of the group and its susceptibility to internal conflicts seems to confirm the hypothesis that innovation can sometimes be driven by the desire to overcome factional disputes via rallying the organization behind successful operations.

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. In fact, the level of competition among the different Palestinian factions is probably one of the best examples of this phenomenon. From the outset of its existence, the PFLP-GC defined its very identity based not so much on an ideological or a strategic program, but much more so on the level of criticizing and even directly fighting other Palestinian groups. Further, the group's small size and lack of ideological uniqueness led the PFLP-GC to adopt spectacular military operations as a way of distinguishing itself from other organizations. The PFLP-GC competed operationally not only with Arafat's Fatah and the Black September, Sabri al Banna's Abu Nidal Organization or George Habash's PFLP. The fiercest competition was between Jibril and his former student Abu Abbas of the PLF. The operational competition between these two groups can be demonstrated in the race that occurred prior to operation Kibya. Jibril had planned to use air infiltration for quite some time, but since many of his operational experts who worked on this plan defected to the PLF, it was Abbas's group that would be responsible for the first attempt.[332] On 21 July 1980 a gas-filled balloon carrying Palestinian guerrillas with automatic weapons, anti-tank grenades and plastic explosives was apparently shot down by Christian militiamen as it made its way for the Israeli border about seven miles west of the Israeli town of Kiryat Shmona.[333] Then on 7 March 1981, the PLF sent two men on hang-gliders to drop explosive devices on oil refineries in Haifa, but due to unfavorable weather patterns the hang-gliders crashed before they could reach the Israeli border. A month later, the PLF would try again, this time using a hot-air balloon. Even though on this occasion the terrorists succeeded in making their way over the border, they were eventually shot down and killed by IAF troops.[334] Having studied these failed attacks, Jibril then made the decision to use motorized hang-gliders, which led to the legendary operation Kibya.

In some cases, the competition between the Palestinian groups got out of control and even turned into a full-scale war. For instance, prior to 1990 the PFLP-GC was reportedly directly involved in assassination attempts against key PLO leaders including Arafat,[335] who Jibril branded "a Jew who works

for the Israeli secret service and infiltrated the PLO."[336] Similarly, in 1999 the group's commandos attacked Syrian and Lebanese offices of the DFLP killing one person and injuring several others.[337] The bloodiest was the conflict between PFLP-GC and PLF, having escalated to unprecedented proportions on 13 August 1978, when a PFLP-GC car bomb demolished a Beirut apartment building that served as the headquarters of the military command and central operations of the PLF. At least 155 people were killed and 80 others wounded,[338] making this attack one of the deadliest terrorist bombings to date.

Besides the contentious and even hateful relationship with many Palestinian factions, the PFLP-GC reportedly also had its collaborative side, mainly with regard to groups with which it shared a common state sponsor. For instance, in June 1986 Jibril indicated that his organization maintained links with the Japanese Red Army (JRA).[339] Similarly, during this time frame strong links had reportedly surfaced between the PFLP-GC and the Red Army Faction (RAF) and the Provisional Irish Republican Army (PIRA),[340] which is not surprising given that all of these groups were at this time among the many recipients of Libyan aid. Similarly, following the bonding with Iran in the late 1980s, the group started cooperating closely with other organizations sponsored by the Teheran regime. "We do not deny that we have made a pact with HAMAS, Hezbollah, and Islamic Jihad, or that there is full coordination between us and these elements," Jibril claimed in a 1994 interview.[341] But in the case of PFLP-GC the hypothesis that close cooperation with other groups can also lead to innovation due to the possibility of know-how transfers cannot be confirmed, as it was the PFLP-GC that served as the source of know-how for other groups, as opposed to being on the receiving end. In this sense, the cooperation that took place provided little operational knowledge the PFLP-GC already did not have, and thus hardly contributed in any way to the group's innovative tendencies.

Overall, it was the competitive nature of PFLP-GC's relationship with other organizations that served as one of the most important variables in terms of determining the group's innovative tendencies. In the absence of a distinct ideology combining with a comparatively small membership base, the PFLP-GC placed an unusually high level of emphasis on spectacular operations as a way of achieving a distinctive group identity. Since operational uniqueness was the only thing the PFLP-GC could depend on to preserve this identity, the need to improve operationally in order to demonstrate superiority over its rivals was much stronger than in the case of other competing groups, which had additional dimensions such as ideology or a political program to rely on in this regard. The most important lesson here thus may be that while competition among groups can be a driver behind innovation, the process will only occur in the presence of other factors, such as a strategic or expressive emphasis on high technology or the process of innovation itself on behalf of at least one of the competing groups.

Resources

With regards to this variable, it has been hypothesized that the availability and extent of a terrorist group's resources are likely to be among key determinants of the degree to which the given group innovates, with more resourceful or state-sponsored organizations being more likely to innovate due to their ability to invest more heavily into the process. This seems to be confirmed in the case of PFLP-GC, whose dependence on state sponsorship was the most important determining factor behind the group's operational strength and targeting preferences. When PFLP-GC broke off from the PFLP in 1968, it started out with only a few hundred fighters, a tiny budget and no outside political supporters. However, the close links and an astonishing level of loyalty to Syria allowed the group to receive a high level of support, which included training, safe-haven, assistance in overcoming borders, money and military equipment. The Syrians reportedly even had their intelligence officers permanently attached to the group's installations, whose job was, among other tasks, to facilitate Ahmed Jibril's regular meetings at Syrian defense and interior ministries.[342] In addition, as of around 1964 Jibril was one of the first Palestinian leaders to gain access to the Soviet Union and its satellite states, as a result of which the PFLP-GC members had access to training at the Soviet school for military staff officers.[343] In addition, the Soviets also supplied sophisticated equipment, including infrared and night vision gear, SA7 surface-to-air missiles, 122 mm multiple rocket launchers and AT-3 Sagger wire-guided anti-tank missiles.[344]

The Syrian and Soviet sponsorship, however, decreased considerably towards the end of the 1980s, due in part to the steady economic decline in both countries and in part to external and internal political pressures. While Syria still provided a safe-haven for the group, according to a PFLP-GC central committee member "not one Kalashnikov nor one single dollar ever passed to [PFLP-GC] from Syria [after the Oslo Accords]."[345] As a group completely dependent on state sponsorship, the PFLP-GC was forced to turn to additional backers. This resulted in the increasing allegiance to Kadafi, with whom the PFLP-GC had a relationship since the downing of a civilian Libyan aircraft over Israel in the mid-1970s. After vowing to retaliate against the Israelis, Kadafi reportedly provided Jibril with millions of dollars to buy gliders for suicide missions.[346] The PFLP-GC also reportedly received $25 million annually in exchange for their aid to Libyan overseas operations.[347] Since 1986, Libya also supplied the group with additional funds and logistical bases, as well as providing SA-9 Gaskin surface-to-air missiles, and the motorized hang-gliders that were used in Operation Kibya.[348] The relationship went so far that PFLP-GC pilots even became on-loan commissioned officers for the Libyan air-force during the country's war with Chad.[349] However, following Kadafi's public renunciation of terrorism in 1989, the group was forced to shut down its training camps in Tripoli

and leave. Only two months later, Jibril met with Iranian Foreign Minister Ali Akbar Velayati and, soon thereafter, the PFLP-GC became the first Palestinian group to receive funds from Teheran, including a reported $10 million to prepare a revenge operation for the abovementioned downing of Iran Air flight 655.[350] To this day, however, Jibril still denies receiving millions from Iran, stating that "this is an exaggeration. Iran does not give us material support, but provides [certain] limited and valuable items . . . Our relationship with Iran is not based on money. The foundation of this relationship is the political position."[351] Nevertheless, PFLP-GC's dependence on state sponsorship including Iran's is clear.

At the level of human resources, the PFLP-GC was a highly skilled organization, which despite its lack of overall size possessed around 250–500 committed full-time fighters. According to Katz, Jibril sought "innovative and sharp minds just as his mentor Habash, but like Arafat he also looked for people who could take orders and were prepared to sacrifice themselves."[352] Since the date of its founding the PFLP-GC also had considerable talent at the top level, mainly in its leader Jibril, the operations chief Abu Abbas, and chief bomb maker and ordnance office Marwan Kreeshat – the inventor of the altimeter bomb. Even though some of the top members would be lost in the PLF split, the group would re-enforce itself in 1985. First, there was the breakup of Abu Ibrahim's May-15 organization, which resulted in the influx of experienced bomb makers from this group into PFLP-GC ranks.[353] Another source of outside talent was the notorious hostages-for-prisoners exchange during the same year. Although only 271 of the 1,150 released terrorists were at the time PFLP-GC members,[354] many of the remaining men would later also join the group. Among them were Dalkamoni and Abdel Ghandanfar, the two operatives who became instrumental in setting up a web of bank accounts, safe houses and operatives in Frankfurt, Bonn, Rome, Stockholm, Barcelona, Athens, Malta, Cyprus and Yugoslavia.[355] Another person who had allegedly been operationally important for the PFLP-GC was Jibril's son Jihad, the alleged mastermind of Operation Kibya who was killed in May 2002 in a car bomb explosion in Lebanon.

Overall, the PFLP-GC case study confirms that the groups most likely to innovate are state sponsored entities, simply because of the greater access to funds and outside assistance, but also due to the ability to invest full-time energy into operational as opposed to fundraising activities. At the level of material resources, the group had financial and logistical support that by far exceeded its operational capacity in the terrorist realm. At the level of human resources, the PFLP-GC was also comparatively well off, since the core of the group comprised former army officers and demolitions experts, whose military training and bomb-making skills provided the PFLP-GC with ready-made capability. On the other hand, the fact that the PFLP-GC was such a small organization runs contrary to the hypothesis that a group's innovativeness is positively correlated with its size. In this sense, the

hypothesis that it may not necessarily be the size and full-time status of the group, but rather the qualitative attributes of the cadres that will determine its innovation potential, also seems to be confirmed in this case study.

Openness to new ideas

With regards to this variable, it has been hypothesized that organizations that are in 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.

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 technological innovation. This reality did not pertain to the PFLP-GC at all. Since the group was not an underground organization in Lebanon, Syria and Libya, the group's members were not secluded from the technological reality; on the contrary their close contacts with sponsor states have kept them more informed about military technologies than most other groups. As a result, the absence of obstacles derived from the first level of this variable correlates positively with PFLP-GC's innovative tendencies.

At the second level it has been hypothesized that in order for innovation to occur, the leadership has to be open to suggestions from below and individual members must not be afraid to put forward their proposals for adopting new methods. In the case of PFLP-GC, which was characterized by a highly centralized structure and a powerful and highly confrontational leader, such widely open bottom-up communication links were unlikely to exist. At the same time, 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 initiate the innovation process.

At the final level of this variable characterized by an organization's approach to risk taking, the PFLP-GC had a positively correlating record. At the operational stage, the group had frequently opted for innovative means of attack and was undeterred by the lack of success. In fact, all of the spectacular operations that have made the PFLP-GC a notorious organization have at the same time included significant failures; not in a single instance did the spectacular plan work out as was originally planned. Nevertheless, even when consecutively failing, the group opted for another innovative substitute, as opposed to switching to less challenging attacks in order to restore operational confidence. With regards to physical risks associated with innovation, it remains unknown how many bomb makers the group had lost to weapons experimentation throughout the years. At the same time, the PFLP-GC had for its time shown an unusual willingness to sacrifice its operatives during

missions, and was even responsible for the first de facto suicide bombing in the Middle East during its attack on Kiryat Shmona. On the whole, the PFLP-GC leadership showed a high level of openness to new ideas, was willing to take high risks with regards to the threat of operational failure, as well as the risk of sacrificing its own operatives. The combination of these factors provided a fertile ground for Jibril's innovative tendencies, although it again served more as a supporting factor, as opposed to a causal one.

Overall, the influence of the "openness to new ideas" variable seems positive. Due to the high level of state sponsorship and the ability to operate freely in at least four countries, the PFLP-GC was in close contact with modern military and dual-use technologies. Further, the group demonstrated 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. And while open communication links in order to facilitate a bottom-up approach to innovation were not present, Jibril's preference to pursue innovative means and his high level of authority clearly compensated for this absence.

Durability

With regard to the "durability" variable it has been hypothesized that longer-lasting organizations are likely to have more time to progress in terms of their motivation to innovate, as well as the opportunity to gather enough experience to facilitate success of this process. At the first glance this assertion seems to hold in this case study, as with nearly 40 years of existence the PFLP-GC ranks among the longest-lasting terror organizations in the world. At the same time, however, the group has demonstrated innovative tendencies right from the outset, with its most innovative device being created only two years into the organization's existence. In the absence of a clear innovational trajectory over time, it is difficult to assign a causative or even a supporting function to the "durability" variable.

Nature of the technology

The hypothesis associated with this variable has asserted that the less challenging the weapons technologies that are the object of innovation would be, the greater the chances of success in this process. As mentioned above, one would be hard pressed to cite a PFLP-GC spectacular that did not involve a significant failure in at least some aspect of the original plan. At the same time, the group did become famous for its operational capabilities even despite this fact, being the first and only group to succeed in downing an airliner with an altimeter device. The nontrivial nature of such an endeavor can be documented by the fact that despite the technological advances that occurred over the next 35 years, only two terrorist entities – the Unabomber and the May 15 Organization – have succeeded in

constructing and using this type of a device. Neither succeeded in actually bringing down the respective aircraft, underscoring the comparatively high level of sophistication involved in PFLP-GC's Swissair operation. By another comparison, even Oplan Bojinka, the highly complicated AQ plot to blow up 12 airliners in mid-course flight, counted on a technology that was much less complex. In this sense, given the technological barriers the group had to overcome to carry out its highly ambitious plans, it is no surprise that the PFLP-GC had a fairly high failure rate, thus confirming the original hypothesis associated with this variable.

Conclusion

No group of the 1970s and 1980s has come even close to matching the innovativeness of Ahmed Jibril's PFLP-GC. The use of the altimeter bomb, the concept of using airmail and mules to smuggle it on board commercial aircraft, the use of hang-gliders for infiltration, and the various letter bombs and booby traps have all combined for an arsenal rarely seen in the realm of even today's terrorist groups. As observed throughout this chapter, several variables in particular have served as the key underlying factors responsible for PFLP-GC's highly innovative tendencies. The first such factor was the *absence* of distinctive ideology, which led to the adoption of daring and highly innovative military operations as a means of achieving distinct group identity. This need was further augmented by the high density of the operational theater in which the group operated, leading to a high level of competition among the different Palestinian factions. In light of the absolute lack of ideological distinctiveness, complete dependency on state sponsors and Jibril's high ambitions to become the top leader of the Palestinian liberation movement, the PFLP-GC's need to resort to innovation as a means of achieving visibility and prominence was strengthened even more. Together with the expressive emphasis placed on innovative spectacular operations and the pride derived from military successes and overcoming security countermeasures, these factors combined for a matrix of characteristics that triggered the decisive motivational push toward innovation. In addition, the ample human and material resources acquired via state sponsorship and the favorable security environment further aided in creating advantageous conditions for the success of this process. One more important lesson that we can learn from this case study is that operational grandiosity and innovativeness are by no means a guarantee of popular success: despite its touch for spectacular operations, the absence of any ideological distinction or a concrete alternative plan, along with the unconditional allegiance to Syria and the absence of a stronghold in Gaza and the West Bank, were all factors responsible for the fact that the PFLP-GC always remained only a marginal force in the Palestinian liberation movement.

With regard to the potential use of CBRN, the early PFLP-GC was without question among the most likely historical candidates for this type of

endeavor, given its unusually indiscriminate targeting logic, desire for inflicting maximum casualties, unparalleled technological capabilities and inherent innovative tendencies. There are two principal reasons why the PFLP-GC never resorted to CBRN use despite possessing these alarmingly favorable characteristics. The first was the fact that Jibril's attachment to innovation was geared more toward state-like conventional military technologies and special operations, as opposed to the idea of unconventional weapons. Given the fact that CBRN use by states historically remains an extremely rare occurrence, the critical push for proceeding via this route was missing. Even more importantly, it may have been the dependence on state sponsors that prevented the group from exploring the CBRN option. Even though all PFLP-GC's state sponsors possessed the necessary capability in the chemical (and some even in the biological) weapons realm, the group's use of such technology would immediately signify state involvement, likely triggering a massive retaliation against the sponsoring state. It thus appears that state sponsorship, which is based on using a proxy to punish a stronger opponent while remaining hidden behind the veil of deniability, is somewhat paradoxically a stabilizing force when it comes to the prospects of CBRN terrorism, as opposed to being a volatile one. This assertion seems to be supported by the fact that there has not been a single confirmed case of CBRN technology transfer from a state sponsor to a terrorist group.

5 Riyadus-Salikhin Suicide Battalion

The Riyadus-Salikhin Suicide Battalion (RAS) was a Chechen Islamist terrorist organization founded by Chechen warlord Shamil Basayev in the summer of 2002, just prior to the infamous hostage-taking operation in the Dubrovka Theater in Moscow. Since this date, the RAS had become one of the most spectacular and lethal terrorist organizations in the world, renowned for its cunning ability to infiltrate enemy environment and meticulously prepare and synchronize their operations. At the tactical level, Basayev was the first to engage in large-scale barricade hostage-taking operations involving a large commando unit of suicide fighters, the first to explore the potential of radiological terrorism, the first to resort to sending live video footage of beheadings of Russian soldiers to the media, and the first among Islamists to rely almost exclusively on female suicide operatives. In the time period between its formation in the summer of 2002 and its last attack in Beslan in 2004, the RAS perpetrated over a dozen spectacular operations, which resulted in the deaths of more than 1,100 people and the injury of many more. Considering the fact that only 28 attacks in history have killed more than 100 people, RAS' average casualty rate of nearly 100 fatalities per attack ranks the group among the most lethal terrorist organizations ever. By another comparison, the number of RAS-inflicted fatalities in the first 24 months of its operation is over *three times higher* than the number of all Israelis who died during the same time period in terrorist attacks perpetrated by *all Palestinian terror groups combined* (331)![356]

History of operational progression

In order to understand the operational progression of RAS, it is imperative first to follow the evolution of the group's leader and operational chief, Shamil Basayev. Basayev's involvement in terrorist activity dates back to November 1991 when he and two friends hijacked a Russian TU-154 aircraft from Mineralnye Vody to Ankara, threatening to blow up the plane if Russia did not lift the state of emergency in Chechnya. Basayev's next adventure awaited in Abkhazia, where he and a group of several dozen of his Chechen fighters gained the reputation of an extremely brutal and successful fighting

force. Following the December 1994 invasion of Russian troops to Chechnya and the subsequent outbreak of the first Russian–Chechen war, Basayev was the first Chechen leader to advocate an expansion of the war to Russian territory. Then on 14 June 1995, just weeks after a Russian bomb destroyed Basayev's home in Vedeno killing several members of his family including his wife and children, the warlord personally led a 142-strong commando unit for "Operation Jihad" in Moscow (or the Mineralnye Vody Airport) to "stop the war or die." The team made it all the way to the Russian town of Budyonnovsk, but having run out of bribe money the group was arrested and brought to the police station.[357] Once there, previously undiscovered fighters emerged from three Kamaz trucks and with swift action seized some 2,500 hostages in a hospital, demanding that Russian forces pull out of Chechnya.[358] To resolve the crisis that unfolded, the responding Russian forces led by the elite Alpha commando unit assaulted the Chechen positions but were forced to retreat, partially due to the terrorists' use of hostages as human shields.[359] The stand-off continued for another five days, after which Basayev's men negotiated with then Prime Minister Chernomyrdin a free passage out of Budyonnovsk, as well as an announcement of a temporary ceasefire and a declaration of the Russian commitment to serious negotiations with Chechen representatives. The casualty figure of the Budyonnovsk siege was 166 hostages killed and 541 injured.[360]

Budyonnovsk was significant for several reasons. First, it was the first Chechen operation deliberately targeting Russian civilians. Commenting on the objectives of the siege, Basayev stated: "We wanted to show to the people in Russia that this war is very close to them, too; we wanted them to see what blood looks like, and how it is when people are dying. We wanted them to understand it, to wake up."[361] This statement is crucial, as it effectively summarizes the entire strategic logic later adopted by the RAS. The second point of significance lies in the fact the at the time of its execution "Operation Jihad" was the largest barricade hostage-taking operation in history, by the number of both attackers and hostages involved. Third, the X-ray machine taken in the Budyonnovsk raid served as the source of cesium-137, which Basayev later used for the first modern act of radiological terrorism; five months after Budyonnovsk Basayev directed a television news crew to a 32 kg parcel containing 10–50 mCi of the radioactive isotope, threatening that many such containers were placed around Moscow and that they could be detonated at any time.[362] In the future, Basayev would use this type of psychological warfare on many occasions, threatening attacks with not only radiological, but also chemical and biological weapons. And finally, in Budyonnovsk Basayev succeeded in forcing the Russians into a humiliating position of giving in to his demands, a development that not only gave Basayev a high level of confidence in the effectiveness of the tactic used, but also shaped Russia's reactions to similar incidents in the future.

Following the end of the first Chechen war in which Basayev relied mainly on military means, the conflict reached its second phase in 1999 after

two armed incursions of Basayev's fighters into the neighboring republic of Dagestan, and the apartment buildings bombings that killed nearly 300 and injured more than 550 people.[363] After the subsequent invasion of Russian forces to Chechnya, the conflict saw a radically changing nature of the Chechen resistance, which transpired mainly by increased Islamization and the growing influence of radicals, especially Basayev. Both of these processes were naturally reflected in the means that would be used in the fight against the Russians. In the most important development, Basayev made public statements about setting up a battalion of suicide bombers and on 7 June 2000 the first such attack took place after Khava Barayeva and Luisa Magomadova drove a truck of explosives into the temporary headquarters of an elite Special Forces (OMON) detachment in the village of Alkhan Yurt, Chechnya, killing two (or 27) officers.[364] In the next two years at least eight other suicide operations took place against Russian military targets in Chechnya, including a coordinated attack of five suicide truck bombers who blew up military checkpoints and a police dormitory killing 33 people and injuring 84, and an assassination of the Russian military commander of Urus-Martan.[365] In about one-half of the attacks the suicide bombers were women, a phenomenon previously absolutely alien to Islamist terrorist organizations.

Another turning point from the tactical perspective was the August 2002 meeting of the Military *Shura*, where Basayev proposed an attack on the "lair of the enemy in the heart of Moscow," also announcing the founding of the RAS as a new entity created specifically for this purpose.[366] It appears that at this time the RAS was meant to be a single unit for an ad-hoc operation, as opposed to an actual group. The original plan was to perpetrate four major acts of terror in Moscow "with explosions in densely populated places as part of a frightening action," which should have been completed by the largest action – the seizure of the State Duma.[367] However, following two failed bombing attempts in Moscow Basayev modified his plan, and on 23 October 2002 a group of at least 43 armed men and women took 979 people hostage at the Dubrovka Theater in Moscow. The classic Basayev-style hostage-taking operation lasted for 58 hours and ended in a controversial rescue operation that resulted in 129 dead hostages, most of whom died due to exposure to a gas used in the assault.

According to the Chechens' own words, preparations for the "Nord-Ost" operation took two to three months. Six weeks before the actual raid, some of the team's members traveled to Moscow and secured jobs as construction workers at the Central Station II nightclub within the theater complex. During those six weeks, the "workers" conducted detailed casing of the location, stored explosives and arms in the club's back rooms, and on several occasions also attended the featured musical. Once in the theater during the attack, the commando unit followed the Budyonnovsk blueprint to the last detail including the demand of an unconditional pullout of Russian forces from Chechnya, the wiring of explosives in the corridors and the deployment

of snipers in strategic perimeter positions. A new addition was the employment of a large explosive device containing roughly 110 pounds of TNT and 19 suicide belts placed around the waists of female terrorists.[368]

What were the objectives of the raid? The demands appear straightforward, but based on previous Russian responses to similar incidents in Budyonnovsk and Kizlyar, the RAS team was 100 percent sure that sooner or later the Russian elite forces would launch an assault.[369] The apparent goal then was to achieve maximum casualties among the hostages as a result of the *rescue operation*, in an attempt to "show to the whole world that Russian leadership will without mercy slaughter its own citizens in the middle of Moscow."[370] If this was indeed the goal then the operation succeeded beyond expectation, as all but three of the 129 fatalities were victims of the rescue attempt. However, Basayev appears to have grossly miscalculated the reaction of the world community to the "Nord-Ost" operation, which in the wake of 9-11 and the skillful Russian spin doctoring ended up overwhelmingly siding with the Russians. This fact would later be responsible for the immense radicalization and escalation of the RAS campaign, in which the group had apparently discarded any consideration for international public opinion. In a statement published immediately in the Dubrovka aftermath, Basayev was quick to condemn the world for its "hypocrisy," stating that if the world had "one tenth of the sympathy [expressed for Dubrovka victims] for the Chechens, the war would have ended long ago." Also, Basayev officially resigned all his posts, duties and obligations except for the post of *Amir* of the RAS, which had now transformed from an ad-hoc unit into a permanent group focusing solely on terrorist operations against civilian targets. And finally, Basayev also made a gory promise: "The next time, those who come won't make any demands, won't take hostages. There will be just one main goal: annihilation of enemies and inflicting upon the enemy the maximum possible damage."[371] In the next 24 months, he would live up to this promise.

RAS struck again on 27 December 2002, when a twin suicide truck bombing destroyed the offices of the pro-Russian Chechen government in Grozny, the most heavily protected target in Chechnya.[372] The attack leveled the building killing over 80 people and wounding 210, but failed to kill the intended target, the head of the pro-Kremlin Chechen administration Akhmad Kadyrov. According to investigators the three suicide bombers rode in Kamaz trucks with military license plates, wearing Russian military uniforms and flashing military ID's at checkpoints. Shortly after the attack Shamil Basayev claimed responsibility, asserting to have personally detonated the bomb by remote control.[373]

In the next five months after the Grozny carnage, Basayev took his time preparing for "Operation Whirlwind," a massive terrorist offensive designed to create an atmosphere of perpetual terror leading up to the Chechen presidential election of October 2003.[374] On 12 May 2003, three suicide bombers drove a truck bomb made of agricultural nitro, cement and aluminum

powder into the headquarters of the Federal Security Service (FSB) in the town of Znamenskoye.[375] The blast, equivalent to 1.5 tons of TNT, destroyed the second most heavily protected building in the region killing at least 60 and injuring over 300 people. The results could have been a lot worse, but the truck could not fully reach the building due to a barrier that had been installed just two days before the incident.[376] According to some sources, the attack occurred in the light of the March referendum initiative in which 90 percent of Chechen voters approved a new constitution confirming Chechnya's status as an internal Russian republic; others have suggested a link between Znamenskoye and the al-Qaida affiliated bombings in Riyadh and Casablanca, which occurred during the same week. According to investigators, however, the targeting of Znamenskoye had a more specific objective than simply killing a lot of people – the main purpose allegedly was to eliminate Mayerbek Khusiyev, the man in charge of the investigation of three crimes perpetrated against family members of former Chechen leader Doku Zavgayev, and the destruction of all evidence related to the investigation.[377] Then only two days after Znamenskoye at least 18 people were killed and 43 injured when two female suicide bombers dressed as journalists detonated a bomb hidden in a video camera during a religious festival in Ilaskhan-Yurt. Their ultimate target was again Kadyrov, who once more managed to escape unhurt. Both the Znamenskoye and the Ilaskhan-Yurt operations are significant in that they demonstrated RAS' completely indiscriminate nature, documented by the group's willingness to produce a high number of casualties even in operations where the objective was the assassination of single individuals. In many ways, these two attacks were a sign of things to come.

On 5 June 2003 a woman dressed in a white overcoat killed 18 people when she detonated her explosive belt while trying to board a bus carrying Russian airmen to their base in Mozdok, North Ossetia, Russia's main operating base in the region. Only two weeks later, a man and a woman driving a suicide truck attacked the MVD multi-story police building in Grozny, but failed to penetrate the inner perimeter. The explosion that occurred 300 feet from its target still managed to kill six and injure 36 more.[378] Then on 5 July 2003, the focus of "Whirlwind" shifted on soft targets in the heart of Russia, as two female suicide bombers detonated their explosive belts killing 14 and injuring 60 others at the open-air rock festival at Moscow's Tushino airfield. The casualty levels again could have been higher but one of the detonators malfunctioned failing to detonate the main charge and killing only the bomber. Other similar setbacks followed when five days later another female suicide bomber was arrested after intentionally failing to detonate her explosive in Tverskaya Street in central Moscow. A policeman was killed later while trying to disarm the bomb. In the following three weeks RAS experienced additional failures in Grozny, where in the period between 17 and 27 July four suicide plots were foiled.[379]

Undeterred by these failures "Operation Whirlwind" continued, return-

ing to Mozdok on 1 August 2003, where two suicide bombers drove an explosive-laden truck into the 58th army military hospital, killing 50 and injuring dozens.[380] The explosion produced a large brown cloud and a sulfuric smell, suggesting saltpeter was used to produce the explosive mixture.[381] Another suicide truck bombing attempt took place in the neighboring Ingushetia on 15 September 2003, but the 600 pound truck bomb detonated 16 feet short of the newly constructed FSB building in Magas, killing "only" three people.[382] The masterminds of the attack were the self-described "Ingush Chief of Staff" of the RAS Ali Taziyev (a.k.a. Magomed Yevlovev), and Ruslan Khuchbarov (a.k.a. Colonel) – the same men who trained suicide bombers for the operations in Dubrovka and Mozdok, and who would later become the leaders of the raids in Nazran and Beslan, respectively.[383]

Despite these eight attacks which killed over 240 people and the threats of further violence on Election Day, the month of October was a quiet one and Kadyrov defended his presidential seat by a suspiciously comfortable margin, having received 81.1 percent of the popular vote on a turnout of 83.46 percent.[384] The Kremlin immediately used this outcome as clear evidence of the success of the government's policy in Chechnya, while skeptics countered by pointing to the many irregularities associated with the election. To the surprise of many, Basayev remained quiet.

Then on 5 December, a suicide bomber with grenades strapped to his legs and carrying a backpack shrapnel bomb made of 66 pounds of TNT was detonated by remote control onboard a commuter train in the Stavropol region in southern Russia, killing 44 people and wounding 150 others.[385] Four days later, six people were killed and another 14 wounded in a suicide bombing outside Moscow's National Hotel – an attack the apparent target of which was the Russian Duma. In late December Basayev claimed responsibility for both attacks, saying that the "successful bombings were planned military operations in response to Russian aggression, carried out by fighters of [RAS] brigade."[386] Basayev also denied Russian claims that the attacks were meant to disrupt the Russian parliamentary elections. In total, the RAS had killed over 300 civilians in 2003 alone.

The year 2004 would end up being even bloodier. On 6 February, the RAS was suspected of carrying out what appeared to be a suicide bombing in the crowded Moscow subway, which killed 41 people.[387] Then on 9 May 2004, the RAS launched an operation that will be remembered as one of the most sophisticated terrorist assassinations in history – the killing of President Kadyrov during the public Victory Day parade at the Dynamo Stadium in Grozny. Having failed to kill Kadyrov in 12 previous attempts the RAS had formed a special 40-member team, which managed to infiltrate the stadium four weeks before the event disguised as a construction team responsible for the repair of the Boxing Ring Hall located just beneath the VIP box. The team successfully planted two bombs in the ceiling of the boxing hall, and placed another trotil-hexane bomb packed inside an

artillery shell into the concrete structure near the VIP section. Anticipating that the security services would be jamming remote control signals, the terrorists wired a detonation cord under a thin layer of plaster for some 100 meters from the VIP section where an activation switch was later attached to detonate the bomb. Further, the RAS team also planted three insurance bombs, each with its unique mode of detonation in order to circumvent any possible countermeasures.[388] As a result, the RAS succeeded in killing Kadyrov along with 23 other people, including the head of Chechnya's state council, the chief of state security and the finance minister – despite the stringent security arrangements at the parade which involved the use of metal detectors, sniffer dogs and remote signal jammers.[389]

In an e-mail statement Basayev boasted that the Kadyrov assassination "would go down in the history of the art of military sabotage," also threatening that the RAS was ready to launch a series of special operations that would be "very painful for the Putin regime and [would] take [Russia] by surprise."[390] Basayev delivered on 21 June, when he personally commanded more than 200 of his fighters in the attack on the now former Ingushetian capital of Nazran.[391] The attackers wore local police uniforms and set up roadblocks at which they stopped and killed the real police officers who raced to reinforce their colleagues. Nearly 100 people including several ministers died before the fighters withdrew and disappeared in the largest Chechen operation since 1999. This was followed by an unsuccessful attempt to assassinate interim president Sergei Abramov on 13 July, and another Nazran-style raid in Grozny on 21 August, resulting in at least 22 fatalities.[392] Only three days later the RAS launched its "week of terror," the scale and horror of which would rival 9-11.

On 24 August 2004 two female suicide bombers detonated hexogen bombs on board two domestic flights originating at Moscow's Domodedovo airport, killing all 89 passengers and crew. This was the first time since 1970 that two aircraft were coordinately bombed in mid-course flight, and only the third historical incident in which suicide bombers were used to attack aircraft. The planners apparently studied their targets well, as suggested by the small amount of explosives used and the fact that both women sat by the window just nine rows from the tail, which is generally considered to be the most vulnerable part of the aircraft.[393] Then on 31 August, another female suicide bomber detonated herself at the entrance to a Moscow subway station, killing ten other people. This attack occurred only two days after another round of Chechen presidential elections, in which another Kremlin-backed candidate became Kadyrov's successor. And finally, 1 September 2004 was the date of operation "Nord-Vest," in which terrorists took more than 1,200 hostages on the first day of school in Beslan, North Ossetia, demanding the complete Russian military withdrawal from Chechnya.[394] Three days later the Russian security forces stormed the school resulting in the deaths of at least 331 people, half of them children.

The *modus operandi* was a familiar one: a heavily armed 50–70 member

team dressed in camouflage, two to four women wearing suicide belts, the use of mines and booby-traps to secure the site, the strategic positioning of snipers, the infiltration and storing of weapons at the location months before the attack – Beslan had Basayev's fingerprints all over it.[395] This time the team was unusually multi-ethnic, being composed mainly of Ingush and Chechens, but also Ossetian, Dagestani, Russian and Algerian nationals.[396] This slight change in *modus operandi* reflected the goal of the operation, which according to the only surviving terrorist was to provoke violent retaliations by the predominantly Orthodox Christian Ossetians against the Muslim Ingush minority in the province.[397] These attacks were supposed to provide the spark for a large-scale confrontation between the two groups as a part of the strategy of expanding the Chechen conflict throughout the entire North Caucasus region. In light of this purpose, attacking in Ossetia with a team featuring a majority of Ingush attackers was a good strategic choice, since more than 600 people had already died in ethnic clashes between these groups in 1992.[398]

The Beslan crisis and its goals definitely confirmed the increasingly apocalyptic nature of Basayev's thinking. In the aftermath, Basayev in his typical fashion tried to put the blame on the Russians by saying that he regretted that "so many children died at the hands of the Russians," but also emphasized that he did not regret the seizure of the school.[399] Unlike in Dubrovka, however, he did not make an attempt to plead for international sympathy; on the contrary Basayev threatened to attack "citizens of states whose leaders support Putin's Chechen policy," also proclaiming that "this world will sooner be set on fire than we refuse to fight for our freedom and independence!"[400] In a January 2005 interview, Basayev confirmed his intention to launch more "Beslan-style" operations in the future.[401] However, following the succession of the slain separatist president Alsan Maskhadov by the more radical Abdul Khalim Sadulayev, Basayev accepted the position of first deputy prime minister in Sadulayev's government effectively pledging allegiance to the new president's strategy of expanding the Chechen conflict throughout the region, while refraining from the deliberate targeting of civilians. As a result, Basayev's operations focused more on military targets and large-scale Nazran-style operations, such as the 13 October 2005 attack against the Kabardino-Balkarian city of Nalchik, in which more then 100 members of the security forces died.[402] Then on 10 July 2006, Basayev was killed in a possibly accidental explosion of an explosive-laden truck near the Ingush village of Ekhazhevo, effectively ending the RAS' existence.

Analysis

Due to its originality with regards to employing large-scale suicidal hostage-taking operations, the systemic use of female suicide bombers, past involvement in radiological terrorism, indiscriminate targeting logic, extreme lethality, the use of suicide bombers on airplanes, the cunning

ability to infiltrate enemy environment, and in general a highly ambitious *modus operandi*, the RAS falls into the category of the most spectacular terrorist organizations of all time. The reasons behind the RAS' extravagant approach will be explored in further detail in the upcoming section, where the variables hypothesized to be the key factors influencing the level of terrorists' innovation will be scrutinized.

Role of ideology and strategy

The RAS' ideology and strategy played a significant role in triggering the group's innovative tendencies, in the sense that the organization's operational preferences corresponded directly to the ideological and strategic emphasis on large-scale attrition inside the Russian territory.

The RAS' ideology could in most generic terms be described as fundamentalist Islamism. To a great extent it is this religious dimension that distinguishes the RAS and its affiliate groups from the more secular elements of the Chechen resistance, which emphasize the national liberation aspect of the struggle against Russia. In Chechnya, Basayev and his associates are commonly referred to as Wahhabis or the "bearded ones," a label that does not by any means bear a positive connotation, given the fact that many of the Wahhabi elements have had a history of violently enforcing contributions for the jihad from the local population.[403] This may be one of the reasons why Basayev repeatedly denied being a Wahhabi: "None of us are Wahhabis" he claimed.[404]

Historically, Basayev's ideological progression is rather inconsistent, considering that he has in the past not only fought on the Russian-supported Abkhazian side in the separatist campaign against Georgia, but has even personally protected president Yeltsin with two grenades in his hand during the Communist party coup attempt of August 1991. Belonging to the traditional Naqshbandi Sufi order, Basayev had shown little interest in radical Islam, until he "learned that he was leading a jihad from Russian NTV television," as one Moscow-based "Wahabi" preacher had sarcastically commented.[405] In order to understand Basayev's ideological and strategic mindset, it is particularly useful to focus on his various influences and role models such as Ernesto "Che" Guevara, whose poster Basayev kept on the wall of his dorm room while he was studying at the Land Tenure Engineers Institute in Moscow and from whom Basayev learned the basics of guerilla strategy.[406] An even stronger influence was Imam Shamil, the historical Chechen figure who between 1830 and 1859 led the forefathers of today's Chechens in a bloody struggle against Tsarist Russia, later establishing the first Islamic state in the Caucasus. Basayev took great pride in being named after Imam Shamil, and his incursions into Dagestan and Ingushetia demonstrated the desire to re-establish Shamil's Islamic state ranging from "the Black to the Caspian seas." Another clear influence in terms of ideology has been Samir Saleh Abdullah Al-Suwailem a.k.a. Omar Ibn-al-Khattab,

the Saudi *mujahid* and Afghan veteran alongside whom Basayev had fought in Nagorno-Karabakh and Chechnya for almost a decade. Under Khattab's influence, Basayev's thinking gradually became integrated into the global jihadi agenda, as demonstrated by the 1999 invasion of Dagestan with the proclaimed goal of "freeing [the province] of Zionist influences."[407] And while the RAS has always carefully defined its war as one of national liberation, amid the growing disenchantment with the lack of overt international sympathy for the Chechen cause after Dubrovka, the group rapidly became imbedded in the global jihadi agenda even more.

Like ideology, Basayev's strategy has also been an evolving phenomenon. For almost a decade Basayev has argued that time was on his side, anticipating that the longer the Russian occupation of Chechnya persisted, the greater pressure at both the domestic and international level would be created to end the war. A strong component of this strategy was the emphasis on casualties, summed up in Basayev's observation that "[the Russians] can't handle heavy troop losses. They know that if it happens, the Russian people will eventually rise up against the war."[408] However, Basayev's patience with the inaction of the international community seems to have run out over time, and Basayev decided to make one last desperate attempt to capture international sympathy with the hostage-taking operation in Dubrovka. Following a miserable failure in this regard, Basayev's strategy changed radically. First, there was a shift toward an increased emphasis on terrorist, as opposed to guerilla operations, and the RAS was established as a permanent group dedicated specifically to this purpose. This shift revealed the increasingly apocalyptic nature of Basayev's campaign, both in terms of intensity as well as targeting. In this regard, Basayev's long-existing strategic emphasis on attrition remained constant, but had gradually shifted from military to civilian targets, leading all the way up to the deliberate targeting of schoolchildren in Beslan with the goal of provoking a large-scale war in the entire Caucasus. Second, suicide operations against civilian targets, especially ones utilizing female suicide bombers, became Basayev's principal weapon of choice in the Dubrovka aftermath. The RAS had adopted the classical underdog explanation of this action stating: "we have no warplanes, so we will be blowing ourselves up in Russian cities."[409] Suicide bombings thus became not only the way of producing a maximum amount of casualties; they also represented the ultimate form of protest against the current conditions, especially when the bombers were women.

After Beslan, Basayev described the RAS strategy as "the worse, the better," arguing that "difficulty is followed by ease, and the harder it is for [the Chechens] today, the faster this relief will come, the faster victory will come. [The Chechens] are laying naked bare nerves, and forcing the whole world to remember that there is still a war in Chechnya, although Putin lies and claims there is none."[410] This statement also reveals another core element of the RAS strategy, being the deliberate embarrassment of Russian

leadership mainly through the effective use of counterpropaganda, the goal of which is to prove that the Russians are distorting the facts about the status of the war in Chechnya. This purpose was often fulfilled by the use of high pressure hostage crises in the Russian territory with the goal of not only forcing the Russian leadership to choose between unattractive options; even more importantly these incidents aimed to produce a high level of casualties with the goal of subsequently pointing the finger at the Russian leadership for incompetence and cruelty.

Overall, there seems to be a relatively high level of correlation between the RAS' operational preferences and the group's ideology and strategy. Given the fact that the RAS' goal was to exert the maximum level of attrition against the Russian civilian population preferably in the heart of enemy territory, the group had to design adequate methods of disguise and infiltration, as well as high pressure and mass-casualty tactics in order to fulfill its strategic objectives. In other words, the methods used by the RAS closely reflected the ideological and strategic preferences of the group, confirming the hypothesis that organizations whose ideology identifies an ideal outcome with regards to definite objectives, and which prescribes a time frame and a specific course of action for reaching those objectives, are likely to demonstrate a higher level of tactical and/or technological innovation than organizations with vaguely defined goals, low sense of urgency and a low level of strategic planning.

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 variables that show a high level of relevance to the RAS' innovation patterns. At the first level of the security environment the RAS had benefited greatly from operating out of the mountainous district of Vedeno where the group was unchallenged by the security forces, providing enough breathing space in terms of conducting experiments and training. Further, the enormous level of corruption in Russia had also strongly aided the success of the RAS operations on enemy territory. For instance, according to Aukai Collins who fought in Chechnya in the mid-1990s, a $1,100 bribe was enough to bring him and three other Arab *mujahideen* to the country through a series of Russian military checkpoints.[411] Further, according to General Shamanov, Basayev's unit's retreat out of Grozny during "Operation Wolf Hunt" was also facilitated by a bribe, which in this case amounted to $100,000.[412] Overall, the RAS made excellent use of the corruption in Russia in its operations, transporting dozens of its operatives to Moscow, infiltrating target locations weeks before attacking, and managing to overcome police vigilance in the most glaring ways. For instance, the Moscow apartment of the Tushino airfield bombers had been raided by the police several days before the attack, but the search officially turned up nothing.[413] Similarly, the two

women who blew themselves up on airplanes in August 2002 had been selected for special screening prior to boarding the aircraft, but managed to bribe their way through the security checkpoint.[414]

At the level of providing increased motivation and ability to innovate on the part of groups engaging in frequent reciprocal clashes with the enemy on the battlefield, the "dynamics of the struggle" also appear highly relevant. Basayev and his colleagues had been engaged in over a decade of guerilla warfare against the Russian army in Chechnya, Abkhazia, Tajikistan, Nagorno-Karabakh and Dagestan. These engagements helped the RAS in accumulating an enormous level of combat experience, which resulted in a high standard of knowledge, optimism and ambition. Chechen groups in general have shown an unusually cunning ability to learn from past experience, which has been one of the most dominant reasons behind their military successes against the Russian army. Over the years, the Chechens have learned the Russians' techniques to the last detail. For instance the Russian army uses reconnaissance aircraft equipped with heat vision equipment, which allows the detection of people or bases in the mountainous areas. To counter this technology, the Chechens have learned to make special awning out of mirrored reflective film, two big pieces of which are used to make a bag which is then filled with water.[415] People and even campfires hidden under such an awning then become invisible by heat reconnaissance tools. Another type of innovation that has been bred by the continuation of this guerilla struggle has included various methods of booby trapping arms depots and enemy corpses, as well as inventions of new weaponry. An example of this is the compact "Khattab grenade" made from the ammunition of rifle-mounted grenade launchers, or the light Lom-30 sniper grenade launcher, which can allegedly be used to fire at low-flying aircraft and enemy positions for distances up to 2,000 meters.[416]

Overall, the hypothesis that organizations with guerilla characteristics, such as frequent reciprocal clashes with enemy armed forces and control of a territorial stronghold, are likely to be both more willing and more capable to innovate than urban terror groups that are confined in their training and operations to the municipal setting shows a high level of relevance in the RAS case study. Due to control over safe areas where the group can safely plan and prepare its attacks along with the high level of corruption in the Russian security apparatus, the RAS possessed two very important ingredients that helped them succeed in their spectaculars, many of which would simply not be possible to carry out in a more stringent security environment. Further, the combat experience of RAS personnel had taught the group to adapt and improvise, also providing a high level of understanding of enemy strengths and weaknesses through everyday combat operations. This knowledge base has then provided an invaluable foundation for terrorist operations as well, in terms of reflecting the fighters' experience with handling weapons, building various booby traps and strengthening their improvisational skills under pressure.

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 groups' established *modi operandi*, the RAS is a typical example of an organization that has learned vastly from past failures. For instance, in Dubrovka the terrorists executed a young woman who mysteriously made her way into the theater while the siege was going on, remembering that a spy had entered the hospital in Budyonnovsk under similar circumstances, just before the rescue operation had been launched.[417] Similarly, after Dubrovka was resolved by the release of an anesthetic gas into the ventilation system, the RAS made procedural changes for Beslan, where the attackers not only shattered all the school windows to insure air circulation, they also brought gas masks, first-aid kits, and allegedly even two sentry dogs in order to effectively detect and counter a possible gas release.[418] Similarly, the group took into consideration the countermeasures likely to be in place during the assassination of president Kadyrov, having opted for four explosive devices, each with its unique method of detonation in order to overcome possible obstructions.

Overall, there is a high level of correlation between the "countermeasures" factor and the RAS' operational trail, in the sense that the group's unusually high ability to learn from past mistakes has in many cases provided the impetus for the adoption of new and tactically innovative practices, which the group may not have considered had it not been for these past failures. In addition, the group's emphasis on creating the perception that it could strike anywhere at any time has led to the adoption of innovative practices in order to overcome the established security precautions already in place.

Targeting logic

In light of the assertion that highly indiscriminate and highly lethal targeting logic of a group would be associated with higher levels of innovation, "targeting logic" seems to correlate with the RAS' innovative tendencies quite strongly. After all, in the post 9-11 period no other group has been both willing and able to deliver as many civilian casualties in terrorist operations as the RAS. As mentioned earlier, the group's targeting logic makes no distinction between Russian civilians and military personnel since it is based unconditionally on the traditional "what-you-do-to-us-we-do-to-you" reciprocity, which Basayev sometimes equated to Newton's law. As early as the group's formation in the summer of 2002, Basayev sent a message to the Russian civilians declaring them a legitimate target: "to us you are unarmed military men, because those who by majority approve the genocide of the Chechen people cannot be peaceful civilians. According to Sharia law, mere verbal approval of war puts peaceful citizens in the ranks of the enemy. You

are just unarmed enemy."[419] In retrospect, this statement was a clear indication of a growing lack of discrimination in RAS targeting, which was further clarified by Basayev in the Dubrovka aftermath: "It is the enemy who sets the limits to our actions, and we are free to resort to the methods and actions that the enemy first employed against us. We are ready, and want to wage war according to international law . . . but we do not want to be the only side to espouse those tactics."[420] This type of logic has consistently been repeated in RAS statements which claimed and justified other terrorist attacks, including the deaths of children in Beslan. After this particular incident Basayev used an explanation that appears to have been copied directly from Osama bin Laden's 2002 "Letter to the American People," in which bin Laden argues that all Americans who pay taxes effectively fund attacks against Muslims, and are thus legitimate targets.[421] Almost identically, Basayev now argued that "peaceful people are those that don't pay taxes for this war, people who don't participate, and who speak against this war."[422] Even more radical and dehumanizing were his proclamations of January 2005 when he referred to the struggle against Russia as a "war between the descendants of monkeys – about whom your Darwin said [*sic*] – and the descendants of Adam. That is today's war, between good and evil . . . This is the war of the descendants of Adam and Eve to put the animals in their place."[423] This statement clearly demonstrated the growing dehumanization of the Russian civil population in the RAS belief system.

Overall, the hypothesis that the more indiscriminate and more deadly the targeting logic of the group under scrutiny, the greater the organization's propensity to innovation, appears to be highly relevant to this case study. From the very moment of its foundation the RAS has embraced an indiscriminate logic, quickly reaching the point where even the explicit targeting of children was seen as a legitimate. This aspect along with the cunning use of religious language had created a situation where the group saw unlimited violence as a tool of choice, and thus naturally sought mass-casualty capable methods in order to achieve this level of intensity.

Attachment to weaponry

The "attachment to weaponry" variable is relevant to the RAS case study especially in the realm of tactics, and can be traced all the way to the then largest historical hostage-taking operation in Budyonnovsk. Interestingly enough, Basayev's original reasons to bring along several hundred fighters had more to do with the attempt to bring a taste of the war to Russian territory, as opposed to a highly planned hostage-taking operation. But after being detained along the way to their target, Basayev improvised and took hostages. Fascinatingly, even in Budyonnovsk Basayev called his team the "Intelligence-Diversion Battalion,"[424] a name which reflected his fascination with "special operations" and which would later become embedded in the name of RAS. The tremendous success of Budyonnovsk made Basayev a

legend, which resulted in his embracing of large-scale hostage-taking operations as a signature tool, especially following Salman Raduyev's imitative attack in Kizlyar. After this raid, Basayev criticized Raduyev for a negotiation failure, but also boasted: "Budyonnovsk and Kizlyar will repeat themselves until Russia recognizes the Chechen republic."[425] Not surprisingly, when the need came to launch a spectacular terrorist operation in 2002, Basayev returned to his signature tactic with Dubrovka, another attack that increased his profile especially among the international jihadi circles. For instance, in issue 10 of AQ's online training manual *Al Battar* the late Abdul Aziz al Muqrin offered detailed instructions on carrying out barricade hostage operations, making numerous references to the tactics used in "Shamil's operation in Moscow."[426] Precisely because of the organizational attachment to large-scale hostage takings involving trademark elements such as a large team of attackers on an apparently suicidal mission, the wiring of target location with explosives and the strategic positioning of snipers, we are likely to see the use of this tactic in the future despite its recent lack of strategic success in Dubrovka and Beslan.

Another trademark developed by the RAS has been the use of female suicide bombers. Basayev's obsession with sacrifice dated back a long way, as did his imagination and touch for capturing the attention of the international audience. As far back as Budyonnovsk, Basayev remarked: "We don't care when we die. What is important is how [we die]."[427] In other words, for an individual fighting in Chechnya death is only a matter of time; but a cleverly "staged" demise can have extra benefits. Basayev later tried to downplay the issue by saying that his group's attraction to suicide bombings has only to do with limited capability, and that "if Russians or Americans [gave him] cruise missiles or intercontinental ballistic missiles, then [his group] would not be using suicide attackers or Kamaz trucks loaded with explosives."[428] But this is unlikely given RAS' links to AQ, a group that sees martyrdom as the principal vanguard for the historical victory of Islam, and which has been very active in its attempts to spread this tactic to its affiliate groups. What is puzzling, however, is why Basayev was the first Islamist systematically to employ women in this kind of operation. The answer could lie in Basayev's cunning touch for propaganda; for instance, in the video recorded right before her death, the first Chechen suicide bomber Khava Barayeva pleaded to Chechen men to "not take the women's role by staying at home."[429] This type of a message not only served to provoke Chechen men into action; the "black widow" phenomenon also sent a message of absolute desperation to the international media as well as to potential donors in Gulf countries. Given the enormous propaganda benefits of such a message, it is not surprising that female suicide bombers were quickly adopted in other countries such as Palestine, Uzbekistan, Iraq and Jordan.

Suicide terrorism was not the only area in which Basayev had shown his touch for propaganda; since the early 1990s Basayev and Khattab were among the first ones to distribute video footage of combat and terrorist

operations on the Internet, and had also pioneered the sending of gruesome footage of live beheadings to the media, long before AQ or Iraq-based groups even thought of doing so. As with other RAS tactics and targeting logic, the use of propaganda is again based on the "Koranic" rule of reciprocity, which could be summed up in the following Khattab quote: "Allah orders us to fight the unbelievers as they fight us. They fight us with media and propaganda, we should also fight them with our media."[430]

Overall, the attachment to a particular weapon, tactic or the process of innovation itself serves as an important variable in explaining the RAS' operational preferences. In some cases, Basayev's tendency to carry out signature attacks such as female suicide bombings or large-scale hostage takings has even overshadowed practical considerations pertaining to each specific operation. For instance, during the assassination attempt against Kadyrov in Ilaskhan-Yurt, the two female bombers failed to kill their target due to their inability to enter the prayer area designated for men. In this attack, male bombers would clearly have been a more practical choice, but the "non-rational" considerations apparently prevailed in the planning phase over the practical ones. Similarly, since the RAS describes itself as "a purely military-guerrilla structure which is waging a legitimate armed struggle," it has been of supreme expressive importance for the RAS fighters to wear uniforms during operations. This was the case even in Dubrovka where the time invested in the change of clothes in the lobby of the theater prior to storming the auditorium could have risked the outcome of the entire operation.[431] In short, while the tactics used by RAS closely reflect the group's strategic objectives, the attachment to a particular *modus operandi* appears to be a no less important determinant of the organization's innovative tendencies.

Group dynamics

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.

The first component of this variable is the background, the value system and the authority of the leader as a key determinant of the motivation of such a figure to instigate innovation, as well as his or her ability to impose such a decision successfully on the rest of the group. In this regard, the group dynamics variable appears highly relevant. The RAS' decision-making was completely dominated by its *Amir*, Shamil Basayev, the group's only public face and the main operational planner. Basayev was born in 1965 in the mountain district of Vedeno in southern Chechnya, which remained one of his most important strongholds.[432] Basayev's military experience dated

back to his two mandatory years in the Soviet Army, in which he received only basic training and then spent his time working as a firefighter for the Air Force. Much more extensive, however, was the training Basayev allegedly received during 1992 in the special training camps of the Main Intelligence Department of the Russian Federation General Staff, as a part of the support Russia provided to the Abkhazian separatist elements fighting against Georgia.[433] Following his extensive battleground experiences in Abkhazia and Nagorno-Karabakh, as well as the training allegedly received in the *Amir Muawia* camp in Afghanistan and the ISI-run *Markaz-i-Dawa* camp in Pakistan, Basayev returned with his now famous Abkhaz battalion to fight against the Russians in Chechnya.[434] By 1995, Basayev was commanding the central front and had about 900 men under his command.[435] Throughout his career Basayev held various functions, including the Chechen Prime Minister, Chechen Vice President, deputy commander of the republic's armed forces, the head of the Islamic *Majlis* of Chechnya and Dagestan, *Amir* of the *Majlis al Shura*, the Special Purpose Islamic Regiment (SPIR), and International Islamic Brigade (IIB), and finally, the *Amir* of the RAS.

At the second level of this variable, the size and structure of the RAS as a group are difficult to pinpoint precisely. According to the FSB, Basayev's inner circle consisted of relatives and friends from his childhood and youth mainly from Vedeno, as well as a number of foreign fighters. It was an extremely tight group which had not changed for a number of years, and which relied on personal communication between Basayev and only several other persons who had direct access to him.[436] Basayev had confirmed that he did not "need to confer personally with lower-level commanders more than once or twice a year" and preferred to issue orders in writing.[437] Another difficulty in understanding the dynamics of the group is the fact that there appeared to be fluid membership between many of the groups in Chechnya, where the RAS played the central role of combining fighters from different groups for *ad hoc* "special operations." For instance, one of the main figures from Dubrovka was Mansur Salamov (a.k.a. Movsar Barayev), previously known only as the leader of the Special Purpose Islamic Regiment (SPIR). Similarly, the December 2002 suicide attack in Grozny was allegedly masterminded by Abu Tariq, a deputy of the International Islamic Brigade (IIB), while the Moscow National Hotel and Moscow metro bombings had allegedly been prepared directly by IIB head Abu Walid al Ghamdi.[438] Basayev's ability to incorporate fighters from different groups in his operations is by no means surprising, given the fact that he was the most influential player in the Chechen resistance, and given his "monopoly" on terrorist operations inside the Russian territory. As a result, however, the overall number of RAS members remained unknown. The Russians claimed that of some 1,600 active members of "illegal armed gangs" about 250 were subordinate to Basayev and 150 to Abu Walid.[439] Basayev himself had claimed that "even though the Russian leadership is trying to make it look

like only one Brigade of RAS is actually fighting the war . . . there are several thousand of active *mujahideen* fighting in Ichkeria and outside of the country."[440]

Overall, relatively little is known about the internal dynamics of the RAS, with the exception of the fact that the group was led by an uncontested leader, suffered from little internal conflict and had a top-down operational approach, with the group's penultimate leadership making the decision and "outsourcing" the plans to sub-units or cells for execution. These group dynamics seem to confirm only some aspects of the original hypothesis. On the one hand, Basayev's uncontested authority and his personal preference for spectacular operations provided the necessary spark for the RAS' innovative operations, as well as for the decisive push to implement these ideas effectively. At the same time, the group's highly cohesive nature runs contrary to the hypothesis that innovation would be driven by the desire to overcome factional disputes via rallying the organization behind successful operations.

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 was not confirmed in this case study. Much has been written in the past about the internal divides in the Chechen resistance movement. In the most basic terms, the movement can be divided into the more secular "Westernizers," and the dominantly religious "Easternizers."[441] These two basic factions have sometimes cooperated in order to pursue a common agenda, but have also occasionally fought each other over influence and authority. This divide is not a crucial one in terms of enhancing our understanding the RAS' innovation patterns, as the competition between these two wings had generally taken place not at the level of tactics but at a much more elementary ideological plane.

More crucial to the understanding of the causes of the RAS' operational patterns is the relationship between Basayev and other units that have participated in terrorist operations. At the level of competition, the most important schism had existed between Basayev and Salman Raduyev, the man who imitated the Budyonnovsk operation in Kizlyar, and who Basayev criticized heavily for his inability to obtain any political deals out of the ordeal. In the future years, the two men would clash on several occasions, with Basayev calling Raduyev a "hysterical woman" and Raduyev labeling Basayev a "national traitor." It is no surprise that many people in Chechnya suspected Basayev's involvement in Raduyev's eventual arrest.[442] With the exception of Raduyev, Basayev's authority as a leader in Chechen terrorist operations has been uncontested, and the other two organizations listed on the US State Department's list of terrorist organizations – the Special

Purpose Islamic Regiment (SPIR) and the International Islamic Brigade (IIB) – had both been led by Basayev in the past and had also provided fighters and experts for RAS operations. From this perspective, it would be hard to argue that the RAS' innovative tendencies were in any way a product of operational competition that would drive the group to improve in order to demonstrate superiority over its rivals.

More relevant in this regard appears to be the RAS' cooperation with international groups such as AQ, whose training and experience have allegedly greatly boosted the Chechen ability to fight the Russians. First, in Basayev's own words, the Chechens have "benefited greatly from studying the Afghan Jihad."[443] Second, several hundred of Basayev's men had received training in Hekmatyar's and bin Laden's camps in Afghanistan, and bin Laden's associates such as Khattab, Abu Walid, Abu Haffs al Urdani and Omar Saif had been dispatched to Chechnya to serve as financial channels as well as leaders of the foreign fighter units fighting in the country. On the one hand, the financial sponsorship and training provided AQ with the opportunity to exert considerable influence over Basayev; on the other hand, the AQ-linked elements operating in Chechnya have not played a dominant role in RAS operations.[444] And while it is true that some of the RAS' tactics such as synchronized suicide truck bombings were likely adopted due to AQ influence, other spectacular operational methods used by the group seem to have been homegrown.[445] For instance, televised beheadings, large-scale hostage-taking operations, use of female suicide bombers, radiological terrorism or the threats of flying airplanes into the Kremlin have all predated AQ's involvement in these tactics. In this sense, it is quite possible that it was the Chechen operational expertise and imagination that in many ways inspired AQ, rather than vice versa. In addition, Chechen *modi operandi* have also become a model for groups in Saudi Arabia, Uzbekistan, Palestine, Bosnia and even Indonesia, where the *al-Jemaah al-Islamiah* network had produced VCDs and documents on the Chechen techniques for using land mines and improvised explosive devices.[446]

Overall, the hypothesis that competition between groups in the same operational theater will be associated with a higher level of innovation than in the case of indifference or cooperation cannot be confirmed in the case of the RAS, as the group demonstrated a high propensity to innovation even in the absence of any such competition. On the contrary, it has been more at the level of cooperation where the RAS has managed to boost its operational capabilities, even though it appears that Basayev's men were frequently the ones to provide creative models for others, as opposed to necessarily adopting the means used by their allies. As a result, the "relationship with other organizations" has shown a limited value in terms of providing an explanation for the RAS' innovative tendencies.

Resources

The RAS also seems to confirm some aspects of 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. At the level of financial resources, the Chechen cause has attracted sponsorship from many countries in the Muslim world, with the overall estimate of donations that have reached Chechnya from various Arab countries since 1996 falling into the range of $100 million to $1 billion.[447] The money is allegedly funneled through to rebel forces via Islamic charities such as the Saudi-based Al-Haramain Islamic Foundation, or by ground routes through either Turkey–Azerbaijan–Dagestan–Chechnya or Turkey–Georgia–Ossetia–Ingushetia.[448] But according to Colonel Shabalkin, the official spokesman of the regional center in charge of the anti-terror operation in the North Caucasus, "90 percent of the money does not cross any borders, as it is invested by the leaders of 'bandit formations' living abroad, and also by Basayev and Abu Walid through their accomplices for the development of their own businesses well beyond Chechnya."[449] According to FSB specialists Basayev was one of the few rebels to receive financial support from abroad through their personal channels, meaning that he did not rely on any middlemen.[450] One such channel was allegedly bin Laden himself, a claim Basayev had always categorically denied: "I do not get money from him, but I would not refuse [such money]."[451] Other sources of funding have included donations from the Chechen diaspora living in Europe and central and western parts of Russia. One of Basayev's most important aids in this department had allegedly been his brother Shirvani who lives in Turkey.[452] In addition to donations, illegal sources of funding have also been used to fund the RAS, including drug trafficking, counterfeiting of US currency, illegal tapping of oil pipelines, illegal banking activities, kidnapping for ransom, diversion of funds destined for the Chechen government and other means.[453]

Overall, the exact budget of the RAS itself is difficult to determine precisely, but the fact is that the organization was comparatively very well funded indeed. This is especially true if one considers the relatively low cost of RAS operations; for instance, the cost of Budyonnovsk was $25,000, Dubrovka was estimated in the range of $40,000, the simultaneous airplane suicide bombings were funded by $4,000, the average suicide bombing in Moscow is estimated at about $7,000, and according to Basayev's claims the Beslan attack cost no more than $10,000.[454] This suggests that while the group's funding did not necessarily facilitate major technological innovations, the RAS' financial resources were more than sufficient to support the group's *tactically* spectacular operations. In fact it seems that attracting financial support from groups like AQ is in itself a major factor behind the group's innovative tendencies – certainly attacking Russians in the

trademark AQ fashion involving suicide bombers, synchronization and a large number of fatalities served the purpose of increasing funding and support for the group. For instance, according to the FSB citing an intercepted phone call from the Dubrovka hostage takers to an unidentified individual in the Gulf, Barayev offered to provide footage from inside the theater to the sponsor for $1 million.[455]

In terms of human resources, the RAS drew on what was probably the most experienced pool of fighters from all of the terror groups of our time. Most of the fighters from the older generation had undergone military training in the Soviet Army, which provided the group with detailed understanding of enemy strategy, structure and operational procedures. According to an FSB operative "[the Chechens] used the same textbooks . . . but were more diligent pupils. Because for [the Russians] it was a matter of acquiring knowledge and diplomas, but for [the Chechens] it was a matter of survival."[456] Basayev had always been justifiably proud of his troops, claiming that "[they] are self-sufficient, fight independently, every man in his place, you do not need to teach them anything."[457]

Overall, the RAS' innovative operations were in many ways associated with its high level of funding, superior access to weaponry and the expertise of its human resources, confirming the original hypothesis that large organizations with hefty budgets, outside sponsors and highly qualified membership are more likely to demonstrate an inclination of innovation with respect to both motivation and capability, than smaller groups with limited financial and logistical resources. On the other hand, the fact that the RAS was apparently a relatively small organization runs contrary to the hypothesis that a group's innovativeness is positively correlated with its size.

Openness to new ideas

With regards to the first component of this variable, 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 as well as less capable of innovation. In the case of the RAS, which received considerable sponsorship and know-how from other international groups and which had access to weapons and other useful items such as mobile phones and computers on a daily basis, the restrictions associated with this level of the "openness to new ideas" variable did not apply. As a result, the absence of obstacles derived from the first level of this variable correlates positively with the RAS' innovative tendencies.

At the second level, it has been asserted that in order for innovation to occur, the leadership has to be open to suggestions from below and individual members must not be afraid to put forward their proposals for adopting new methods. The RAS, which has a highly centralized structure and a powerful leader, does not possess these characteristics. Further, if Basayev's claim that he preferred to issue orders in writing and

rarely even met with his operatives personally is true, it would suggest that the conditions for effective communication regarding technical issues would also be impaired, further inhibiting an effective bottom-up approach to innovation. At the same time, since all of the operational decisions were typically taken at the top level around Basayev whose attitude toward innovation was positive, the input from brainstorming sessions involving ordinary members was essentially not needed to initiate the innovation process.

In contrast, at the final level characterized by an organization's approach to risk-taking, the RAS case study shows a high level of correlation. First, the group had shown a high level of tolerance to operational failures, having an exceptional ability to bounce back from unsuccessful operations. This was clearly demonstrated by the assassination of Akhmad Kadyrov, who the group failed to kill on 12 occasions but kept coming back until it finally succeeded. With regards to physical risks associated with innovation, the RAS also demonstrated an extremely high willingness to sacrifice even its top operatives during missions, as documented by the direct participation of key organizational figures such as Basayev, Khuchbarov, Barayev, Asofov or Elmurzayev in suicidal operations such as Dubrovka, Nazran or Beslan. On the whole, the RAS leadership showed a high level of openness to new ideas and was willing to take high risks with regards to the threat of operational failure, as well as the risk of sacrificing its own operatives. The combination of these factors provided a fertile ground for Basayev's innovative tendencies, although it again served more as a supporting factor, as opposed to a causal one.

Overall, the influence of the "openness to new ideas" factor seems to have been positive. Due to the ability to operate freely in many parts of Chechnya, Ingushetia and Dagestan, RAS operatives were in a close contact with modern military and dual-use technologies, despite operating in one of the most destroyed parts of the world. Further, the lack of fear of repeated operational failure along with the willingness to invest even its most precious human resources into suicidal attacks serves as one explanation of the RAS' success with innovative operations. And while open communication links in order to facilitate a bottom-up approach to innovation were not present, Basayev's preference to pursue innovative means and his high level of authority clearly compensated for this absence.

Durability

With regard to the "durability" factor it has been asserted that longer-lasting organizations are likely to have more time to progress in terms of their motivation to innovate, as well as the opportunity to gather enough experience to facilitate success of this process. This variable does not appear relevant to the case of the RAS, which demonstrated innovative tendencies right from the outset of its existence, maintaining relatively constant

operational preferences throughout the entire duration of its activity. And while it is true that the RAS leadership had founded the group following nearly a decade of intensive battleground and sabotage experience, in the absence of a clear innovational trajectory over time it is difficult to assign a causative or even a supporting value to the "durability" variable.

Nature of the technology

With respect to the "nature of the technology" factor, it has been hypothesized that the sophistication of selected weaponry would be negatively correlated with the success of the attempts to adopt such a method. This variable again does not show a high degree of relevance to the RAS case study, as the innovative nature of the group transpired more in the realm of tactics, as opposed to technologies. In other words, the sophistication and spectacular nature of RAS attacks was associated more with tactic selection, planning and superior execution, than with weapons technology per se. In fact, the technologies used by the RAS have shown very little if any sort of innovation at all.

Conclusion

With its innovative approach to operational planning and execution, the RAS ranked at the top of today's spectacular and highly lethal terrorist organizations. The RAS' emphasis on large-scale barricade hostage-taking operations involving outsized, well trained and mixed-gendered commando units of suicide fighters, the use of live video footage of beheadings or the systematic use of female suicide operatives have all served as a model to follow for a number of today's prominent Islamist terrorist organizations around the world. As observed throughout this chapter, several variables in particular had played a key role in driving the RAS' highly innovative tendencies. The first such factor was the strategic emphasis on high level of attrition inside the Russian territory, which naturally led the group to perfecting the methods of disguise and infiltration, as well as mass-casualty tactics. No less important in this regard were the high ambitions of the RAS' leader in the arena of "art of sabotage," the need to resort to innovation as a means of achieving visibility in order to secure outside support, and the indiscriminate targeting logic based on "unconditional reciprocity." In combination with the expressive emphasis placed on innovative spectacular operations and the pride derived from military successes and overcoming security countermeasures, these factors combined for a matrix of characteristics that triggered the decisive motivational push toward tactical innovation. In addition, the group's outside sponsorship and possession of highly trained human resources, as well as the extremely favorable security environment, further aided in creating favorable conditions for the success of the RAS' operations.

6 Revolutionary Organization November 17

Revolutionary Organization November 17 (17N) was a Greek revolutionary terrorist group named after the day of the unsuccessful student uprising protesting the Greek army's coup in 1973. In the time period between its formation in 1975 and its termination in 2002, the group perpetrated 106 attacks resulting in the deaths of 23 people and injury of many more. 17N attacks initially concentrated mainly on US and NATO targets, such as US embassy employees and military personnel, later progressing to domestic, European and Turkish targets as well.

17N's main objectives as they were specified in the group's communiqués included the pullout of Greece from NATO, forcing an end to the US military presence in the country, and a general opposition to capitalism and imperialism. 17N attempted to appear as a revolutionary organization that was in constant war with the internal and external enemies of the "Greek people." This type of ideology may seem to be no different from other revolutionary groups that operated in Europe during the same time period. What makes 17N unique, however, is the lack of a cohesive strategy of how to achieve its proclaimed revolutionary goals. According to the group's manifestos and the testimonies of its former members, the organization sought to create an atmosphere of rebellion that would inspire the people to launch a revolution that would overthrow the ruling class. In practice, however, 17N had never even attempted to cause a general sense of chaos within Greek society by escalating its attacks into an offensive that could trigger the revolutionary process. Unlike the Italian Red Brigades or the German RAF, for instance, 17N never constituted a serious threat to the Greek institutions because it did not take actions that could hold the country hostage, nor did it have the organizational structure that would allow the group to exploit the eventual revolution for purposes of usurpation of political power.[458] In essence, the group's military strategy had taken merely a reactive approach, tying every single attack to a particular event, even engaging in several multi-year periods of operational silence in the event of lack of a justifiable target. This reactive element is just one of the key points that made 17N unique among revolutionary groups. The other distinct features included the ritualistic use of a 1911 Colt .45 caliber pistol, the unusually

high level of durability, and the fact that for over 27 years of the group's operation not a single member had been apprehended.

History of operational progression

The historical progression of 17N's armed operations can be divided into several general periods, which essentially follow milestone events that caused the group to shift its targeting patterns or operational methods.

In the initial stage between 1975 and 1985 the group's attacks were essentially revenge killings that concentrated on individuals associated with the 1967–1974 military dictatorship in Greece and the Turkish invasion of Cyprus.[459] The main operational method used during this time period was close-quarter assassination, which usually featured two attackers firing from a passing motorcycle. The group's initial operations concentrated on mainly US targets in an attempt to capitalize on the public perception of US complicity in the emergence of the junta.[460] One of the characteristics that make 17N unusual is the fact that unlike most left-wing groups of its era, which usually commence their activities through a period of non-lethal operations before they gradually progress to human targets, 17N appears to have taken a reverse approach. In fact, in the beginning the group's claims of responsibility for its operation were being quickly dismissed, as the authorities could not believe the sudden and unusually bold emergence of a new revolutionary group. 17N surfaced for the first time in 1975 with the publication of its first communiqué, shortly thereafter followed by the first armed operation in which Richard S. Welch, the Athens CIA Station Chief, was killed in close-quarter assassination by a gunman armed with a 1911 Colt .45 caliber pistol in front of his Athens home. Then in December 1976 Evanghelos Mallios, reputed as one of the most brutal torturers during the former Greek regime, was assassinated in a drive-by shooting, followed by another drive-by assassination of the deputy chief of the MAT riot police in January 1980. Greek ballistics experts quickly determined that all of these killings were executed with the very same weapon,[461] a gun which would later become an easily recognizable trademark of 17N assassinations.

Following the electoral victory of the Panhellenic Socialist Party (PASOK) in 1980, the group apparently became hopeful for a brighter future with regards to the implementation of the party's full-fledged socialist program. This optimism led to the interruption of 17N activities for a period of 25 months, during which the group refrained from sending communiqués or engaging in military operations.[462] However, in November 1983 the group ended this self-imposed operational silence by the assassination of US Naval Captain George Tsantes, who was hit by four .45 caliber bullets fired by two terrorists from a passing motorcycle.[463] This attack was followed by a seven page communiqué in which 17N attacked the PASOK government for betraying the people by abandoning socialism, also reiterating the group's solidifying belief that "popular revolutionary violence" and

not democratic politics was the only path to socialism.[464] Only five months after the Tsantes assassination, the group struck again when two gunmen on a motorcycle fired five .45 caliber bullets injuring Master Sgt. Judd of the US Military Assistance Group.[465] Commenting on its first operational failure, the 17N communiqué stated that "it simply proved that they were not a group of professional assassins as portrayed by sections of the press but 'simple', popular fighters with simple means and rudimentary organization."[466] The group indicated that it would expand its campaign against domestic targets in the near future, a prophesy that would be fulfilled in the group's next attack.[467] In February 1985 Nikos Momferatos, a publisher of the conservative newspaper *Apogevmatin*, was intercepted in central Athens and later killed.[468] This was the last operation in what can be described as the first operational period, which was highlighted by the ritual use of the group's signature weapon in every single attack. From 1985 on, the group decided to diversify its tactics.

The beginning of the second distinct period was marked by the group's first use of a car bomb in November 1985, in which one officer was killed and 14 more were injured. This tactical shift did not occur in isolation, and essentially followed a period of significant events such as the implementation of austerity measures by the Socialist government, the dramatic decline of the Greek tourism industry resulting from US State Department's travel warnings,[469] and the death of a student demonstrator during the annual march celebrating the 1973 student revolt.[470] These events apparently increased the group's frustration with the political situation in the country and triggered a sudden escalation of the 17N campaign, as evidenced by the fact that the remote-controlled car bomb which targeted a riot police bus was the bloodiest act of terrorist violence in Greece in 40 years.[471] The group's first use of the car bomb is a significant milestone for several reasons. First, it demonstrated 17N's increasing willingness to engage in tactics that had the potential of producing a large number of indiscriminate casualties, as opposed to the highly selective assassination method previously favored by the group. Second, 17N's use of the car bomb demonstrated an increased level of operational sophistication, as well as the first modification of 17N's up to this point amazingly constant *modus operandi*. From 1985 on, the 17N military activity would increase in frequency and lethality.[472]

On 8 April 1986, the group carried out another drive-by assassination killing Dimitrios Angelopoulos, a 79-year-old Greek steel magnate,[473] followed by the symbolical knee-capping of a well-known neurosurgeon and owner of Engefalos Medical Centre Zacharias Kapsalakis in February 1987.[474] These two operations marked the commencement of 17N's targeting focus onto domestic business owners, who were usually accused by the group of corruption and worker exploitation. Another issue that dominated 17Ns agenda between 1987 and 1988 was the increased tension in the Aegean between Greece and Turkey over oil-drilling rights, nearly bringing the two countries to the brink of war.[475] Holding the US responsible for

"expansionist Turkish militarism," 17N bombed two American military buses during the next four months, injuring a total of 29 people, mainly US servicemen. In the first case the bomb was apparently planted directly on the bus and was detonated by a 300 meter cable, which was found on the scene.[476] In the second instance, a similar mechanism was used; with the difference that in this case the explosive was placed in a booby-trapped car that exploded as the target was passing by.[477] Both of these attacks demonstrated 17N's increasing proficiency in the use of car bombs, despite the fact that the organization digressed from the use of remote technology to detonate their car bombs to a detonating cord. Three of the next four attacks would also utilize explosive devices and again were aimed at US and Turkish targets. First was the January 1988 bomb that was placed in the trashcan in front of the home of a Drug Enforcement Agency (DEA) official, which was defused without mishap following a warning call to a local newspaper.[478] This incident marked the first time 17N employed the prior-notification tactic in an apparent attempt to limit unintended casualties, a rather unusual occurrence for groups in their 13th year of operation. Then in June 1988, 17N planted a bomb in a parked car, which was detonated from an abandoned house nearby just as US Navy Attaché Captain William Nordeen's armor-plated sedan was passing by. This explosive device was the most sophisticated one yet, having included bags of cement that were piled against one side of the bomb to direct the force of the blast. Nordeen was decapitated in the explosion that threw the car across the street into a steel fence. The US government responded by offering a $500,000 reward for information leading to the conviction of the attackers, which at the time was the largest sum to ever be offered in a terrorist case.[479]

The beginning of 17N's third operational period can be traced as far back as 1988, when the group launched an aggressive resource acquisition campaign starting with a post office robbery in July.[480] This was followed by the storming of the 18th police precinct in Vyronas, where the group stole a significant quantity of weapons and ammunition, and then the Christmas raid of the Sikoirio army depot near Larissa in 1989, where the group acquired a large quantity of bullets, hand grenades, and most importantly, a cache of 2.36 inch World War II era rockets.[481] In the future, these stolen rockets would become the most frequently used 17N weapon, to the point of not only forcing a decline in 17N bombings, but even completely pushing aside the signature .45 caliber weapon assassination tactic for the next 2 years. First, however, the group had to find the capability to launch the stolen rockets. Specifically for this purpose, five armed 17N members robbed the World War II museum on Rizaris Street in Athens on 3 February 1990, stealing two World War II era bazookas.[482] The design of these devices was then analyzed and imitated for the production of makeshift launchers made out of plastic tubes.[483] As a part of the group's reliance on signature attacks, these home-made rocket launchers were then always left at the site of launch. Another interesting aspect of the rocket attacks was the

operational considerations involved in the selection of targets – most of the rocket attacks were launched from construction sites on buildings opposite to the target, where the launchers were fired from behind large billboards often placed on such sites.

17N's first use of rockets occurred shortly after the museum robbery, in the assassination attempt against shipping magnate Vardis Vardinoyiannis. The operation was spectacular in the sense that three missiles were used to hit a moving target, but ultimately a failure since Vardinoyiannis survived the attack after the rockets failed to penetrate his armor-plated limousine.[484] During the rest of 1990 17N stepped up its violent campaign, in most cases – possibly out of excitement or for practice reasons – using rockets. Some of the notable 1990 attacks include the firing of rockets on the Athens offices of several companies inducing Procter and Gamble, which were attacked twice during a single month.[485] Another notable operation was the attack against the European Community (EC) offices,[486] underlining the group's increasing propensity toward European targets which continued throughout 1991, mainly because of 17N's dissatisfaction with EC financial arrangements. But the most significant event that fueled 17N's violence during this year was the US-led "Operation Desert Storm," as a response to which 17N violence reached its historical annual peak with 22 attacks in 1991.[487] Operationally, the year saw a resurrection of bombings, a trend that started in late 1990 with the November assassination of US Air Force Sergeant Ronald Steward. The primary method, however, remained attacks using the missiles stolen from the Sikoirio army depot in 1989. Even though most of these attacks were still human activated, the year 1991 also witnessed the introduction of timing devices consisting of two table clocks and a 12 volt battery. Another interesting development throughout the year was the resumption of advance warnings which preceded some 17N attacks, and the introduction of a new method of claiming credit by spray painting the group's symbol on a wall near the target location – a measure introduced as a response to the media's compliance with a parliamentary request not to publish terrorists' claims of responsibility.[488] And finally, also notable in 1991 was the October assassination of Turkish Embassy's press attaché, who was killed by a spray of .45 caliber bullets fired by two assailants on a motorcycle.[489] The significance of this attack rests in the fact that this was the first time the group used its signature tactic in nearly two years.

Directly resulting from 17N's increased level of armed activity during 1991 the security in Athens was stepped up with a high visibility police presence, based on the fear that a more violent 17N faction had taken over the group's military operations.[490] It was probably these security measures that caused the dramatic decline in the frequency of 17N attacks starting with the year 1992. Another factor that likely contributed to this development was the accidental killing of a 28-year-old student during the 14 July assassination attempt against finance minister Yannis Paleokrassas.[491] This accidental killing that was also accompanied by the injury of six innocent

bystanders dealt a significant popularity blow to the organization; its subsequent attempts to displace blame for the civilian casualties onto the authorities according to Kassimeris also revealed the group's "growing detachment from reality."[492]

17N's operational decline continued throughout 1993, with the group engaging only in sporadic and insignificant bombings of tax offices and vehicles.[493] This decline carried over to 1994 despite the 17N's attempt to restore operational morale by the close-quarter assassination of former Bank of Greece director Michalis Vranopoulos, who was killed by gunmen armed with a .45 caliber semi-automatic pistol.[494] 17N also attempted to step up its operations by the synchronized attack on Alico and Nationale Nederlanden insurance companies in April, using an anti-tank missile and a time bomb, respectively. On the very same day, the group also announced that it would attack the British aircraft carrier "Ark Royal" anchored at Piraeus. Following up on this threat, police found and disarmed two 2.3 inch rockets in a metal pipe and a firing mechanism placed on a building site along the Miaoulis coast in Piraeus.[495] This incident dealt another public image blow to 17N, since the failure was covered widely in the media, with some reports openly suggesting that 17N was in decline. Such commentaries in the mainstream media greatly diminished the group's aura of the *organossi phantasma* or "phantom group" that it once had.[496] As a consolidation attempt after the Piraeus embarrassment, 17N gunmen assassinated a senior Turkish diplomat with six bullets fired from the original 1911 .45 caliber pistol.[497] However, the group still was not able to live up to its constant pledges to escalate its campaign and managed to launch only one attack throughout the year 1995.[498] The same trend continued in 1996, with the group's single action being the failed attempt to fire a missile at the US Embassy in Athens, where the rocket bounced off the wall in front of the building and exploded some 100 meters away from its target.[499] The credit for this attack was not claimed by the group until June 1997, when ship-owner Peratikos became the next victim of 17N's signature assassination.[500]

For the next two years 17N focused mainly on protesting the NATO actions in Serbia by stepping up its rocket campaign, and throughout the 1998–1999 period about a dozen rocket attacks were launched against US businesses, banks, PASOK offices and residences of western ambassadors – all causing only minimal damage.[501] On 8 June 2000, the last 17N signature operation took place, when Brigadier Stephen Saunders was shot and killed by two gunmen on a motorcycle.[502] Finally on 29 June 2002, a man later identified as Savvas Xiros was seriously injured by the premature explosion of a bomb in Piraeus. At the scene of the explosion, the police recovered a bag containing two hand grenades and a .38 caliber revolver, which had been stolen from a police officer in 1984 and which had been used by the 17N in its two shootouts with the police.[503] Also found were a set of keys and a prepaid telephone card leading the investigators to a 17N safe house in central Athens where more weapons were discovered, including the ori-

ginal 1911 .45 caliber pistol. 17N's 27-year-long violent campaign was about to come to an end.

Analysis

Due to its ritualistic reliance on specific weapons, reverse escalation pattern, repetitive attacks on selected targets, and the almost unchanging nature of its *modus operandi*, 17N counts as one of the most conservative terrorist organizations in history. The ritualistic close-quarter assassinations with the .45 caliber weapon that made the group famous in the late 1970s remained in its arsenal for the entire 27 years of the group's duration, and in essence became a symbolic method to which the group would turn as a reconciliation tool after failed operations or public opinion setbacks. Other ritualistic aspects of 17N's *modus operandi* include the use of the same typewriter to write the group's communiqués for over 20 years,[504] and the format and writing style of these communiqués, which made their authentification possible even without the use of a codeword. A further interesting pattern with regard to 17N communiqués was the fact that the group would always claim responsibility for three or four attacks at once, making the absence of an immediate claim following an armed operation a clear sign of the inevitability of further action.

Overall, 17N operations showed very little innovativeness, documented by abundance of relatively clear and predictable patterns. The only major technological shifts in the group's 27-year-long history included the enrichment of the group's close-quarter assassination methods by the introduction of explosive devices ten years into the campaign (1985), and then the incorporation of rocket attacks another six years later (1991). The reasons behind 17N's strikingly conservative approach to innovation will be explored in the next section, where the variables hypothesized earlier to be the key factors influencing the level of terrorists' innovation will be tested in order to provide a control study of their relevance to innovative organizations covered earlier.

Role of ideology and strategy

17N's ideology and strategic outlook played a significant role in reinforcing the group's conservative nature, in the sense that the group did not have an ambition to govern and thus maintained an unusually low level of strategic urgency with regards to the question of a final victory. On the one hand 17N's ideology has often been described as radical leftist, and the organization has openly traced its system to the teachings of Marx, Lenin and Guevara. But despite describing itself as a "vanguard of the working class," 17N has differed significantly from most of its European revolutionary counterparts in several important aspects. First, it had never attempted to turn into a mass movement that would initiate a socialist revolution at the

national level – a critical precondition of the formation of a communist international organization that would install a socially just society around the world. Second, 17N had no documented contacts with other European groups such as the German RAF, the Italian Red Brigades or the French Direct Action, and had not actively sought the support of a state sponsor from the bloc countries under Soviet influence. Third, 17N did not have an ambition to govern, nor did it seek to develop cadres for the purposes of taking over government posts in the event of a successful revolution. These factors are critical to understanding the reasons behind the fact that 17N has been able to outlast other European revolutionary organizations – its resistance to expansion of its ranks greatly limited the possibility of infiltration by law enforcement, and the absence of sponsorship by states decreased detection by foreign intelligence agencies. The final aspect that made 17N unique was the fact that the group seemed to have no coherent revolutionary strategy for mobilizing the masses, but instead limited its actions to avenging what the group saw as exploitation or injustice.[505] The group in essence sought the image of a Robin Hood-like mystical force, which acted as a symbolic "instrument of popular justice," providing very specific explanations of the logic behind every individual attack. One striking aspect of 17N is its historical reluctance to launch attacks in the absence of a clear justification for action. This aspect is quite unusual in the realm of terrorist organizations, most of which have an inherent need to carry on with the momentum of violent action even in the absence of a specific motive. In contrast, 17N (at least in the early period of its existence) has been willing to lay down arms when the group's perceptions did not warrant action, as in the case of the years after the PASOK electoral victory in 1981. Encouraged by the party's socialist program, 17N ceased its armed operations for 25 months.

Further, 17N's lack of innovation seems to be closely correlated with the group's strategy. First, due to the absence of an ambition to govern, the group was not dependent on popular support and thus did not need to impress a large audience. Second, since the group limited itself to mere acts of revenge and ultimately did not take any specific action to bring about a change in the status quo, there seems to have been only a very limited sense of urgency in terms of the immediate necessity to spark a popular revolution. Both of the above factors clearly translated into 17N's apparent lack of a need to escalate its violent campaign as a trigger of the revolutionary involvement of the masses. In the absence of the need to escalate the group had little motivation to invent new, more effective and more eye-catching tactics, confirming the original hypothesis that organizations with vaguely defined goals, low sense of urgency and a low level of strategic planning would demonstrate lesser inclination toward innovation than organizations whose ideology identifies an ideal outcome with regards to definite objectives, and which prescribes a time frame and a specific course of action for reaching those objectives.

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 another variable that shows a high level of relevance in terms of determining 17N's conservative nature. 17N operated in an urban environment, having carried out the absolute majority of its attacks in Athens. This geographical focus of 17N's campaign is especially apparent in the case of the group's close-quarter assassination attacks, which have all occurred along a line centered on Kiffisias Avenue, covering an area of a mere 15×2 kilometers. Along this line were two particular clusters of attack points[506] with the theft of vehicles used in the attacks occurring in two areas on either side of the line.[507] This breakdown clearly demonstrates how the group's operations in hit and run attacks were confined to a small area with which the group's members were familiar enough to escape under pressure, and where a limited number of safe houses were present to aid them in their escape. Such a tight operational environment would make successful innovation a challenging task for any group. Further, the absence of any known 17N training camps suggests that all of the group's devices were constructed in central Athens apartments, creating an environment in which the group had little room for experimentation without the risk of being detected. And while it is possible that some new devices were tested in the abandoned areas just outside of Athens, no evidence of such training has surfaced so far. What seems more likely is that the group approached the issue of testing new weaponry as a "trial and error" process, deploying its devices without prior testing. This would explain the fairly high failure rate in 17N's rocket attacks, as well as the high number of abortive operations in Greece that remained unclaimed, indicating that these may have been dry runs or failures with which the group did not want to be associated fearing negative image repercussions.

On the other hand, the security environment in Greece was rather lax, mainly due to the natural antipathy toward law enforcement and internal security agencies that existed during and after the fall of the junta. Further, due to the indifference, amateurism and poor training of Greek law enforcement agencies,[508] not a single terrorist had been arrested in the country for over two decades – not just 17N, but any member of *any* other domestic terrorist group. This later point clearly demonstrates that the main reason behind 17N's notorious elusiveness cannot be attributed to the group's exceptional evasive qualities or the so deeply dreaded but never documented possibility of a link with the Greek internal security agencies. For 20 years, the Greek authorities simply were not able to obtain any confirmed fingerprints, blood samples, hair samples or any other type of forensic evidence that would facilitate an arrest.[509] Further, not until the autumn of 1991 did the Greeks have an electronic data bank for the collection of information on terrorist groups.[510] And finally, the point about low level of capability of

Greek law enforcement is driven home by the fact that even when the authorities were in possession of very concrete intelligence regarding a 17N meeting held at the Louizis Riankour Street in March 1992, the police operation unbelievably came up empty handed.[511]

With regards to the frequency of attacks as a possible determinant of both the desire and the ability of terrorists to innovate due to a possible need to employ new weapons on the battlefield as well as greater experience with handling weapons and more ample opportunities to test innovations, there appears to be a positive correlation between 17N's low frequency of attack and its low level of innovativeness and high failure rate, confirming the original hypothesis. In other words, the absence of a need to improve on the battlefield as well as a small spectrum of opportunity to test new technology in such a setting has provided yet another obstacle to both the decision and the ability to innovate.

Overall, the confined urban environment in which 17N operated was probably one of the factors that contributed to the group's technologically conservative nature, curbing both the organization's motivation and ability to conduct research and test new devices without arousing unwanted attention. And while the security environment in terms of a strong and efficient police presence was rather low, mistakes during experimentation could have still been very costly – after all, it ended up being a premature explosion of a bomb that brought about the beginning of the end for the group.

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 some relevance of this variable with regard to providing an explanation for 17N's conservative tendencies. For one, the security environment in Greece did not put enough pressure on 17N to force it to adopt new tactics or technologies – in the absence of arrests of any of its members, 17N was simply never put in a position to have to change its *modus operandi* in order to ensure its survival. Further, with few physical countermeasures in place there was no pressure on the group to find alternative ways of attack in order to achieve operational success. Only after the peak of 17N violence in 1991 was deterrent police presence stepped up, ultimately resulting in a significant and continual operational decline of the group, from which it never recovered. This last point suggests that despite the apparent correlation between the lack of countermeasures and the absence of innovation, this variable was not the *main* driving force behind 17N's conservative approach – 17N did not resort to any innovational initiatives even after more pressure was put on them by law enforcement, suggesting that it was perhaps the lack of capability of making this shift that had a more profound influence on the group's conservative approach, than a lack of motivation to do so.

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 variable seems to correlate with 17N's conservative tendencies quite strongly, in the sense that the methods used by the group strictly reflected the discriminate nature of the group's targeting. 17N had killed "only" 23 people in its 27 years of operation, a tiny number by most terrorist organizations' standards. But as the group's operational leader Dimitris Koufodinas remarked in relation to this low casualty rate: "The issue isn't technical, it's political."[512] In other words, the group never strived to cause casualties beyond several specific individuals that were targeted with great precision and patience, and by methods that limited the risk of producing undesired victims. In other instances when less discriminate methods such as bombings or rocket attacks were used, this was usually done at night or was preceded by a warning call in order to prevent unwanted casualties. Further, the group had a limited repertoire of targets, some of which were successfully attacked on multiple occasions, as in the case of the Athens offices of Citibank and Alpha Credit bank. In other instances, the group would follow through plans that were designed for previous years. For instance, the 1997 Peratikos murder had unsuccessfully been attempted twice, dating as far back as June 1995.[513] Similarly, the 1996 missile attack against the US embassy had been attempted in 1990, but was aborted at the last moment after the attackers were spotted behind a poster placed on the building exactly opposite to the embassy.[514]

Overall, the fact that the group followed a rigid targeting pattern and did not seek to escalate in terms of their indiscriminate killing potential seems to be one of the factors that contributed to the conservative weapons and tactic selection employed by the group. After acquiring a sufficient enough capability to fulfill 17N's strict targeting logic, there was little reason to invest energy and resources into the adoption of additional attack means in order to maximize killing potential.

Attachment to weaponry

Probably the most significant factor behind 17N's low innovation level was the group's expressive and emotional attachment to weaponry, with respect to which 17N acted more like a serial killer, than a revolutionary movement. The group stared out with the .45 caliber Colt 1911 semi-automatic pistol, which was used in six assassinations throughout the campaign, with another .45 caliber pistol taking the stage in other similar operations. The exact reason for 17N's obsession with the .45 remains unknown, but it seems more than likely that it was the widely publicized 1976 linking of the first two 17N assassinations by the ballistics signatures of the weapon that prompted its repeated use. The .45 in a sense became a signature weapon,

the very use of which would give a testimony of 17N's responsibility, adding even more to the group's mystical image. Another reason for this preference could be the fact that the .45 was at the time a standard sidearm for American law enforcement, and thus for 17N it possibly carried the symbolic value of punishing the "imperialists" with their own weapon.[515] But the .45 caliber semi-automatic pistol was not the only signature firearm used by 17N, despite being the most visible one. Another gun used on a regular basis was a .38 caliber pistol, which was stolen from a policeman during a robbery in 1984 and was used for the first time two years later during the Anglopoulos assassination. Interestingly, this gun was used exclusively as a defense weapon by 17N hit men in the event of an unexpected interruption. In such cases, the .45 would be used as the murder weapon, while the .38 had exclusive preference when it came to shooting beyond the original target.[516] Besides its ritualistic selection of weapons, 17N also left signatures during its rocket attacks, where the group would virtually always leave the plastic tube launchers at the scene.[517] And even though little is known about 17N bombings,[518] pieces of evidence had been recovered by which all three 17N tactics could be linked, including the repeated use of a timing mechanism consisting of two alarm clocks and a 12 volt battery in the later stages of the campaign.

Overall, the ritualistic importance of using the same tactics and the same weapons was perhaps the most important reason why the group was not driven to innovate, in the sense that since the signature attack tool was in the possession of the group from the outset of its existence, the group made little effort to acquire a different means of attack. At the same time, this particular element of 17N tactics serves as a fascinating example indicating that a terrorist group does not necessarily need to be innovative in order to build a spectacular image. In essence, 17N's approach was innovative in that it relied specifically on *not* changing its *modus operandi* in order to achieve notoriety.

Group dynamics

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.

The role of leadership in particular seems to have played a vital role in the group's operational trajectory. Despite some uncertainty derived from the fact that Alexandhros Yiotopoulos a.k.a. "Lambros" – the man who the prosecutors claim was the head – still denies any involvement in the group, convicted 17N members are clear on the issue that he was the group's

undisputed leader. Born and educated in France, the son of a pre-war Trotskyite, he became a student activist while in Paris in the late 1960s. Here, he was one of the founding fathers of a six-member revolutionary organization called May 29, the goal of which was to overthrow the junta in Greece. Modeled after French organizations popular at the end of 1960s, this group survived for only 3 years and never amounted to any concrete acts of violence. It did however serve as an empirical foundation for Yiotopoulos' design of 17N after May 29 ceased to exist following the sentencing of its members *in absentia* by a Greek court.

Yiotopoulos, an academic mathematician by training, was described by his peers from May 29 as a very decisive and ambitious person, who had excellent theoretical groundings in revolutionary operations theory. He was also described as a man of great charm and charisma who could easily attract young people to follow him,[519] furthering his authority and control via leading by example.[520] In this light it is hardly surprising that several 17N members had identified Yiotopoulos as the man who pulled the trigger during the group's first armed operation in 1975. Another of Yiotopoulos' characteristics was allegedly his inherent conspiratorial nature, as documented by the fact that none of the May 29 members knew where he lived.[521] This particular characteristic apparently stayed with Yiotopoulos for the rest of his terrorist career – even his French-born wife of 25 years testified that she had no idea about his real name, never met a single member of his family and never suspected his involvement in 17N.[522] The fact that 17N operations did not occur with great frequency lends some credibility to this otherwise unbelievable claim. Further, this particular point brings to the forefront the possibility that in the case of part-time terrorist groups, the operational frequency can sometimes be determined by elements much less rational than ideological imperatives or strategic planning, such as the necessity to avoid disappearing from home too often in order to prevent arousing suspicion among family members.

Another important element of the decision-making dynamics of 17N is the structure of the group. 17N was very small, having consisted of no more than 20 core members who formed an exceptionally cohesive unit which they referred to as "The Company." For instance, the group included family ties among four of its members (the Xiros brothers) and its only female operative was simultaneously the former wife of one, and the life partner of another of the group's members.[523] Close ties within the group were undoubtedly one of the key reasons behind 17N's long-term impenetrability. Moreover, despite being a small and cohesive group to begin with, 17N was further subdivided into operational cells which included no more than 3–4 members.[524] Even at this level, the responsibilities and "security clearances" of the group's members were clearly divided. For instance, some of the group's associates have testified that they had never met more than a couple of their 17N colleagues and in most cases had not even seen the faces of these few.[525] Possibly dictated by Yiotopoulos' obsession with secrecy, the

security precautions placed within the group were immense. For instance, code names were used to address the leaders, members, locations and safe houses, the existence of which was again revealed only to selected members. At the same time, some of the group's meetings were held in public places, including cafés and "rebetika" music bars.[526] Also interesting was the group's attitude toward former members, most of which testified that they were not put under pressure to remain a part of the group, even though one ex-member insisted that he was blackmailed.[527]

Overall, some of the 17N's internal dynamics such as Yiotopoulos' leadership by example, his high level of authority, complete control of the group's resources[528] and the 17Ns tightly knit structure were all factors that formed a favorable environment for the implementation of a decision to innovate. However, since there was an absence of desire to innovate on behalf of the leadership, and since the group did not appear to experience any internal conflicts or pressures that would reach the point of a possible split, the group decision-making process was in this case one of the variables that contributed to the absence of a decision to escalate with innovative means. This further confirms the observation made in the other case studies that innovation is typically triggered by a top–bottom approach.

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 indirectly confirmed in this case study. 17N encountered only two other groups in its operational theater, both of them possessing virtually identical ideological foundations: the Revolutionary Armed Struggle (ELA)[529] and May 1st. The exact form of the relationship between these groups is clouded with mystery and speculation given the lack of evidence, but the current consensus is that 17N, ELA and May 1st have somewhat uncharacteristically engaged in a strategic partnership, as opposed to competition. Some reports have even suggested that ELA has provided 17N with trained personnel, while May 1st served as the connecting link between the two organizations.[530] The 17N–ELA partnership seems to be confirmed by the testimonies of 17N suspects, some of whom have stated that in internal discussions 17N referred to ELA by the code name "fathers," referring to themselves as "kiddies."[531] Further, it is also known that Yiotopoulos had in 1974 originally approached ELA with a plan to kidnap Welch, and only after his inability to "sell" this plan did he decide to found 17 N as his own outfit.[532]

ELA was historically the first post-junta group to launch a violent campaign in Greece, with its first operation being the firebombing of eight cars belonging to US servicemen. In the next 20 years, ELA perpetrated over 250 attacks, of which 49 were failures due to technical malfunctions.[533] ELA targets very closely resembled those of the 17N, as did the timing trajectory

of shifts in targeting logic. The one key difference was the ELA's historical aversion to killing, as evidenced by the fact that until 1992 the group gave advanced warnings prior to every single one of its attacks. In terms of operational methods ELA has relied exclusively on explosive devices, with most of them having been placed under vehicles. Other differences between 17N and ELA include size, with ELA being slightly bigger with some 25–30 members, and the fact that with an active network of supporters and several underground publications, ELA had always been much less of a closed group than 17N.[534] Another key point of distinction is that unlike the secretive 17N, ELA engaged in an open partnership with May 1st having announced its formation in a 1990 issue of the periodical *Andipliroforissi*.[535] According to Kassimeris, the partnership between the two groups had a sudden and dramatic impact on ELA's strategy, as evidenced by the fact that in 1992 the group launched its first casualty-seeking attack in 18 years of operation.[536]

Unlike in many terrorist operational theaters, where terrorist organizations with nearly identical goals and ideological foundations fight each other for the monopoly on the struggle almost as vigorously as against the enemy, ELA and 17N seem to have enjoyed a fairly friendly, if not a symbiotic relationship. This was to a great extent caused by the fact that due to 17N's lack of ambition to expand, mobilize and eventually govern, the group never posed a threat to ELA's political ambitions. Also important in this regard were the distinct operational methods used by the two groups, which nearly eliminated the possibility of competition with regards to claiming false credit for each other's operations.

Interesting in relation to the possible cooperation between the two groups is the question of the source of 17N's bomb-making capability, which could have presumably come from ELA for which bombings were the main mode of attack. However, the fact that the first 17N car bomb in 1985 was detonated by remote control brings some doubt into this hypothesis, as ELA had not used remote detonation until its first deadly attack seven years later. Further, since ELA relied exclusively on bombings, it would not have necessarily been in its interest to share the know-how on the methods by which their responsibility for an operation was easily distinguishable.

Overall, the 17N's relationship with ELA is one of the factors that seem to correlate with the organization's low level of innovation. First, the fact that the two groups did not clash over political ambitions made operational competition for the purposes of assuming greater visibility or prominence over the rival group unnecessary. Second, the varying preference of both organizations on the methods by which they could easily be recognized by the media as the likely perpetrators of particular attacks contributed to this operationally uncompetitive atmosphere. And third, in the event of this noncompetitive relationship transforming further into actual operational cooperation, an inter-group know-how transfer would have hardly resulted in significant innovation on either side, given the heavily conservative nature of both of these organizations.

Resources

17N also seems indirectly to confirm the hypothesis that large organizations with hefty budgets, outside sponsors and highly qualified membership are more likely to demonstrate an inclination toward innovation than smaller groups with limited financial and logistical resources.

In the first category of material resources, 17N was clearly impacted by the complete absence of a state sponsor or a network of sympathizers from whom money could be raised on a voluntary basis. Moreover, 17N also lacked a sufficient infrastructure that would allow the group to collect "revolutionary taxes" effectively via extortion. As a result, all of the groups' material resources had to be obtained directly by its members via bank and post office robberies. Nevertheless, the group's funds were sufficient to finance the group's activities, including "bonuses"[537] for the members who carried out assassinations, and alleged donations to "third parties needing financial assistance."[538] For example, the group was able to secure the equivalent of over €1,126,000 in two post office attacks alone.[539] In addition, some evidence has suggested 17N's additional financial involvements, which have included plans to open a takeaway restaurant in the popular Syntagma square in central Athens,[540] and the possible connections with the film industry which were brought to light by the fact that two of the Xiros brothers were "thanked for their assistance" in the credits of the Greek film "Tell Morphine I'm Still Looking for Her."[541] The exact annual budget of the group remains unknown, but was likely somewhere in the range of tens of thousands of dollars, comparatively a rather small number. At the same time, the group's material resources, despite having all been obtained through self-help, by far exceeded the organization's operational capacity. According to British investigators who significantly contributed to 17N's collapse, the armory that was recovered in the group's safe houses following the 2002 arrests would at a constant attack rate have lasted the group for over 275 years.[542] No evidence points to 17N's use of its financial resources for an actual purchase of weapons, suggesting that these arms were all obtained through the group's raids of military depots and holdups of police officers.

With regard to human resources 17N was also dependent on self-help, despite the numerous historical reports speculating about links with various entities such as Carlos "the Jackal," Greek intelligence services, the Abu Nidal Organization, the Turkish Armed Propaganda Union[543] or even the Iranian government.[544] The source of 17N military capability remains somewhat clouded, but according to investigators it is likely that at least some of the group's members underwent the Greek compulsory national military service where they had been trained to operate basic weaponry.[545] Interestingly, the one member who has been credited by his peers as the group's weapons expert was Dimitris Koufondinas, who apparently kept a false name precisely in order to avoid military service.[546] Koufondinas' own source of

expertise thus remains unclear, even though some reports have suggested that the technique used by the people who have made 17N's bombs had been taught in the training camps throughout the Middle East in the 1970s.[547] Either way, Koufondinas was the most capable operator within the group. Another source of expertise can also be traced directly to Yiotopoulos, who according to some reports was one of the ten Greek visitors who received urban guerilla warfare training in Cuba at the end of the 1960s.[548] The one aspect that lends some credibility to these reports is the fact that this training allegedly included instruction on covert operational procedures and on securing "operational autonomy," both of which were 17N's strengths.

Looking at the professional background of its members, 17N clearly had only a small potential for technological innovation, having been composed of only part-time members of professions such as a beekeeper, a mathematician, a religious icon painter, two electricians, a school teacher and several plumbers. 17N's main operational attribute clearly was not expertise but patience, which allowed the group slowly to master the tactics of assassination, reconnaissance and disguise. The very limited background in weapons training might have been enough to facilitate what the group was attempting to achieve, but was clearly one of the factors that made significant tactical or technological innovation on the part of the group unlikely. In addition, the group's extremely small size confirms the hypothesis that the level of innovativeness of a group is positively correlated with its size.

Openness to new ideas

The final variable that seems to correlate with 17N's lack of innovation is the group's low level of openness to new ideas. This can be attributed to a combination of many of the other variables mentioned above, including the group's emotional attachment to a particular weapon, the low level of awareness of the groups' members in terms of alternative means of attack, and the unwillingness to risk detection and apprehension resulting from experimentation in the urban environment. The general attitude toward risk taking is particularly important in this regard. Even though 17N's fairly positive attitude toward risk taking with respect to personal safety was demonstrated by the use of the close-quarter assassination technique, the group was much more sensitive to the risks of mechanical failures and the public opinion risks associated with operational incapability in general, and the danger of producing undesired casualties in particular. All of the above factors contributed to the low openness to new ideas within the group, directly impacting the apparent lack of desire to innovate.

Durability

With regard to the "durability" variable it has been hypothesized that longer-lasting organizations are likely to have more time to progress in

terms of their motivation to innovate, as well as the opportunity to gather enough experience to facilitate success in this process. This variable does not appear relevant to 17N at all, as with 27 years of the overall period of existence 17N was one of the longest lasting terrorist organizations in history, which makes it difficult to argue that the low level of the group's innovation can be explained by an insufficient amount of time to facilitate the process.

Nature of the technology

With respect to the "nature of the technology" variable, it has been hypothesized that the sophistication of selected weaponry will be negatively correlated with the success of the attempts to adopt such a method. This variable shows little relevance to the 17N case study simply because of the group's limited attempts to make significant technological or tactical leaps. In the absence of the decision to innovate, the obvious preconditions to successful completion of the innovation process have not been fulfilled. At the same time, the minimum amount of innovation that the group did demonstrate was relatively successful, mainly because of the simplicity of the newly adopted technologies and tactics, and therefore the nature of the technology variable generally seems to hold despite the lack of its overall relevance to this case study.

Conclusion

Revolutionary Organization November 17 serves as a prime example of how a small group of individuals can acquire enough capability to carry out terrorist operations and eventually achieve worldwide notoriety even without undergoing a substantial innovation process. This case further demonstrates that a group does not necessarily need to inflict a large number of casualties in order to create a spectacular image for itself. 17N's innovation in this regard was the ritualistic use of weaponry, the rigid tactics and target selection, unprecedented elusiveness, avenging nature of its attacks and an overall resistance to the temptation to escalate. In essence, 17N was spectacular by the virtual *absence* of innovation in its campaign. The key question that remains is whether it was a product of a strategic choice, or rather the lack of operational capability that forced the group to behave in the way it did. As we have seen during the examination of the influence of individual variables described above, some factors such as non-ambitious overall strategy, discriminate targeting logic, attachment to weaponry that was simple, lack of direct countermeasures and the non-contentious relationship with similar organizations seem to suggest that the group's decision was a conscious one. On the other hand, variables such as the tight urban environment in which the group operated and the small amount of material and human resources available to the group make the operational limitations of 17N's capabilities evident as well. Nevertheless, some of the variables examined above have

also suggested that the group did possess some preconditions favorable for successful technology adoption had the decision to innovate been the strategic preference of the group's leadership. In the absence of any attempts to exploit such an environment, it seems safe to conclude that 17N was one of the terrorist organizations whose level of innovational capability was self-limited by strategic choice. Implicitly, in relation to the prospects of mass-casualty CBRN terrorism, 17N clearly represents one of the least likely historical candidates for perpetrating such an event, given the group's complete absence of interest in both mass casualties and innovation.

7 Understanding terrorist innovation

Throughout the course of this book, the trends in terrorist innovation were examined, followed by an attempt to explore the factors responsible for the enormous differences among the innovational patterns demonstrated by different terrorist groups. For this purpose, 11 variables were tested on four different case studies in an attempt to identify the level of correlation of these variables with the level of innovativeness demonstrated by the respective groups. The goal of this chapter is to provide an analytical comparison of the findings, leading to the inductive production of a comprehensive theory of terrorist innovation, which will attempt to explain the circumstances and characteristics that determine the level of a group's involvement in tactical and/or technological innovation. First, the original hypotheses associated with the individual factors will be summarized, followed by an analysis of their applicability to the individual case studies. Following this step, alternative explanations to the original hypotheses as well as the definition of the scope conditions of their applicability will be presented, along with supplementary evidence.

Role of ideology and strategy

The first variable tested has been the role of ideology and overall strategy. It has been argued that this variable's importance lies in the fact that it is in essence an organization's ideological foundation that frames the worldview of its members and thus provides a sense of collective identity. Ideology is also instrumental in identifying the enemy, while also providing the necessary explanation and justification for its targeting. Moreover, ideology determines a group's core objectives and the strategy for how and by what means these objectives are to be achieved. And finally, ideology is a critical component in determining a group's ambitions, as well as the overall perception of urgency for armed action in order to fulfill the given aspirations. At the operational level then, the group's core strategy translates into the frequency and intensity of its military operations. This is where ideology, strategy and innovation meet, in the sense that terrorists' innovation has been hypothesized to be driven by the need to achieve the capability necessary for reaching and sustaining the level of intensity preferred by the group.

The record of the four case studies under scrutiny is highly supportive of this assertion. Possibly most telling is the case of Aum Shinrikyo, whose operational preferences not only reflected the group's overall ideology and strategy – the curve of shifting organizational goals was directly mimicked by modifications in the technological realm as well. In other words, as Aum's paranoia grew the group's goals began to shift toward more apocalyptic ends, triggering the increased effort to acquire mass-casualty capable technologies such as chemical, biological, nuclear, plasma, laser and even seismological weapons. Similarly, PFLP-GC's innovation patterns also correlated highly with the group's ideological and strategic objectives. Despite the group's traditional Marxist–Leninist rhetoric, in PFLP-GC's belief system, political concepts and strategic planning seem to have been considerably less important than the *process* of the struggle itself. In this sense, the emphasis on spectacular armed operations along with the building of conventional military capability to fight the Israelis naturally led the group to become its time period's leader in terrorist innovation. Equally, the RAS' ideological and strategic goal of exerting the maximum level of attrition against the civilian population in order to achieve the pullout of Russian forces from Chechnya had driven the group to design adequate methods of high pressure and mass-casualty tactics. This is especially true given the RAS' preference for striking in the heart of the enemy territory, an aspect of the RAS' strategy that required the perfecting of disguise and infiltration techniques, an area where the group's success rate remains unparalleled. In the control case of 17N, the comparative *lack of* innovation also seems to be closely tied to the group's ideology and strategy. In the absence of a coherent plan of bringing about a revolution and the associated lack of an ambition to govern, the group was not dependent on popular support and thus did not need to impress and mobilize a large audience. In this regard 17N saw itself more as a "tool of popular justice" than a real revolutionary force, a fact that was reflected in the group' repetitive, almost ritualistic operational methods.

As these case studies have shown us, terrorist organizations can indeed be expected to launch operations according to their ideological and strategic objectives. Thus in many ways, the disparity among the innovational tendencies of different groups can be attributed to the differences in belief systems as well as strategic approaches of the different groups. For instance, AQ had learned the power of single large-scale operation from the outcomes of the assassination of Egyptian President Anwar Sadat. Under this influence, the group had decided to rely exclusively on dramatic and spectacular operations, explicitly avoiding small-scale attacks in order to prevent the dilution of its omnipotent image. As early as 1996 bin Laden explained in an interview for *al Quds al Arabi*, "the nature of the battle calls for operations of a specific type [large scale] that will make an impact on the enemy, and this calls for excellent preparations."[549] Correspondingly, the group's strategic approach has been to launch operations only about once a year, while investing between one and three years in the planning and preparation

phase.[550] In contrast, the Peruvian Maoist group *Sendero Luminoso*'s (SL) strategic approach depended on the strict following of Mao's model of "numerical inferiority at the strategic level but a numerical superiority at a tactical level"; this translated into the quantitative operational preference of launching as many operations in a short time frame as possible, while placing a comparatively low level of importance on the efficiency of their military outcome.[551] In consideration of the disparity in the strategic outlook of these two groups, it is hardly surprising that AQ with its emphasis on quality over quantity was by far the more innovative in its operational approach.

As we can see from these examples, understanding the ideology and strategic objectives of a group is a key component of threat assessment, as both of these elements provide us with an insight into the logic behind a particular group's decision to launch a specific type of operation at a given time. But while these aspects of a group's ideology can tell us a lot about where a terrorist group might be headed in terms of innovation, we must be aware of the limitations in the reliability of such an analysis. First, in some cases ideology seems disassociated from strategy, in the sense that it merely seems to serve as a retrospective justification for violence, rather than the pre-step toward formulating a strategy.[552] For instance, while the strategic approaches of left-wing groups in Latin America generally corresponded to the basic tenants of the Marxist–Leninist or Maoist ideology, the left-wing groups in Europe and North America were more anarchistic in nature, in the sense that they attacked the system but ignored other ideological imperatives such as mobilizing the working class and preparing a support base. In this sense, we can certainly expect very different operational approaches from groups in both regions, despite the fact that in generic terms they all would fall into the same ideological category of "left-wing/revolutionary organizations." This suggests that our analysis must go deeper than simple ideological compartmentalization if we are to predict accurately the potential of a given group to engage in innovative operational methods.

Second, we must be careful to make a distinction between ideology and operational practicality. So while some ideologies such as "cosmically-scientific" millennialism may signal a clear ideological predisposition of a group to becoming technologically innovative, tremendous danger lies in applying a reverse generalization to ideologically conservative groups. In other words, the fact that a given group despises modernity does not necessarily mean that it will be reluctant to use modern means to its advantage. For instance, the AQ belief system while heavily conservative and retrospective in nature, with its desire to return to the time of the Prophet and the rejection of modernity and globalization, has not constrained the group from reaping the benefits that modernity brings for operational purposes. In fact, the group derives significant pleasure from using the enemy's own tools against it, as documented by the words of a former AQ member who stated that "[the 9–11 attack] was like taking [your enemy's] finger and poking [him] into his own eye."[553] Similarly, according to Osama's close aid Abu

Ubeid al Qurashi: "The Westerners' rage increased once it became clear to them that we could use the same computers that they did without espousing the same values. Against all their assessments, our culture cannot be shattered by technology."[554] AQ's practicality in these matters can further be documented in the instructions given to their operatives to help them avoid detection in the West, such as drinking alcohol, shaving their beards, watching television and avoiding usual prayer times and places. This level of ideological pragmatism is likely to be present among innovative groups that embrace conservative ideologies, as they will need to possess the will to act completely contrary to their own belief system in order to succeed operationally. Contrary to popular perception, however, very few conservative groups have actually demonstrated such qualities, providing one possible explanation why innovation has been rare. For instance, HAMAS had for almost ten years refused female volunteers for suicide operations based on religious prohibitions forbidding single women from walking outside without the escort of a male relative; despite the fact that the group realized the tactical advantages of using females for such operations, as demonstrated by the fact that the group had used male bombers disguised as females, for a long time it was unwilling to compromise on ideology in favor of operational success.

Overall, the original hypothesis that organizations whose ideology identifies an ideal outcome with regards to definite objectives, and which prescribes a time frame and a specific course of action for reaching those objectives, are likely to demonstrate a higher level of tactical and/or technological innovation than organizations with vaguely defined goals, low sense of urgency and a low level of strategic planning has been confirmed in all of the four case studies and can be supported by plentiful additional evidence. The principal reason for this finding might be the fact that organizations with a greater sense of urgency for attaining their goals within their lifetime are generally more inclined to escalate continually in order to provide an "instant decisive formula" for victory, which can sometimes trigger a decision to pursue innovative means. However, as discussed in Chapter 2, while many terrorist groups encounter the need to escalate at some point throughout their lifespan, this step usually involves only the increased frequency and intensity of attacks as well as the broadening of targeting categories, as opposed to radical changes to the *modus operandi* per se. As a result, it appears that an increased perception of urgency can serve as a reliable indicator of the potential to *escalate*, but not necessarily a potential to *innovate*. Whether the escalation step will coincide with innovation will apparently be determined by other factors that lay outside of the scope of this variable. Also relevant in this regard may be the observation that all of the innovative groups examined in this book have shared a high level of ideological and strategic inconsistency and fluctuation. For instance, Aum's ideology and strategy kept shifting in accordance with Asahara's growing megalomania, Jibril kept altering the ideology of his group depending on

the preferences of current state sponsors, and Basayev went from personally protecting Boris Yeltsin to fighting against the Russians as a part of a global jihad against unbelievers. Given the fact that innovative tendencies of these groups have generally corresponded to the shifts in ideology and strategy, it seems to provide additional proof that it may not necessarily be the ideology itself, but rather the *number of shifts* in the ideological and strategic outlook that determine the innovativeness of a group. In this sense it seems safe to conclude that ideologically flexible and strategically adaptive groups are likely to be more innovative than groups whose ideology and strategy remains constant throughout their lifespan.

To conclude, terrorist ideologies and strategies have some predictive value with regards to understanding a group's motivation to innovate, but by itself this factor is not sufficient in explaining what sets aside innovative groups from conservative ones. More so than the type of ideology itself, the importance seems to lay in the ideological and strategic flexibility and adaptability – groups whose perception of reality changes in the direction of an increased perception of urgency can be expected to escalate, possibly employing innovative means if other suitable conditions and variables are present as well.

Dynamics of the struggle

Another variable that seems relevant to terrorist innovation patterns is the dynamics of the struggle. In this sense, tremendous differences were hypothesized 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. While the former have the option to conduct research and training freely without the immediate fear of detection and obviation, the latter have to take tremendous security precautions to ensure that their experiments and training do not arouse suspicion among the ever-present strangers. Further, the nature of the struggle also reflects on its frequency and intensity, having a profound impact on both the decision to innovate, as well as the likelihood of success in the case of a positive attitude toward such a decision. First, guerilla organizations in territorial control of a safe haven usually engage the enemy on a larger scale and with greater intensity and are therefore in more of a need of sophisticated weaponry to use in the field. Second, when groups that are involved in reciprocal clashes with the government decide to innovate, their greater overall combat exposure not only translates into more experience with handling weaponry, but also provides more ample opportunity to battle-test the new innovations in the field. Thus, greater frequency of attacks is likely to have a profound impact on both the desire as well as the capability of terrorists to innovate.

With regards to the relevance of the first part of this variable, the case studies examined throughout the course of this book show a mixed outcome. For instance, Aum's ability to operate on its own land 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 difficult 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 its adversary, it is clearly not possible to attribute its extreme innovative practices to the need of achieving comparative advantage on the battlefield. In contrast, the experiences of the RAS and PFLP-GC do show a high level of correlation with the respective dynamics of the struggle given the fact that both groups operated in a classical guerilla mode out of safe-havens set up either in friendly countries or regions, providing them with the breathing space needed to train and experiment without fearing obviation in the event of failure. In the case of the RAS, the group's high level of success in terms of tactical innovation was also greatly aided by the unparalleled corruptibility of the Russian security forces, which directly facilitated the triumph of scenarios that would be unlikely to succeed in other, more stringent security environments. And finally, the variable also appears highly relevant to 17N's technologically conservative innovation patterns, in the sense that the group was confined to a small and tight urban operational environment in which it had little room for experimentation without the risk of being dismantled in the event of error. And while the security environment in Greece was comparatively lax as documented by the country's failure to arrest a single terrorist over 27 years, it was in the end the accidental detonation of a bomb which brought about the end of the group, underscoring the general vulnerability of urban terror groups to experimental failures.

With regards to the frequency of attacks as a potential determinant of both the desire and the ability of terrorists to innovate due to a possible need to employ new weapons on the battlefield as well as greater experience with handling weapons and more ample opportunities to test technological innovations, there is a mixed relevance of this factor. On the one hand, 17N's low frequency of attack seems to be interlinked with the group's low level of innovativeness, just as Aum's high failure rate can to some extent be attributed to the group's low attack frequency. On the other hand, Aum's extreme drive to innovate at the technological level invalidates the motivational component of the hypothesis that guerilla groups are more likely innovators due to a possible desire to employ new weapons for battlefield use. Further, the PFLP-GC's and RAS' engagement in guerilla warfare had certainly provided a boost for these groups in terms of battleground experience, but at the level of technology there had been little impact of this variable since none of the technologies invented by either group for battlefield purposes had ever been used for terrorist operations and vice versa. As a result, the assertion that organizations engaging in frequent reciprocal clashes with the adversary would be both more motivated and more capable of innovation does not hold, at least not at the level of technological innovation. With regards to tactical innovation, however, organizations with

guerilla characteristics are arguably more fit to succeed due to the heightened exposure to combat and the associated tolerance for dangerous situations, operational experience and improvisational skills.

Overall, the hypothesis that organizations with guerilla characteristics, such as frequent reciprocal clashes with the enemy armed forces and control of a territorial stronghold, are likely to be both more willing and more capable of innovation than urban terror groups that are confined in their training and operations to the municipal setting has been partially confirmed in all four case studies. But while some aspects of the "dynamics of the struggle" were apparently relevant, this variable alone fails to provide a viable explanation for why Aum's, the PFLP-GC's and RAS' innovation practices were so radically different from other groups that have operated in very similar working conditions. Looking at other examples, some innovative groups that operated in safe havens like AQ, LTTE or the FARC show a high level of relevance of this variable; on the other hand why did urban groups such as the PIRA or RAF engage in technologically more innovative practices than groups with guerilla characteristics such as the Armed Islamic Group (GIA) or the SL? The answer apparently lies outside of the scope of this specific variable, and therefore it seems that while favorable "dynamics of the struggle" can provide a group with the working conditions that can generally increase the chances for successful innovation, the decision to engage in innovative practices in the first place is driven by other considerations.

Countermeasures

Another variable that has been credited with a possible causal role in driving terrorist innovation has been the security countermeasures introduced by a state to provide protection against specific tactics used by terrorists in the past. According to this hypothesis, target-hardening efforts in some instances render the tactics previously used by terrorists ineffective, providing the critical push for a group's decision to innovate in order to overcome these countermeasures. Examples of this phenomenon in the history of terrorism are abundant, and it is thus not surprising that the hypothesis has proven to be relevant in three of the four examined case studies. For illustration, the PFLP-GC's changes in operational methods such as the use of airmail, "non-terrorist profile" mules and double trigger mechanism for barometric pressure bombs in order to overcome the barriers of airline security, or the employment of motorized hang-gliders to defeat the security measures at the Israeli–Lebanese border, have all directly reflected the role "countermeasures" as the driving force behind these innovations. Likewise, the changes in the RAS' operational methods, such as the preparations for the possible use of an incapacitating gas during the rescue operation in the Beslan hostage crisis or the diversification of remote detonation methods during the Kadyrov assassination, have also directly reflected the counter-

measures employed by their adversary in the past. In contrast, there had been few physical countermeasures encountered by 17N and Aum throughout the entire lifespan of both groups. And while the non-innovative nature of 17N confirms the relevance of the "countermeasures" variable, Aum's enormous level of creativity in the absence of any need to find alternative ways of attack in order to achieve operational success clearly refutes it. As a result, while the Japanese security environment provided an atmosphere in which innovation was feasible, it certainly did not play a decisive role as the impetus for Aum's desire to innovate in the first place. Consequently, although the countermeasures variable can be credited with providing the impetus to both tactical and technological innovation in many concrete instances, the original hypothesis that organizations whose *modi operandi* are frequently countered by the adversary will demonstrate a greater innovative drive than organizations whose tactics are not effectively countered is not applicable *universally*.

Still, most groups that have demonstrated innovative tendencies in the past have done so partly because of the countermeasures variable. And while the majority of groups have responded to the introduction of security obstructions by switching to less challenging targets as opposed to choosing to innovate in order to defeat them, what sets the innovative groups aside is a desire specifically to overcome the enemy countermeasures as a symbolic gesture. For example, for groups such as the PIRA, LTTE, PFLP-GC, RAS, Hezbollah or AQ, the circumventing of enemy countermeasures has clearly been an issue of pride and prestige, serving the purpose of not only terrorizing the target population due to creating an image of invincibility, but also the goal of attracting outside sponsorship and lifting group morale. Alternatively, new devices can sometimes be the product of a lack of access to modern weapons, as in the case of the Kenyan Mau Mau which in the 1950s created primitive home-made pistols, or the case of West Bengali Naxalites who designed rudimentary pipe-guns triggered by pulling a string.[555] Another example of this phenomenon is the LTTE's employment of chlorine gas during the siege of a Sri Lankan Army camp in Kiran in 1990, which also came as a direct result of the group's decreasing access to ammunition following the seizure of several of the group's arms shipments.[556] This suggests that while in our minds unconventional weapons typically represent an escalation, in reality they can also be employed out of desperation or a simple lack of conventional options. Such causes of technological innovation, however, are unlikely to lead into a progression to a mass destruction capability.

Overall, while in many cases terrorist innovation has indeed been the product of an "arms race" between the terrorists and their enemies, the Aum Shinrikyo case study serves as a glaring reminder that, when it comes to innovation, terrorist groups are not necessarily limited to reactive strategies. Additional sources of the motivational drive to innovate, other than the need to adjust the *modus operandi* in order to survive in a more stringent security environment, apparently exist.

Targeting logic

Targeting logic is another factor that can have a strong effect on the level of innovation demonstrated by a particular group. At the most basic level, it has been hypothesized that terrorists identify the scope of their targets, and then seek to attain the capability to attack these targets at the desired scale. In other words, groups that embrace a very narrow and discriminate targeting logic will depend on a *modus operandi* that will allow such a targeting, while organizations that embrace a highly indiscriminate targeting logic are more likely to engage in the process of innovation in order to obtain adequately destructive means of attack.

This hypothesis was confirmed in all four of the examined case studies. For instance, Aum's desire to kill everyone but its own members in a short time frame is directly relevant to the group's need to obtain technologies capable of killing on a much larger scale than traditional terrorist weaponry. Similarly, the early PFLP-GC's unusually indiscriminate targeting approach also reflected on the highly lethal methods used by the group, such as the essentially random downing of airliners in mid-course flight. In the RAS' case the indiscriminate targeting logic embraced by the group from the very moment of its foundation was reflected in the adoption of suicide bombings as the principal tactic capable of delivering a high number of civilian casualties. And finally, 17N's highly discriminate and low intensity targeting pattern also apparently reflected the group's conservative operational tendencies in the sense that after acquiring a sufficient capability to fulfill 17N's strict targeting logic, there was little reason to invest energy and resources into the adoption of additional means of attack.

Another relevant dimension of a group's targeting logic has been the level of rigidity with which the given group approaches the issue. Organizations that have a highly rigid approach to their targeting throughout the entire period of their existence have been hypothesized to be less likely to demonstrate technologically innovative tendencies than organizations whose targeting logic is flexible in terms of frequency and extent of targeting shifts. The applicability of this hypothesis can best be demonstrated by the example of the PFLP-GC, whose de-escalation of targeting over time was accompanied by a decline in the group's technologically innovative tendencies. In other words, the more discriminate and less lethal PFLP-GC operations became, the lower level of innovation was involved in terms of the technology used. Similarly, Aum's shift from targeting individuals that posed a threat to the group to indiscriminate targeting corresponded with the search for weapons of mass destruction capability. Likewise, 17N's unusually fixed targeting model seems to correlate directly with the ultra-conservative nature of the group, further lending credence to the hypothesis that the greater the number of shifting points in a group's targeting logic, the more instances of a modification in a group's *modus operandi* will occur. The RAS' case in this regard is a bit less straightforward, largely due to the

fact that the group had in its two-year existence made only one shift to include the deliberate targeting of children in the hostage scenario, a change that was not reflected in any specific technological innovations.[557]

Overall, the assertion that the less discriminate and the more lethal the targeting logic of the group under scrutiny, the greater the organization's propensity to innovation, has been confirmed in all of the tested case studies. Further, at the level of flexibility of targeting logic, the hypothesis that organizations whose targeting preferences shift over time are more likely to be innovative than groups embracing a rigid targeting logic throughout their lifespan has been confirmed in all of the case studies as well. This particular phenomenon is closely associated with the point made earlier about the ideological flexibility and adaptability of innovative groups, as modifications in the strategic department are typically accompanied by shifts in the targeting scope as well.

However, it is also important to note that indiscriminate and highly lethal targeting is not always achieved through innovative means. For instance, some of the historically most lethal terrorist groups such as the GIA or SL rank among the operationally least innovative ones, while comparatively discriminate groups such as the PIRA have engaged in an infinitely higher level of innovation. In fact, many highly discriminate operations might require a much higher level of operational talent than indiscriminate massacres, as in the example of highly focused assassinations of well protected persons.[558] For instance, the RAF's six assassinations of heavily guarded Germans all involved highly sophisticated weapons that included state-of-the-art remote-controlled bombs triggered by a light beam and high-powered rifles.[559] Similarly the ETA assassination of Louis Blanco involved the casing of the Admiral's travel route for over 12 months, the digging of a 20 foot tunnel from a basement under the road and the placing of three large devices under the road timed to detonate in intervals of one-tenth of a second to match the speed of the car.[560] Both of these groups were certainly more sophisticated in their approach than the GIA during its village massacres in the 1990s. As a result, it seems that even highly discriminate and highly rigid organizations can sometimes be driven to innovate in order to maintain their ability to conduct "surgical strikes" against their desired targets, even after these have been hardened. This point makes it clear that lethality cannot automatically be equated with innovation, just as innovation is frequently not associated with indiscriminate targeting. In sum, while radical innovation in the category of mass-casualty CBRN attacks is likely to be pursued by organizations embracing a highly lethal and indiscriminate targeting logic, this observation does not necessarily apply to the realm of incremental or tactical innovation in the same way. Nevertheless, for the purposes of this analysis we are concerned primarily with the potential of terrorist groups to innovate in the direction of achieving mass-casualty capable weapons, and in this context the fluctuation of a group's "targeting logic" provides a usable indicator.

Attachment to weaponry

The purpose of this variable was to test whether a particular organization's preferences in terms of *modus operandi* and weapons selection are driven more by non-rational factors rather than purely strategic or cost–benefit considerations. Throughout the study, we have seen that the attachment to particular weaponry or the process of innovation itself has been among the strongest factors in all four case studies. In Aum's case, Asahara's self-perception of grandiosity and uniqueness along with his fascination with futuristic arms that could kill on a large scale in order to provide an empirical "proof" of the accuracy of his own apocalyptic prophesies was particularly important, as was the emphasis on the use of "non-bloody" killing methods in order to assure the victims' favorable re-birth. Of no lesser importance was the guru's attachment to super-powerful lasers equated to the "large sword" referenced in the Book of Revelation, and to chemical weapons in particular based on the admiration for Adolf Hitler and Saddam Hussein, whose entire chemical weapons arsenals Aum had explored. Similarly, in the case of the PFLP-GC, the group's tactically and technologically innovative tendencies can be explained by an expressive attachment, though in this case not to a particular weapon, but rather to the process of innovation itself. Like Asahara, Jibril was highly ambitious, always striving to be the best in his "field," thus naturally placing an emphasis on superior operational capability. In addition, both Asahara and Jibril had considered themselves to be inventors, both having claimed the rights to several technological patents. Likewise, Basayev's fascination with "subversive operations" also appears to be a key driver behind the tactical innovativeness of the RAS, along with the trademark-like emphasis on the operations that made him famous such as large-scale hostage takings, and female suicide bombings. And finally, 17N's ritualistic attachment to using the same weapons in order to achieve a tacit claim of responsibility and the desire to deepen the group's mystical image was perhaps the most important reason why the group kept returning to this signature *modus operandi*.

Examples of the importance of the "attachment to weaponry" variable as a determining factor behind a group's drive to pursue particular means of attack are abundant. For instance, the first terror groups ever to use dynamite – the Russian *Narodnaya Volya*, the transnational Anarchists and the Irish Fennians – all literally worshiped this explosive as the ultimate revolutionary weapon of the people that would topple the old world order and bring about the new secular millennium through its scientific, humane and even mystical powers.[561] An Anarchist song from the late nineteenth century called "The Carmagnole," documents this obsession:

> Dance dynamite
> Dance, dance, quickly
> Let us dance and sing (twice)
> Let us dynamite, let us dynamite.[562]

One cannot help but notice the similarity with Aum Shinrikyo's already cited "Song of Sarin the Brave." Perhaps the most glaring example in this regard is the expressive nature of the 1995 Oklahoma City bombing in which Timothy McVeigh meticulously followed the scenario described in the *Turner Diaries*, the William Pierce novel that has become the bible of right-wing militias in the US.[563] Not only did the target, tactic and the explosive mixture correspond precisely to the scenario described in the book – even the size of the explosive device was imitated. As such the *Turner Diaries* are a crucial text, in the sense that the book takes great expressive pride in the ability of the "patriots" to manufacture improvised weapons and devices from ordinary household items, because sophisticated weaponry in the novel's scenario is unavailable.[564] Given the obsession of the American militia movement with this book, tactical improvisation with dual-use items is a much more likely scenario for the militia groups than a quest for highly novel technologies. In the same way, in AQ's case it has been the expressive emphasis on martyrdom as the principal jihadi vanguard and as the best way to achieve a "victory of Islam" that has been one of the key determining factors behind the group's *modus operandi*. Given the prominence of martyrdom in seminal AQ texts such as the "Declaration of Jihad against the Jews and Crusaders" and Ayman al Zawahiri's last will, "Knights under the Prophet's Banner," is it any surprise that since 1998, every single attack launched directly by AQ has involved suicide delivery?[565] And is it any surprise that AQ-affiliated groups, such as the Algerian GIA, the Moroccan *Assirat al-Mustaqim*, the Tunisian Combatant Group, the Indonesia-based *al Jeemah al Islamiya* (JI) or the Islamic Movement of Uzbekistan, have all incorporated this tactic following their ideological cooption into the AQ network?

Another contemporary aspect of terrorist tactics that deserves close attention is the beheading practice used by Islamist groups in Bosnia, Algeria, Tajikistan, Abkhazia, Chechnya, Pakistan, Iraq and elsewhere. Here too we can trace the origin of this tactic to the literal interpretation of Allah's statement: "When you encounter those [infidels] who deny [the Truth = Islam] then strike [their] necks."[566] While this quote is certainly taken out of context when used to support the contemporary practice of beheadings, for groups like Zarqawi's *Jama'at al-Tawhid wal Jihad* whose logo depicted a *mujaheed* holding a blood-soaked sword, it certainly represents a strict observance of the Koran in the purest sense. Interestingly, the slitting of throats has also been practiced by non-Islamist groups for punishment purposes, such as those of SL. Here again the expressive element was present, this time however rooting from Andean mysticism, where a person who is killed in this way cannot be saved because his or her soul cannot escape from the mouth.[567]

As we can see from these examples, the attachment to a particular tactic or weapon is one of the key determinants of what type of *modus operandi* a group can be expected to adopt. On another note, it should also be emphasized that this expressive or non-rational element goes beyond just tactics and

technologies, but is also often prevalent in a group's target selection. For instance, Black September's decision to attack the 1972 Munich Olympic Games was largely driven by the refusal of the Olympic committee to allow the participation of a Palestinian wrestling team.[568] And while other factors such as publicity and media value were also important, the dominance of the expressive element can be demonstrated by the reciprocal selection of Israeli *wrestlers* as primary targets, despite the fact that athletes of this combat discipline were the most likely ones to have the ability to overpower their captors. This example clearly demonstrates that the expressive attachment can in some cases be more important than tactical or strategic considerations, even though in most cases these elements work in conjunction. For instance, the LTTE's use of a female suicide bomber in the Rajiv Gandhi assassination made tactical sense, but was no less important than Prabhakharan's proclamation that Gandhi deserved to "die in the hands of a woman."[569]

Overall, the groups that have been driven to innovate tactically and/or technologically differ from conservative organizations by the presence of a significant expressive or symbolic attachment to a particular weapon, tactic or the process of innovation itself, or in the sophistication needed to achieve this capability, to be more precise. While conservative groups often embrace a similar attachment, its fulfillment either does not require significant deviations from the group's present capability or the emphasis is on different values than innovation. The 17N ritualism or the SL recognition of ambushes and attacks as "the two fundamental forms of guerilla struggle" provide good examples of this phenomenon.[570] Of all of the variables examined in this book 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. As mentioned, other factors such as ideology and strategy, or countermeasures can have a profound impact on the modifications in a group's operations, but whether this process is accompanied by innovation or not will be determined directly by this variable.

Group dynamics

The first component of this variable is the background, the value system and the authority of the leader as a key determinant of the motivation of such a figure to instigate innovation, as well as his or her ability to impose such a decision successfully on the rest of the group. In this sense, the group structure is also extremely important. First, the structure will shape the decision-making dynamics, determining whether major operational decisions are based on a consensus of all members, or are rather a product of a top-down approach with the group's penultimate leadership making the decision and passing it on to operational sub-units or cells for execution. At the final level, ideational, operational or power disputes within a group can also

sometimes trigger escalation or innovation as a reconciliation tool that will help the group overcome their differences and unite by channeling their energy into a major effort to strike the enemy.

The record of this variable with regards to its applicability to the examined case studies is rather mixed. With regard to the background and authority of the leader and the overall group structure, the correlation in Aum's case is strong as the group's innovative tendencies were in many ways a product of the top–bottom approach driven by Asahara, whose "God-like" position within the group along with the plentiful mind-control mechanisms facilitated an effective and uncontested decision-making process. The experiences of the RAS and PFLP-GC in this regard are similar, as both Jibril and Basayev enjoyed a tremendously high level of authority within their respective groups and both had placed a great emphasis on inventing novel operational methods. So while the communication links within all of the three innovative organizations studied in this book were by no means open to the bottom-up approach to innovation, the personal preference of a powerful leader to take that path had compensated for this absence. The 17N case also confirms this trend – while the internal dynamics such as Yiotopoulos' uncontested leadership and the group's tightly knit structure were factors that formed a favorable environment for the implementation of a decision to innovate, the absence of such a decision at the top level prevented the group from doing so. In this sense, the assertion that groups led by an undisputed leader are likely to demonstrate a greater capability to innovate successfully, 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, has been confirmed in all of the four case studies. There are additional examples of the decisive role of the background and desired image of the respective group's leader as a determining factor behind a group's emphasis on military operations or a lack thereof. Bin Laden, for instance, has despite his very limited fighting experience always taken a special pride in portraying himself as a fighter, as documented by his keenness always to have his Kalashnikov visible in media interviews.[571] In contrast, SL's Abimael Guzman has always been depicted with a book rather than a gun and uniform, in concert with the belief that "to wage war it is necessary to be a philosopher. Comrade Gonzalo's {Guzman's alias} battle plans are political, not technical."[572] The differences between the innovational trails of group's led by "academics" like Guzman and Yiotopoulos on the one side, and "operatives" like Jibril or Basayev on the other is clear.

With regards to the second component of the group dynamics variable, the assertion that organizations experiencing internal disputes are more likely to innovate than cohesive groups due to the need to rally their members behind a spectacular operation was relevant in the PFLP-GC case and possibly in the 17N case, but not in the other two instances. While the PFLP-GC's highly contentious nature and a high susceptibility to internal conflicts and splitting can serve as a viable explanation for its innovativeness,

and while the *absence* of internal conflicts or pressures within 17N could serve as a partial rationalization for its operational conservativeness, the absence of this phenomenon in the case of Aum and the RAS makes it impossible to confirm the hypothesis about the positive correlation between the need to overcome internal factional disputes and innovative operational tendencies. And while there have been cases when an organization's implementation of a new method was specifically designed to strengthen group morale following internal disputes, a survey of additional groups such as the LTTE, FARC, AQ, HAMAS, Hezbollah, PKK or PIRA demonstrate that the record is inconclusively mixed, rendering this component of the group dynamics variable unusable for threat assessment purposes.

Overall, 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. What seems to be the most important implication here is that radical innovation is likely to be driven by a group's leadership, whose decision is likely to be influenced by the presence of other critical variables, namely the attachment to a particular weapon, tactic or the process of innovation itself. However, Aum's case also demonstrates that excessive obsession with the leader can inhibit the success of innovation when the group's experts' desire to please a technologically naïve leader becomes stronger than their rational scientific judgment. This may be yet another reason behind the aforementioned inverse relationship between a group's desire to innovate and the ability to do so successfully.

Relationship with other organizations

The next variable relevant to innovation is a group's relationship with other organizations functioning in the same operational theater. In the event of cooperation, know-how and technology transfers from one group to another can take place, contributing to a group's ability to perform a seemingly sudden capability leap, as we have seen in the case of European left-wing groups and the impact of the training they have received in PLO training camps in the Bekaa Valley, or the impact of AQ training on its associate groups such as JI. Similarly, IRA operatives have gained a high level of operational knowledge from members of the Greek-Cypriot EOKA, with whom they shared cells while serving sentences in Wormwood Scrubs Prison during the 1950s, just as HAMAS' employment of suicide bombings can be traced directly to the training provided by Hezbollah to the exiled Palestinian militants in Southern Lebanon during 1992–1993.[573] However, while examples of operational cooperation among terrorist organizations as a source of modifications in an organization's *modus operandi* are abundant, this variable has demonstrated a limited applicability to the case studies under scrutiny. There is no evidence that Aum has ever cooperated with any other terrorist group; and while both the RAS and PFLP-GC certainly have done

so, the nature of this relationship was typically in the form of *providing* ideas, know-how and training for the other groups, as opposed to receiving it. In this sense, the interactions of the groups under scrutiny with other organizations hardly contributed to their innovative tendencies in any major way.

Another dimension of the "relationship with other organizations" component is rivalry among groups active in the same operational theater, which can result in a fierce competition that can drive each group to improve in order to demonstrate superiority over its rival. A glaring example of how organizational competition can drive modifications in a group's *modus operandi* can be demonstrated on the contagion of suicide bombings in the Palestinian context. Following the political success of HAMAS and PIJ the secular Fatah-affiliated Al Aqsa Martyrs Brigades adopted this tactic in 2002 in order to counter the monopoly of both of these increasingly popular religious groups. This shift was further reflected by the adoption of suicide operations by other secular groups who in turn compete with Fatah, such as the PFLP and the DFLP.[574] And finally, this trend came full circle with the Al Aqsa adoption of female suicide bombers, a shift that attracted immense international attention as well as boosted Fatah's prominence. In order to counter this trend, both HAMAS and PIJ started adopting female suicide bombers, despite the fact that such a shift had previously been deemed unacceptable for religious reasons. In a similar manner, the PIRA's innovative tendencies can to some extent be attributed to competition with other groups such as the Irish National Liberation Army (INLA), just as SL's decision to spread its campaign to cities as opposed to operating solely in the countryside, was driven by the increased visibility of the rival Tupac Amaru Revolutionary Movement in the urban areas.[575]

But as in the case of the cooperative dimension of this variable, competition seems to have played only a limited role in the innovative tendencies of the majority of the groups under scrutiny. The most visible in this regard is the PFLP-GC case, where the absence of a distinct ideology in combination with a comparatively small membership base has led to the unusual level of emphasis placed on spectacular operations as a way of achieving a distinctive group identity among the many other Palestinian liberation organizations. Since operational uniqueness was the only thing the PFLP-GC could depend on to preserve this identity, the need to improve operationally in order to demonstrate superiority over its rivals was much stronger than in the case of other competing groups who had additional dimensions such as ideology or a distinct political program to rely on in this regard. Similarly, 17N's relationship with other groups in the same operational theater seems to have contributed to the group's conservative operational preferences – since the organizations did not clash over political ambitions, operational competition for the purposes of assuming greater visibility or prominence over the rival group was unnecessary. In contrast, Aum's experience has demonstrated that while the group engaged in a fierce competition with other similar organizational entities, as documented by two assassination attempts against rival

cult leaders, Aum's innovative tendencies could hardly be attributed to this variable – since none of the cults that Aum competed with were violent organizations, Aum's uniqueness was already secured by the use of violence per se. This dynamic is similar to the RAS, whose monopoly on operations in the heart of enemy territory and whose ability to draw on human resources of other militant formations has left the group uncontested. As a result, there was little need for either Aum or the RAS to initiate tactical or technological innovation at the level of terrorist operations as a means to differentiate itself from other groups competing in the same operational theatre.

Also important with regards to the "relationship with other organizations" variable as a trigger to innovation is the copycat phenomenon, which is usually not driven by any direct assistance but rather by a group's study of the developments and means used in other terrorist campaigns. There are many examples of this phenomenon, including the spread of the Chechen "black widows" trend to Uzbekistan, Iraq and Jordan, or the aforementioned reference to the RAS' operations in AQ's guidelines for hostage takings published in the *Al Battar* magazine. However, not all groups seem to be able or willing to engage in learning from historical examples. An obvious example here is the reference to hydrogen cyanide in the JI chemical and biological weapons manual, which states that "[the agent] was used in a Japanese railway several years ago killing a number of people."[576] This statement is not only suspiciously vague but also inherently incorrect since none of Aum's six attempts with hydrogen cyanide succeeded in killing anyone.

Overall, the hypothesis that competition among groups with similar ideologies and ambitions in the same operational theater will be associated with a higher level of innovation than in the case of indifference or cooperation among such groups cannot be confirmed based on the four examined case studies. However, we have seen that throughout history, various organizations have indeed modified their operational preferences as a result of both cooperation and competition, and these two aspects thus must be taken into consideration as possible triggers of innovation in any comprehensive threat assessment. What is important to remember is that both levels of interaction among groups are not necessarily ideologically driven, and that most organizations with similar ideologies have in fact historically engaged more often in competition, rather than cooperation. The reason for this is relatively simple: the closer the ideologies and aims of a given number of groups in the same operational theater, the greater the need on the part of these groups to differentiate themselves from one another in order to gain a monopoly on the "dream" that these groups all claim to strive for. As a result, when two or more organizations with similar ideological foundations appear in the same theater, they are more likely to engage in violent competition than in cooperation. This is especially true in the case of ethno-nationalist, separatist and ideological groups, where the terrorist activity is generally seen as a pre-step to taking over governance upon the event of victory in the respective

struggle, and the claiming of rights to the eventual triumph is naturally taken into consideration even in the pre-victory phase. It appears, however, that competition will be less relevant in the future, mainly due to the decreasing prominence of ethno-nationalist, separatist and ideological groups among the terrorist spectrum. In contrast, the role of cooperation is likely to grow, not only due to greater access to information associated with globalization and the proliferation of modern communication technologies, but also because of the rising prevalence of organizations that pursue a truly global agenda, such as religious or single issue groups. Since there is a shared goal without the presence of any mutually threatening elements, innovation for these groups is more likely to be triggered by cooperative endeavors, such as mutual training, sharing of personnel and, more importantly, terrorist manuals shared over the Internet. Further, in today's globalized environment, alliances out of convenience or for entrepreneurial reasons are likely to flourish, as we have seen from the PIRA members who in 1971 provided explosives training for the ETA in exchange for 50 revolvers, and in 2001 trained the FARC in producing a long-range mortar for a cash payment.[577]

Resources

At the level of material resources, the availability and extent of a terrorist group's funds is intuitively likely to be one of the key determinants of a given group's operations, with more resourceful or state-sponsored organizations being more likely to innovate particularly at the technological level due to their ability to invest more heavily into this process. This assertion certainly holds in the case of Aum, which with a budget of up to $1 billion was the most resourceful as well as the most technologically innovative group of all time; no other group could even remotely afford to match the cult's whopping $30 million investment into the sarin program alone. By comparison, AQ's *entire annual budget* in the pre 9-11 era was only about $30–$50 million, with its most expensive operation costing $400,000–$500,000 and no other operation ever exceeding a $50,000 investment.[578] Even then, AQ has invested more money into its operations than the majority of other groups, indicating that in most cases only a small part of a group's budget is actually used for preparing terrorist attacks. The key implication of this finding is that both the PFLP-GC' and RAS' budgets provided an abundance of financial resources to cover their operational expenses easily. Further, in the case of these two groups the "resources" variable seems doubly important, as the innovative and highly spectacular operations can in part be attributed to the groups' need to increase their visibility to potential state and non-state sponsors. The 17N case study also supports the hypothesis that technological innovation is positively correlated with financial resources of a group, as documented by the fact that the organization had a comparatively tiny budget due to the complete absence of an outside sponsor or a network of sympathizers. But while the cases examined in this book all confirmed the original

hypothesis, other examples can be cited to document that the correlation between financial resources of a group and its innovativeness is certainly not absolute. For instance SL's annual budget of $20–$100 million in the early 1990s does not correlate with its technologically conservative nature, just as the PIRA's much smaller budget of $6–$10 million during the same time period would not serve as an accurate pre-indicator of the group's technological innovativeness.[579] Similarly, according to Abu Khalil the PFLP became operationally more *conservative* following the increase of financial resources in the early 1970s, as opposed to vice versa.[580] It thus appears that while financial resources play a supporting and facilitating role to innovation in general and technological innovation in particular, the process itself has to be triggered by other, more important variables. At the same time, large-scale technological innovations such as a mass-casualty CBRN capability can hardly be achieved without significant financial investments.

At the level of human resources, terrorist organizations differ significantly not only in size but also in the capabilities of their individual members. The availability of expertise in key areas can have a decisive impact on a given organization's willingness and ability to innovate, in the sense that it will determine both the outcome as well as the necessary confidence that the group can undergo this process successfully in order to justify the initial investment. This hypothesis has been confirmed in all of the examined case studies. Aum, as in the case of financial resources, possessed a human resource capability that was unparalleled by any other terrorist organization, both in terms of size and qualifications. Among the group's 40,000 members were at least 26 university-trained scientists as well as present and former members of the Japanese Defense Forces and the National Police Agency. Similarly, the PFLP-GC while being a small organization was also comparatively well off in terms of the quality of human resources, since the core of the group comprised former Syrian army officers and demolitions experts. Likewise, the RAS while also being relatively small in terms of membership base again draws on the expertise of a highly experienced pool of fighters, most of who had not only undergone military training in the Soviet Army, but had also amassed a vast amount of experience in over a decade of fighting in several regional conflicts. In sum, the innovative nature of these three groups corresponds to their superiority in human resources, just as 17N's conservative nature correlates highly with the group comprising only part-time members in professions completely unrelated to technical skills or combat. Additional supporting examples could be cited, including AQ's strength in the quality of human resources due to the vast experience acquired by the *mujahideen* in Afghanistan as well as the lessons learned in Egypt, or conversely the complete lack of weapons handling experience of SL members who were drawn mainly from the circles of peasantry or social science students in Peruvian universities.

Overall, the hypothesis that large organizations with hefty budgets, outside sponsors and highly qualified membership are more likely to demon-

strate an inclination toward innovation with respect to both motivation and capability, than smaller groups with limited financial and logistical resource, was confirmed in all of the examined case studies. Still, some modifications to this hypothesis need to be made. First, the argument that the groups that are most likely to innovate are state-sponsored entities needs to be revised to take into consideration one of the most significant contemporary trends in terrorism – the dramatic decline of state sponsorship following the end of the Cold War. In accordance with this trend, some of the most innovative groups in the post-Cold War era have included Aum, the RAS or AQ, none of which have enjoyed state sponsorship. This suggests that contemporary terrorist organizations have learned to adapt to the reality of self-financing, in some cases so well that their budgets even exceeded that of many state-sponsored entities. Thus in today's world, the lack of state sponsorship would serve as a poor pre-indicator of a group's lack of capacity to innovate for threat assessment purposes.

Second, the assertion that innovativeness of a group would positively correlate with its size also cannot be confirmed; both the PFLP-GC and RAS are comparatively small organizations of only several hundred members, and Aum while having a huge membership base of over 40,000, only involved a small inner circle of decision makers and perpetrators around Asahara in its terrorist activity. Similarly, AQ's innovative operations such as 9-11 originated among a very small circle of planners. In this sense it is clear that it is not necessarily the size of the group, but rather the qualitative attributes of the cadres that will determine its innovation potential. This is further confirmed by the case of the PFLP-GC who relied solely on Marwan Kreeshat's bomb-making expertise for its most spectacular operation, or the example of HAMAS whose initial capability to launch suicide bombings can be credited to the engineering skill of Yehya Ayyash, who was able not only to make explosive devices out of household items, but also managed to miniaturize them to fit into a backpack.[581] Similarly, in 1985 the British Army estimated the PIRA relied on only four or five master explosives experts for its entire campaign, providing further proof that the importance of quality of human resources by far exceeds that of quantity.[582] To conclude, while financial resources are only a supporting factor facilitating innovation, the availability of quality human resources is absolutely key to a group's motivation and ability to innovate.

One of the key implications of this finding is the fact that a group's decision to innovate can represent a relatively sudden shift, if for instance a group finds itself in the possession of a key human resource with the idea or the skill to introduce a new method. This underscores that luck and coincidence can also play a considerable role in determining terrorists' *modus operandi*. Examples of this phenomenon include AQ's introduction to the 9-11 blueprint by a then outside "entrepreneur" Khalid Sheik Mohammed, the *Gush Emunim*'s idea to bomb the Dome of the Rock from a plane after finding out that one of its members was a pilot,[583] Basayev's use of cesium

137 following its coincidental acquisition in the Budyonnovsk raid, or 17N's adoption of rocket attacks following the unexpected acquisition of rockets in the Larissa raid. Whether a group will make the leap toward taking advantage of a surprise acquisition of a resource will to a great extent depend on the following variable – the openness to new ideas.

Openness to new ideas

The level of openness to new ideas is another variable likely to be closely associated with terrorist innovation. The first component of this variable is the group decision-making dynamics. In highly autocratic organizations where members are closely watched and controlled and where dissent is not tolerated, the likelihood of innovation proposals coming from individual group members is lower than in the case of groups that base their decisions on a democratic vote. At this level it has been hypothesized that in order to facilitate innovation, a group's leadership has to be open to suggestions from below and individual members must not be afraid to put forward their proposals for adopting new methods. The record of the examined case studies, however, does not support this initial hypothesis. Despite its innovative practices, Aum's members were highly controlled, dissent was not tolerated and individuality was completely suppressed. Similarly, albeit to a much lesser extent, both the PFLP-GC and RAS were characterized by a highly centralized structure and a powerful leader, with operational decisions being made at the very top level. And while both Jibril and Basayev did keep close personal links with their fighters, only Jibril maintained frequent enough contact to permit theoretically a bottom-up approach. Conversely, the democratic dynamics and close personal relationships between the 17N members made the collective approach to decision making much more feasible, and yet the group still remained highly conservative. On the other hand, examples where a bottom-up approach to innovation did function effectively could also be cited, such as AQ whose military committee typically supported attack plans originating from independent cells, or the PIRA whose field units operated autonomously without even having to confer with the central leadership.[584] However, as we have seen in the case studies under scrutiny, open communication links have not proven to be a critical variable for providing the push for the decision to innovate.

The second component of this variable is the technological awareness of a group. In this regard, organizations whose members are in everyday contact with modern technologies such as cell phones, computers or culture collections and laboratory equipment are more likely to incorporate them into their operations than groups whose members are secluded from the rest of the world. However, this hypothesis, while intuitive, again did not show universal applicability to the case studies under scrutiny. On the one hand, the PFLP-GC was in close contact with the technological reality due to its ability to operate freely in countries such as Syria, Lebanon and Libya, which

facilitated the group's innovative practices. On the other hand, Aum was even more technologically innovative despite the fact that the cult's core membership was highly secluded from civilization, having lived in compounds under very primitive life conditions. Similarly, the RAS has also demonstrated its technological awareness despite operating in one of the world's most destroyed and impoverished areas. In contrast, 17N members while being integrated into society more than representatives of any other of the examined groups still embraced a conservative operational approach. This suggests that while technological awareness is clearly an important component of innovation, in the modern age of communication technologies a group's *physical* isolation from the modern world cannot be equated to an *informational* one. Thus, as the examples on the RAS or AQ have clearly taught us, it would be a gross mistake to underestimate the innovational potential of a group based simply on its operational presence being limited to impecunious areas of the world.

The third important component of the "openness to new ideas" variable is the positive attitude toward risk taking, both at the level of the risk of failure and the physical risks associated with conducting experiments with unfamiliar weaponry. At the basic level of physical risk, virtually any terrorist is willing to die for his or her cause. However, while some organizations have shown a great keenness to sacrifice the lives of some of their members during suicide operations, others have gone out of their way to avoid as many physical dangers as possible, even sacrificing the effectiveness of their operations in order to see their operatives fight another day. It has thus been hypothesized earlier that innovative groups are likely to demonstrate less fear with regards to operational failure, as well as a greater willingness to sacrifice their members in the process of attack preparation and delivery. This hypothesis seems to be confirmed at both levels in all of the three innovative case studies. Aum had shown a reasonable willingness to accept setbacks during its operations, as documented by the fact that its failures were not sufficient to persuade the cult to switch to less challenging weapons technologies in order to increase the probability of success. In addition, Aum researchers had shown 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 affected.

Similarly, both the RAS and PFLP-GC had demonstrated a high tolerance for the lack of operational success, as well as a high willingness to sacrifice some of their top members for spectacular operations where the chances of survival were extremely limited. Many innovative groups fit this pattern. The 17N case study further validates the proposed hypothesis; although 17N's fairly positive attitude toward risk taking with respect to personal safety was demonstrated by the use of the close-quarter assassination technique, the group was much more sensitive to the risks of mechanical failures and the public opinion risks associated with operational incapability in

general, and the danger of producing undesired casualties in particular. In sum the validity of the third component of the openness to new ideas variable was confirmed in all of the examined case studies. However, a number of cases that run contrary to the original hypothesis could also be cited. For instance the PIRA, despite being an innovative group, has shown a comparatively low level of risk taking, having placed a great deal of emphasis on the safety of its operatives during attacks, even adhering to the "abort if in doubt" principle.[585] Similarly, the AQ manual "Military Studies in the Jihad against the Tyrants" when discussing assassination with biological agents limits the discussion "only to poisons that the *mujaheed* can prepare without endangering his health," and in its discussion about explosives it stresses their advantage as being "the safest weapon for the *mujaheed*."[586]

In contrast, the conservative SL demonstrated a much more positive approach to risk taking, even implementing a quota for deaths on its own side as a measure of progress.[587] At the level of risks of operational failure, this group was also rather tolerant, going as far as claiming failure to be of a strategic *advantage*, arguing that it would "harden cadres and would provide an opportunity to learn."[588] As we can see from these examples, the hypothesis that innovative groups could be identified beforehand by their higher tolerance to the risks of failure as well as the physical risks associated with experimentation does not show a universal applicability. Further, it should be stressed here that a group's attitude toward danger is a dynamically evolving phenomenon that changes throughout the lifespan of a group. Based on the principle of "risky shift" associated with the psychological processes of group decision-making known as "groupthink," terrorists groups can be expected to take greater risks over time.[589] On the other hand, some organizations have gone in the opposite direction, as in the case of the Japanese Red Army, which scaled down from dangerous attacks using direct personal confrontations such a hijackings or attacks with knives and swords in favor of safer methods such as bombings and rocket attacks, primarily because of the difficulties in replacing lost members due to a lack of a support base and its limited presence in Japan.[590]

Overall, the original hypothesis that groups that are in regular contact with modern technologies, possess a positive attitude toward physical and operational risks, and embrace democratic elements in their decision-making process are more likely to demonstrate a high level of innovation than socially secluded, risk-averse, and autocratically ruled groups has shown a limited applicability for threat assessment purposes. On the one hand, while a high tolerance toward the risks of failure and physical risks can be very important as a precondition to *radical* technological innovation such as the adoption of CBRN weapons, in some cases it is the *low* tolerance toward physical risks that can drive groups to innovate incrementally, precisely in order to improve the safety of its members during operations. Further, we have also seen that informational seclusion is much more relevant to a group's lack of technological awareness than social or physical iso-

lation, and that when an organization's leadership is in favor of innovation, the presence of open communication links and democratically based decision-making is not a precondition to the initiation of this process. Nevertheless, since in this analysis we are primarily concerned with radical innovation leading up to the level of mass-casualty CBRN terrorism, the positive attitude toward risk taking and autocratic decision-making dynamics in the presence of an innovation-prone leader do belong among the indicators of the potential of a group to take this path.

Durability

The durability of an organization was hypothesized to be another key factor, based on the simple logic that organizations that exist longer have more time to progress in terms of their motivation to innovate, as well as the opportunity to gather enough experience to facilitate success of the innovation process. And while groups whose existence lasts only several months may in some cases be significantly motivated to innovate, their ability to succeed is likely to decrease the shorter the duration of their lifespan.

In none of the examined case studies has this hypothesis proved relevant, as all of the four organizations had reached their peak of capability relatively quickly from the outset of their existence. For instance, Aum progressed to biological agents after only three years, a similar time frame that the PFLP-GC needed for first use of the barometric pressure device. In the general absence of a clear innovational trajectory over time apparent in all of the four case studies, it is difficult to assign a causative or even a supporting function to the "durability" variable. In addition, since Aum's overall lifespan was two-thirds *shorter* than that of 17N, it is impossible to argue that the difference between the two groups' innovational outcomes can be explained by an insufficient amount of time on behalf of 17N to facilitate the process. This is especially true if we consider that the SL, for instance, also remained largely conservative despite having spent more than ten years preparing before its very first act of violence. Overall, while we have seen the general improvement of many organizations over time as they have gathered experience and learned from past mistakes, such as the RAF whose study of past court cases had led to innovations such as a special ointment designed to prevent fingerprints, we certainly cannot confirm the hypothesis that the length of lifespan of a terrorist group will be positively correlated with its demonstrated level of radical innovation.[591] The key implication of this finding is that the emergence of an innovative group can be rather sudden, and we would thus be wrong to expect a "superterrorist" group necessarily to be detected due to acts of lower level violence prior to their first CBRN strike.

Table 7.1 Summary table

Triggers of innovation	*Terrorist organizations*			
	AUM	*PFLP-GC*	*RAS*	*17N*
Ideology and strategy	• Cosmically scientific, religious cult • World destruction	• Action over ideology • High-profile operations	• Islamist/separatist • "The worse-the better"	• Marxist/Leninist • Tool of popular justice
Dynamics of the struggle	• Urban • Favorable security environment	• Guerilla with safe haven • Favorable security environment	• Guerilla • Favorable security environment	• Urban • Favorable security environment
Countermeasures	• Low	• High	• High	• Low
Targeting logic	• Extremely indiscriminate • Extremely high intensity	• Decline in intensity and indiscrimination • Innovativeness declined accordingly	• Became more indiscriminate over time • "Reciprocity"	• Highly discriminate • Low intensity • Rigid
Expressive attachment to weapon/tactic	• Non-bloody technologies • High-tech	• Attachment to innovation process	• Large-scale hostage takings • "Black widows" • "Art of subversion"	• 1911 Colt as signature weapon
Group dynamics	• Totalitarian cult • 40k members • Top-bottom	• Uncontested leader • Top-bottom decision making • 500 members	• Uncontested leader • Top-bottom • Several hundred members	• Uncontested leader • Top-bottom • 18 members

Relationship with other organizations	• Rivalry	• Extreme rivalry	• Cooperative	• Cooperative
Resources	• Unrivaled	• Very high	• Very high	• Very low
Openness to new ideas	• High	• High	• High	• Low
Durability	• 8 years	• 30 years	• 2 years	• 27 years
Nature of technology	• CBW • Futuristic	• Barometric pressure detonation	• Explosive devices	• Home-made rockets
Tactical innovation	• Low	• Very high	• Very high	• Low
Technological innovation	• Extremely high	• Very high	• Low	• Very low
Tally of key factors	• Ideology and strategy • Targeting logic • Attachment to weaponry • Resources • Group dynamics	• Ideology and strategy • Attachment to innovation • Relationship with other organizations • Countermeasures • Resources • Group dynamics • Dynamics of the struggle	• Ideology and strategy • Attachment to "art of subversion" • Targeting logic • Resources • Countermeasures • Dynamics of the struggle • Group dynamics	• Ideology and strategy • Attachment to weaponry • Targeting logic • Countermeasures • Resources • Dynamics of the struggle

Nature of the technology

Once the decision to innovate has been made, additional factors that will determine the success of the innovation process will also come into play. These variables include some of the above-stated factors such as the level of outside support, availability of financial and material resources, expertise, time, human resources, quality of membership, intensity of the struggle and the security environment in which the group operates. The one obvious variable that is likely to have the strongest impact on the level of innovational success, however, is the nature of the technology or tactic in question. Quite simply, the more complicated the new *modus operandi*, the less likely it is to be adopted successfully. In this regard it is crucially important to define what is meant by "success." In most basic terms, this definition should be associated with intent. In other words, whether an attack is successful is best defined by what the respective group was aiming to achieve. So while Aum's attacks with chemical agents were exceptionally frightening – which by itself would represent tremendous success for most terrorist groups – Aum's interest in bringing about Armageddon as opposed to spreading fear turns these attempts into an embarrassing failure. In this sense, while Aum's efforts to adopt hi-tech options including futuristic technologies that have yet to be invented were full of disappointments, it was only the extremely sophisticated nature of the technology at hand that stood in the cult's way of causing much greater carnage. In contrast, the PFLP-GC's and RAS' relatively frequent failures were in most instances not associated with obstacles on the side of sophisticated technology, but rather with problems on the side of tactics as well as malfunctions of relatively simple components such as detonators. That being said, the failures of both of these groups were insignificant compared with those of Aum, again mainly due to the differences among these groups in terms of the sophistication of the technology used. In this regard it is scary to even imagine the carnage that Aum could have inflicted had it invested the same amount of resources and dedication in simpler technologies such as car bombs.

Overall, the nature of the technology has proven to be significant when it comes to the success of terrorist innovation. In this regard, the fact that most terrorist organizations have suffered significant setbacks and failures with even relatively primitive technologies may be one of the main reasons why radical innovation in terrorist campaigns has been a rare phenomenon. In terms of threat assessment, the nature of the technology pursued by a given group and the accuracy of its own assessments about the challenges of mastering this technology are among the most useful indicators of whether we can expect the organization to succeed in its innovative endeavors. Table 7.1 summarizes the findings from this study.

8 Conclusions and implications for the future

As stated in Chapter 1, the goal of this book was to identify distinct characteristics of especially innovative terrorist organizations, with the ambition of contributing to our ability to conduct predictive threat assessment of future terrorist violence, specifically with regards to the prospect of mass-casualty CBRN terrorism. As we have seen throughout the previous chapter, terrorist innovation is a highly complex process, and only a few of the individual variables tested throughout this book have demonstrated an exclusive applicability in terms of being able to universally explain what distinguishes an innovative group from a conservative one. However, the presence of certain combinations of these variables does allow us to make some predictive judgments about future radical innovators.[592]

As discussed in the introduction, innovation occurs in the presence of an overlap between a terrorist organization's decision to innovate, and the capability to do so successfully. With regards to the motivational component, there are four distinct reasons that serve as possible triggers to innovation. The first such reason is the presence of an inherent ideological predetermination toward using modern technologies or the need to innovate in order to obtain the capability to match the level of violence associated with the respective ideological and strategic preferences. These innovative tendencies can be expected to occur right from the outset of the organization's existence, if the given group is founded on an apocalyptic ideology or in the event that it is a splinter group of another organization that was deemed not radical enough. In other cases, the points of innovation toward seeking more destructive means will be associated with points of escalatory shifts in strategy, which will likely be accompanied by frequent shifts in ideology and a continually radicalizing targeting logic. While newly formed apocalyptic organizations can remain under the radar screen of intelligence agencies if they do not pursue violence overtly, in the case of traditional terrorist groups the changing patterns in their statements and actions can provide early warning signals that the group might be moving toward the direction of radical innovation. While apocalyptic organizations can be detected by the ideological notion of destroying the world in order to save it, the key indicators in the latter case will include an escalatory pattern of violence, the

broadening of target categories, radicalization of statements, a decreasing concern for constituency or international opinion, increased influence of an allied group or state sponsor, a demonstrated high level of tolerance toward risks, and most importantly an expressive fascination with a particular weapon or technology or the process of innovation itself. At the same time, this reality may not apply to the scenario in which the group's decision to innovate constitutes a sudden shift triggered by the perception of a grave threat to the group, leading to the belief that there is no choice but a large-scale decisive strike as a last desperate attempt to save the group's very existence. However, the likelihood of success in such a scenario is relatively low, given the fact that organizations under such pressure are unlikely to have enough patience and calm to alter their operational methods radically with a positive outcome.

The second situation in which we can expect a group to innovate is associated with the emergence of competition with other organizations operating in the same operational theater. Whether innovation will become a product of this rivalry will depend on a number of factors, among them the density of the operational theater, ideological similarity among these groups, and clashes between leaders at an interpersonal level. The greater overlap in the goals, ideologies and ambitions of these groups, the greater the likelihood of innovative tactics and/or technologies being introduced by at least one of them. Most importantly, the occurrence of innovation will again depend on the presence of an expressive attachment to a particular *modus operandi* or an emphasis on spectacular operations as a source of pride and prestige in the respective organization's value system. A group's condescending reactions to the operations of other rival groups, a lack of ideological distinctiveness, a demonstrated high level of tolerance toward operational failure, as well as the presence of an expressive emphasis on its own operational superiority will provide good early warning signs of a group's propensity to innovation.

The third situation in which a group can be expected to alter its operational methods in a novel direction comes in the presence of government countermeasures, such as target-hardening efforts that serve as a direct obstruction to the tactics used by terrorists in the past. While most groups can be expected to yield to this pressure and substitute targets, an innovative organization will refuse to go down this path of least resistance in order to increase its probability of success. Instead, such a group will work to overcome these countermeasures by means that have not been accounted for by the enemy, often placing an emphasis on projecting an image of invincibility as well as mocking the state for failing to stop the attack despite all of its resources. Indicators of such characteristics are statements praising operational success in the face of difficult conditions, emphasis on the disproportion in resources between the "believers" and the enemy, repeated attempts to attack the same target even after having failed, a demonstrated high level of tolerance toward operational failure, and an

expressive emphasis on military skill or the process of innovation itself. In most cases, however, the innovations that will be triggered by the desire to overcome specific countermeasures are likely to be of an incremental, as opposed to a radical, nature. If a CBRN attack does become a product of these innovations, it is more likely to be a small-scale attack in which chemicals or pathogens are given preference based on their covert nature, as opposed to their potential to cause mass casualties. That being said, even such a small-scale attack can be instrumental in causing substantial loss of live, as in the scenario of smuggling CBW agents on board a plane with the intent of eliminating the crew and causing a crash.

The last scenario of a trigger to terrorist innovation is an incidental or unintended acquisition of a particular human or material resource. In this scenario, however, the organization will actually use the newly acquired capability only if it is consistent with its strategic and targeting preferences, if the group finds the necessary capability to use it, and if it does not perceive the operation to be too difficult or dangerous physically and politically. In the case of CBRN, this scenario would again be unlikely to involve a mass-casualty attack, as a group is unlikely to achieve this level of capability by accident. Further, even in the improbable event of such an acquisition, most groups can be expected to shy away from dramatically altering their grand strategy and targeting logic based solely on an incidental opportunity. That being said, some of today's terrorist organizations such as AQ would hardly shy away from CBRN if such an opportunity presented itself.

To conclude, while the above described situations are likely to be encountered by most terrorist groups throughout their lifespan, only some can be expected to innovate. This will depend on a combination of factors, most importantly on the presence of the expressive fascination with a sophisticated weapon or technology, or the process of innovation itself. Without the presence of this expressive component, groups forced to change their strategy, adapt to countermeasures, or prevail in competition with other groups can be expected to react by modifying their *modus operandi*, broadening their target categories, or intensifying their attacks, but not necessarily by engaging in radical innovation. In this sense, *the presence of the non-rational component such as the expressive emphasis to innovation, overly high ambitions in the operational realm, and ideological or expressive attachment to a particular type of weapon or technology serves as the strongest and most universal pre-indicator of the propensity of a terrorist group to innovate*. Consequently, in future threat assessments this component should be treated with paramount importance.

Future "superterrorists"

As we have seen throughout the course of this book, most terrorist campaigns have witnessed a comparatively small amount of innovation. The limited innovation that we have seen has been more at the incremental level of improvement of existing tactics and technologies, as opposed to radical

innovation of a new methodology or weaponry per se. In the rare instances when groups have engaged in radical innovation, the perpetrators demonstrated a mix of characteristics that make them distinguishable from other, more conservative terrorist formations. Since groups that will attack with CBRN weapons in the future will by default have to engage in radical technological innovation at an extreme level, understanding these characteristics is critical to our ability to identify potential perpetrators of such an attack beforehand.

At the most basic level successful mass-casualty CBRN terrorists will have to possess the capability to acquire and deliver the given agents, as well as the motivation to kill thousands of people by innovative means. Utilizing the overlap of these three components leads us to the following profile of future "superterrorists." Of greatest concern at the motivational level are cult-like groups that are completely isolated from mainstream society and are driven by an apocalyptic ideology that could be described as destroying the world to save it. Cult-like organizations that share the worldview that our planet could use a radical makeover are not in short supply. Fortunately, most such organizations have yet to resort to outward violence. If such a turn of events were to occur, however, the potential ability of apocalyptic organizations to justify killing people as actually benefiting them by sending them to a better place than this world makes such groups particularly dangerous. And while it would be difficult to claim that an act of mass-fatality CBRN terrorism will never occur in the absence of such an ideology, it is clear that similar belief systems should be a warning sign in this regard. Another key point to emphasize is that a terrorist group does not necessarily have to be religious in nature in order to reach an apocalyptic stage. Increasingly frustrated separatist, ethno-nationalist, revolutionary, right-wing, environmental or even animal rights groups can under certain circumstances also reach this point. It is thus the apocalyptic element in a group's ideology along with increasing radicalization, intensity and lack of discrimination that provide us with reliable early warning signs, as opposed to the often-applied "religious vs. secular" dichotomy.

Another element also likely to be present among superterrorists is a strong sense of paranoia among the group's members. Not only will a paranoid worldview enhance the polarization of the terrorists' perception of the world into an "us versus them" mode and consequently increase the ability to victimize the organization's non-members indiscriminately. The greater the presence of paranoia in the group's perception, the greater also is the sense of urgency among the group's members to unite into one cohesive unit and to eliminate dissenters. This is especially critical, as the utility of mass-casualty violence tends to be a topic of disagreement among most terrorist groups, often creating undesirable schisms within the organization. If the given group can completely eliminate dissent, the restraining nature of a debate about the utility of using weapons of mass destruction will be lost. Furthermore, such an environment is also more conducive to radical innova-

tion, which, as we have seen in this study, is almost exclusively a product of top-down decision making.

Organizationally, the group will have to possess the material and human resources in order to succeed in its innovative endeavors. And while it has been stated throughout this book that in traditional terrorist tactics, such as bombings, even a small amount of money and as little as one key expert can provide a group with superior capability, the Aum example has shown us that success in the realm of mass-casualty CBRN terrorism requires a considerable financial investment and a team of experts, not just in the general related scientific areas, but specifically in CBRN *warfare*. This is not to say that people with more general scientific knowledge could not succeed in launching a less sophisticated CBRN attack that would produce casualties at a level comparable with conventional terrorism. The scenario of an unexpected acquisition of a skilled human resource by a group like AQ indeed presents one of the most likely scenarios, especially given the fundamentally changing nature of the threat associated with the rise of attacks carried out by home-grown cells indigenous in Western countries. These cells, often tied to AQ solely on the basis of shared grievances and ideology, are becoming increasingly influential actors of international terrorism. Their members, having spent a significant portion of their life in the West also possess many advantages such as Western-style education, language skills, deep knowledge of the Western psyche, ability to travel freely and evade traditional profiles. The prospect of an educated scientist with the necessary access to and knowledge of lethal chemicals or pathogens deciding to join the AQ bandwagon and launch an operation in its name is becoming increasingly more imaginable. In this scenario, such an actor would likely give preference to CBRN agents not necessarily because of their superior killing potential, but simply because for him or her they will present fewer technical challenges then handling conventional weaponry. Even in this scenario, however, the resulting physical damage is unlikely to reach mass-casualty proportions, although the psychological impact would be huge.

Another important element likely to be present is the group leader's self-perception of grandiosity and ideological uniqueness. And while it is true that most terrorist organizations believe in their exceptionality, which helps to explain why most armed struggles usually involve not one but several concurring terrorist organizations with virtually identical goals, few groups define their individuality based on such narrow distinctions as weapons selection. The most significant differences among terrorist groups with a common cause and enemy exist mainly in the realm of overall strategy of using violence as a part of the revolutionary process, leader personalities and ambitions, allegiance toward a particular state or non-state sponsor, the appropriateness in terms of intensity of individual acts of violence, legitimacy of targeting civilians and other similar factors. Future superterrorists, however, are likely to attach extreme importance to the use of chemical or biological agents as a distinct feature of the group. Given the fact that

radical innovation is virtually always a product of a top-down approach, such an inclination is likely to be evident in the speeches and writings of the leader. If such a leader is uncontested and has the ability to convince his followers that his instructions are direct orders from a supernatural authority, the deadly combination of motivational attributes needed to kill masses of people indiscriminately with CBRN weapons will likely be established.

However, if the drive toward CBRN among future superterrorists is indeed based solely on the desire to kill as many people as possible, why not just attack more often, at more locations, and on a greater scale with weapons that are available and have proven to be effective? Why invest a massive amount of precious resources into a new technology that only few if any know how to use and that could potentially end up killing the perpetrators themselves – all without any guarantee of success? Why risk a negative public reaction and a possibly devastating retaliation likely to be associated with the use of non-conventional weapons? Clearly, another component will have to be present, one so strong that it will be able to offset this negative cost–benefit calculation in favor of CBRN weapons over other conventional options. As we have seen throughout this book, this particular role can be attributed to the expressive attachment to a particular mode of attack, which in the case of CBRN can transpire in several ways. For groups driven by an apocalyptic ideology, this attachment can be represented by a group's desire to kill without shedding blood, a divine fascination with poisons and plagues as God's biblical tools used to punish the sinners, or the interpretation of a disease as a natural tool used by "Mother Nature" to defend herself from destruction by the human race. In the event that a "conventional" group progresses to the mass-casualty CBRN level, the justification will most likely be based on the expressive attachment to the principle of unconditional reciprocity. The inclination of such groups to resort to this bold step is likely to transpire by their repeated claims of having been subjected to the same treatment by the enemy, in this case the use of poisons or radiation against the population the group claims to represent. An example of this is the attraction to poisons by the aforementioned Avengers (DIN), who argued that since six million Jews were poisoned in concentration camps, six million German civilians also had to be killed in the same manner in order to deliver justice.[593] On a similar note an attraction to chemical weapons can be expected from followers of the RAS, based on their claims of Russian use of such weapons in Chechnya and their increasingly apocalyptic outlook.

In conclusion, the trends in terrorism are indeed ominous. The rising frequency of spectacular and highly lethal attacks along with the existence of global terrorist networks seems to confirm the hypothesis that the ever-escalating nature of terrorism is likely to yield a mass-casualty non-conventional terrorist incident at some point in the future. Advances in communications and weapons technologies, as well as the questionable security of the CBRN facilities in the former Soviet Union, also seemingly provide the "new," more violent and reckless terrorists with the tools necessary to perpetrate

such an attack. However, the groups that will decide that such weapons are an attractive option are likely to possess a mix of unique and fortunately also quite rare characteristics that should help us identify them beforehand. They are likely to be apocalyptic cults or increasingly radicalized splinter groups led by uncontested innovation-prone leaders who are fascinated with diseases, poisons or the principle of unconditional reciprocity.

Such groups, however, may be in a more difficult position to breach the technological hurdles of a CBRN attack. Acquiring the necessary financial, logistical and human resources is challenging for isolated cults with an obscure ideology or for groups that represent the extreme of the extreme, mainly due to the difficulties of such formations in attracting mass support. Due to this inverse relationship between the motivation to produce mass fatalities by innovative means and the ability to do so, the likelihood of a successful mass-casualty CBRN attack remains comparatively low. That being said, many conventional terrorist organizations inevitably must have noticed the enormous fear of chemical, biological and nuclear weapons among the general public, and some are certainly likely to attempt to exploit this fear to their advantage. Such attempts are likely to take the form of threats and expressed desire to use such weapons, attacks involving a small amount of crudely delivered chemical or pathogen, or the inclusion of some chemical, biological or radiological agent in a conventional bomb. Such attempts, however, should be understood as psychological operations that are aimed at creating disproportionate fear, but do not necessarily represent a terrifying shift to catastrophic terrorism.

Notes

1 Hoffman, Bruce, *Inside Terrorism*, (New York: Orion Publishing Co. 1998) p. 205.
2 For an exhaustive debate on the topic see: Smithson, Amy E. and Anne-Levy, Leslie, *Ataxia: The Chemical and Biological Terrorism Threat and the US Response*, Stimson Center Report No. 35 (2000); Allison, Graham, *Nuclear Terrorism: The Ultimate Preventable Catastrophe*, (New York: Times Books, 2004); Tucker, Jonathan B., *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons*, (Cambridge, Mass: MIT Press, 2000); Dolnik, Adam, "The Age of Superterrorism" in Gunaratna, Rohan, *Combating Terrorism*, (Singapore: Marshall Cavendish Academic, 2005); Gurr, Nadine and Cole, Benjamin, *The New Face of Terrorism, Threats From Weapons of Mass Destruction*, (New York: I.B. Tauris, 2002); Falkenrath, Richard A., *America's Achilles Heel: Nuclear, Biological, and Chemical Terrorism and Covert Attack*, (Cambridge, MA: MIT Press, 1998); Roberts, Brad, *Terrorism with Chemical and Biological Weapons: Calibrating Risks and Responses*, (Alexandria, VA: Free Hand Press, 1997); Stern, Jessica, *The Ultimate Terrorists*, (Cambridge: Harvard University Press 1999); Sprinzak, Ehud, "The Great Superterrorism Scare," *Foreign Policy*, (Fall 1998) pp. 110–124.
3 Mickolus, Edward F., *Transnational Terrorism: A Chronology of Events, 1968–1979*, (Westport, CT: Greenwood Press, 1980) p. xii.
4 Ibid. p. 6.
5 Ibid. p. 6.
6 Evangelista, Mathew, *Innovation and the Arms Race: How the United States and the Soviet Union Develop New Military Technologies*, (London: Cornell University Press, 1988) p. 51.
7 Ibid. p. 19.
8 Buzan, Barry, *Strategic Studies: Military Technology & International Relations*, (New York: St. Martin's Press, 1987) p. 18; Murray, Williamson, "Innovation: Past and Future." In Murray, Williamson R. and Millet, Allan R., *Military Innovation in the Interwar Period*, (London: Cambridge University Press, 1998) p. 306.
9 Jackson, Brian A., "Technology Acquisition by Terrorist Groups: Threat Assessment Informed by Lessons from Private Sector Technology Adoption," *Studies in Conflict and Terrorism*, Vol. 24, No. 3 (2001).
10 Whether the given group was aware of the fact that the new tactic or weapon has already been used by another group will, of course, be an important factor in terms of the overall analysis, but essentially will have no impact on the definition selected above.
11 George, Alexander L., "Case Studies and Theory Development: The Method of

Structured, Focused Comparison." In Lauren, P.G., *Diplomacy: New Approaches in History, Theory, and Policy*, (New York: Free Press, 1979) p. 43.

12 At the same time, it is important to note that a number of other case-specific intervening variables may also play a significant role, and these will, of course, be factored in.

13 Farrel, Theo and Terriff, Terry, *The Sources of Military Change: Culture, Politics, Technology*, (London: Lynne Reinner Publishers, 2002) p. 4.

14 Wilkinson, Paul, *Terrorism and Technology*, (London: Frank Cass, 1993).

15 Bruce Hoffman's chapter on terrorist targeting (p. 12) and Richard Clutterbuck's chapter on trends in terrorist weaponry (p. 130).

16 Drake, C.J.M., *Terrorists' Target Selection*, (New York: St. Martin's Press, 1998).

17 Jackson, Brian A., "Technology Acquisition by Terrorist Groups: Threat Assessment Informed by Lessons from Private Sector Technology Adoption," *Studies in Conflict and Terrorism*, Vol. 24, No. 3 (2001).

18 Jackson, Brian A., "Organizational Learning and Terrorist Groups. National Institute of Justice Working Paper # WR-133-NIJ, (February 2004).

19 Ibid.

20 Hoffmann in Wilkinson, op. cit., p. 14.

21 Farrel and Terriff, op. cit., p. 6.

22 Evangelista, op. cit., pp. 4–5.

23 Jackson, op. cit.

24 Herwig, Holger H., "Innovation Ignored: The Submarine Problem – Germany, Britain and the United States 1919–1939." In Murray, Williamson R. and Millet, Allan R., *Military Innovation in the Interwar Period*, (London: Cambridge University Press, 1998) p. 264.

25 Rosen, Stephen P., *Winning the Next War: Innovation and the Modern Military*, (London: Cornell University Press, 1991) p. 23.

26 Herwig in Murray and Millet, op. cit., pp. 311–312.

27 Enders, W., Sandler, T. and Cauley, J., "U.N. Conventions Technology and Retaliation in the Fight Against Terrorism: an Econometric Evaluation," *Terrorism and Political Violence*, Vol. 2, No. 2 (1990).

28 Murray and Millet, op. cit., p. 23.

29 Farrel, Theo and Terriff, Terry, "Military Change in the New Millennium," in Farrel, Theo and Terriff, Terry, *The Sources of Military Change: Culture, Politics, Technology*, (London: Lynne Reinner Publishers, 2002) p. 266.

30 Rapoport David C., "Terrorism and the Weapons of the Apocalypse," *National Security Studies Quarterly*, Vol. 6, No. 3 (1999).

31 Dobson, Christopher and Payne, Ronald, *The Terrorists, Their Weapons, Leaders and Tactics*, (New York: Facts on File Inc., 1982) p. 108; Hudson, Rex, *Who Becomes a Terrorist and Why?* (Guildford, CT: Lyons Press, 1999) pp. 106–143.

32 Kahane, Meir, "Rabbi Kahane's Final Speech." Internet, available at: www.kahane.org/meir/last_speech.htm (accessed on 30/11/2003).

33 See for instance Murray and Millet, op. cit., p. 49.

34 Evangelista, op. cit., pp. 27–29, 32, 269.

35 Murray, Williamson, "Innovation: Past and Future." In Murray and Millet (1998) p. 306.

36 Ibid. p. 309.

37 Farrel, Theo and Terriff, Terry, *The Sources of Military Change: Culture, Politics, Technology*, (London: Lynne Reinner Publishers, 2002) p. 268.

38 Evangelista, op. cit., p. 45.

39 Hoffman, Bruce, quoted in Jackson, Brian, op. cit., p. 199.

40 Drake, op. cit., p. 79.

41 Murray, Williamson, "Strategic Bombing: The British French and German

Experiences." In Murray, Williamson R. and Millet, Allan R., *Military Innovation in the Interwar Period*, (London: Cambridge University Press, 1998) pp. 140–141.

42 Till, Geoffrey, "Adopting the Aircraft Carrier: The British American and Japanese case studies." In Murray, Williamson R. and Millet, Allan R., *Military Innovation in the Interwar Period*, (London: Cambridge University Press, 1998) p. 226.

43 Drake, op. cit., p. 70.

44 David C. Rapoport quoted in Hoffman, Bruce, op. cit., p. 170.

45 Crenshaw, Martha, "How Terrorism Declines," *Terrorism and Political Violence*, Vol. 3, No. 1 (1991), p. 79.

46 Jackson, op. cit.

47 Hoffman, Bruce, *Inside Terrorism*, (New York: Orion Publishing Co., 1998) p. 88.

48 Lewis, Bernard, *The Assassins – A Radical Sect in Islam*, (New York: Oxford University Press, 1967) p. 5.

49 Hoffman, op. cit., p. 89.

50 Ibid. p. 89.

51 Associated Press, "Fourteen killed in Algeria Attack," (11 June 1999).

52 Jurgensmeyer, Mark, *Terror in the Mind of God*, (Los Angeles: University of California Press, 2000) p. 120.

53 The perpetrators of this attack remain unknown, but Islamic fundamentalists are generally suspected. Another hypothesis has placed the blame on the Shah's SAVAK, whose motive might have been to compromise the Islamic revolutionaries.

54 Mickolus, Edward F., *Terrorism, 1996–2001: A Chronology*, (Westport, CT: Greenwood Press, 2002) p. 163.

55 Harvey, A.D., "The Pistol as Assassination Weapon: A Case of Technological Lag," *Terrorism and Political Violence*, Vol. 2, No. 2 (1989) p. 92.

56 Clutterbuck, Richard, "Trends in Terrorist Weaponry." In Wilkinson ed. *Terrorism and Technology*, (Portland: Frank Cass, 1993) p. 126.

57 Bishop, Chris, *Combat Guns and Infantry Weapons*, (Shrewsbury: Airlife Publishing Ltd, 1996) p. 59.

58 Dobson, Christopher and Payne, Ronald, *The Terrorists, Their Weapons, Leaders and Tactics*, (New York: Facts on File Inc., 1982) p. 105.

59 Ibid. p. 108.

60 Chang, Andrew, "Reverberation of Evil: Beltway Sniper's Methods Evoke Old Terror Tactics." ABC. Internet, available at: abcnews.go.com/sections/world/DailyNews/sniper021030_IRA.html (accessed on 23/9/2003).

61 Clutterbuck, op. cit., p. 126.

62 Mickolus, Edward F., *International Terrorism in the 1980s: A Chronology of Events Volume I., 1980–1983*, (Ames: Iowa State University Press, 1989) p. 215.

63 Mickolus, Edward F., *Transnational Terrorism: A Chronology of Events, 1968–1979*, (Westport, CT: Greenwood Press, 1980) p. 899.

64 Hudson, Rex, *Who Becomes a Terrorist and Why?* (Guildford, CT: Lyons Press, 1999) p. 68.

65 Nance, Malcolm W., *The Terrorist Recognition Handbook*, (New York: The Lyons Press, 2003) p. 130.

66 Mickolus, op. cit. (1980) p. 64.

67 Ibid. p. 720.

68 Mickolus, Edward F., Sandler, Todd, and Murdock, Jean M., *International Terrorism in the 1980s: A Chronology of Events, Volume II: 1984–1987*, (Ames, IA: Iowa State University Press, 1989) p. 392; Dolnik, Adam and Bhattacharjee, Anjali, "HAMAS: Suicide Bombing, Rocket, or WMD?" *Terrorism and Political Violence*, Vol. 14, No. 3 (2002).

69 In 1995 terrorists in Kashmir started using solar-activated rockets deployed over night and activated during the day when the temperature reached 92 degrees. (Interview with Mr. Misra, Director of Parliament security, in charge of personal security of three Indian PM's, New Delhi 26 February 2002).
70 Mickolus, op. cit. (1989) p. 198.
71 Ibid. p. 501.
72 Ibid. p. 408.
73 Hoffman, Bruce, "Terrorism: Trends and Prospects." In Lesser *et al. Countering the New Terrorism*, (Santa Monica: RAND, 1999) p. 28.
74 Interview with Capt. Tom Wash, Director of Aircraft Security, Airline Pilots Association (8 January 2004).
75 Royal & Sun Alliance Insurance Group Report (2002).
76 Hardgrove, Thomas, Testimony at the House Committee on International Relations. Internet, available at: www.g21.net/narco.html (accessed on 1/30/02).
77 Nance, op. cit., p. 112.
78 Mickolus, Edward F., *Terrorism, 1992–1995: A Chronology of Events and a Selectively Annotated Bibliography*, (Westport, CT: Greenwood Press, 1997) p. 529.
79 Corsi, J.R, "Terrorism as a Desperate Game – Fear, Bargaining, and Communication in the Terrorist Event," *Journal of Conflict Resolution*, Vol. 25, No. 1 (1981).
80 Zartman, William, "Negotiating Effectively With Terrorists." In Barry Rubin, ed. *The Politics of Counterterrorism*, (Washington, DC: The Johns Hopkins Foreign Policy Institute, 1990).
81 Mickolus, op. cit. (1980) p. 8.
82 Wilkinson, Paul, *Terrorism versus Democracy*, (London: Frank Cass, 2000) p. 161.
83 Dolnik, Adam, "Contrasting Dynamics of Crisis Negotiations: Barricade versus Kidnapping Incidents," *International Negotiation*, Vol. 8, No. 3 (2003).
84 Mickolus, op. cit. (1989) p. 456.
85 Query in the Monterey Institute of International Studies' WMD Terrorism Database.
86 Eagan, Sean, "From Spikes to Bombs: The Rise of Eco-Terrorism," *Studies in Conflict and Terrorism*, Vol. 19, No. 1 (1995) p. 7.
87 Mickolus, Edward F., *Terrorism, 1996–2001: A Chronology*, (Westport, CT: Greenwood Press, 2002), p. 229.
88 Wilkinson, op. cit., p. 5.
89 Mickolus, op. cit. (1980) p. 770.
90 Mickolus, Edward F., *Terrorism, 1988–1991: A Chronology of Events and a Selectively Annotated Bibliography*, (Westport, CT: Greenwood Press, 1993) p. 117.
91 Mickolus (2002) p. 96.
92 Ibid. p. 189.
93 Query in the RAND database, available at: www.mipt.org.
94 Harvey (1989) p. 93.
95 Brown, G.I., *The Big Bang – A History of Explosives*, (Thrupp: Sutton Publishing Ltd, 1998) pp. 94–105.
96 Clutterbuck, Lindsey, "The Progenitors of Terrorism: Russian Revolutionaries or Extreme Irish Republicans?" *Terrorism and Political Violence*, Vol. 16, No. 1 (2004) pp. 159–160; Ronfeld, David and Sater, William, "The Mindset of High-Technology Terrorists: Future Implications from the Historical Analog." In Alexander, Yonah and Ebinger Charles K., *Political Terrorism and Energy*, (New York: Praeger Publishers, 1982) p. 18.
97 Ibid. p. 22.
98 Brown, op. cit., p. 165.

99 Hoffman, op. cit. (1999) p. 34.
100 Popular methods of shaping the truck bomb have included placing steel plates or cement bags against one side of the truck in order to direct the blast in the other direction.
101 Quillen, Chris, "A Historical Analysis of Mass Casualty Bombers," *Studies in Conflict and Terrorism*, Vol. 25, No. 5 (2002) p. 290.
102 Mickolus, op. cit. (1980) p. 60.
103 Ibid. p. 481.
104 Ibid. p. 593.
105 Ibid. p. 677.
106 Clutterbuck, op. cit., p. 164.
107 Mickolus, op. cit. (1980) p. 538.
108 Ibid. p. 206.
109 Ibid. p. 97.
110 Reuters: "Palestinian Suicide Boat Attacks Israeli Navy Boat," (23 November 2002).
111 Jerry S. Piven, "On the Psychosis (Religion) of Terrorists." In Stout, Chris E., *Psychology of Terrorism: Coping with the Continued Threat*, (Westport, CT: Praeger Publishers, 2002) p. 130.
112 Some sources quote the number of fatalities at 27, see Pipes, Daniel, "The Scourge of Suicide Terrorism," *The National Interest*, (Summer 1986).
113 Shay, Shaul, "Suicide Terrorism in Lebanon," in *Countering Suicide Terrorism*, (Herzliya: International Policy Institute for Counter-Terrorism, 2000) p. 131.
114 Ganor, Boaz, "Suicide Attacks in Israel," in *Countering Suicide Terrorism*, (Herzliya: International Policy Institute for Counter-Terrorism, 2000) p. 136.
115 Gunaratna, Rohan, "Suicide Terrorism in Sri Lanka and India," in *Countering Suicide Terrorism*, (Herzliya: International Policy Institute for Counter-Terrorism, 2000) p. 102.
116 Mickolus, op. cit. (2002) p. 854.
117 Sprinzak, Ehud, "Rational Fanatics," *Foreign Policy*, No. 120 (October 2000) p. 68.
118 Shahar, Yael, "The al-Aqsa Martyrs Brigades: A political tool with an edge." Internet, available at: www.ict.org..il (accessed on 3/26/02).
119 Schweitzer, Yoram, "Suicide Terrorism: Development and Main Characteristics," in *Countering Suicide Terrorism*, (Herzliya: International Policy Institute for Counter-Terrorism, 2000), pp. 79–81.
120 Paz, Reuven, "The Islamic Legitimacy of Suicide Terrorism," in *Countering Suicide Terrorism*, (Herzliya: International Policy Institute for Counter-Terrorism, 2000), p. 93.
121 Panama City ACAN-EFE: "Candle Bombs: a New Way to Attack Colombian Police," Army, FBIS ID#: LAP20021208000019.
122 This incident is sometimes incorrectly attributed to a neo-Nazi group "Order of the Rising Sun.".
123 Kaplan, David E., "Aum Shinrikyo." In Jonathan Tucker ed. *Toxic Terror*, (London: MIT Press, 2000) p. 207.
124 CBS News: "Arson Attack on S. Korean Subway." Internet, available at: www.cbsnews.com/stories/2003/02/18/world/main540957.shtml (accessed on 26/09/03).
125 With regards to nuclear materials, the situation is, of course, quite the opposite, as the acquirement of weapons grade materials such as highly enriched uranium (HEU) or plutonium remains a great challenge for most states, not to mention nonstate actors.
126 Mickolus, op. cit. (1997) p. 204.
127 Ibid. p. 248.

128 Mickolus, op. cit. (1980) p. 59.
129 Ibid. p. 451.
130 Ibid. p. 460.
131 Mickolus, op. cit. (1989) p. 615.
132 Mickolus, op. cit. (2002) p. 166.
133 Mickolus, op. cit. (1989) p. 513.
134 Mickolus, op. cit. (1980) p. 71.
135 Mickolus, op. cit. (1993) p. 373.
136 Hoffman, op. cit., p. 201.
137 Clutterbuck, op. cit. (2004) p. 170.
138 Ibid. p. 174.
139 Hoffman, Bruce: "Terrorism: Trends and Prospects." In Lesser *et al. Countering the New Terrorism*, (Santa Monica: RAND, 1999) p. 32.
140 Jackson, Brian A., "Technology Acquisition by Terrorist Groups: Threat Assessment Informed by Lessons from Private Sector Technology Adoption," *Studies in Conflict and Terrorism*, Vol. 24, No. 3 (2001) p. 193.
141 Marret, J.-L., "Bomb Attacks as an Example of Terrorist Techniques." Institute for Counter-Terrorism. Internet, available at: www.ict.org.il/articles/articledet.cfm?articleid=435 (accessed on 25/09/2003); Mickolus, op. cit. (1980) pp. 1–967.
142 Marret, op. cit.
143 Mobile phone detonation techniques that were developed years later have suffered from similar problems, when the number of the phone attached to the explosive device was sometimes activated by an accidental caller. This problem was usually solved by the addition of a secondary phone, the activation of which would also be required in order to close the electrical circuit.
144 For a more detailed description of this "arms race" see Hoffman (1999) pp. 31–33.
145 Hoffman, op. cit. (1999) pp. 31–33.
146 Katz, Samuel M., *Israel versus Jibril: The Thirty Year War Against a Master Terrorist*, (New York: Paragon House, 1993) p. 28.
147 Explosive devices designed to attack commercial airliners in mid-course flight that were based solely on timing mechanisms have sometimes suffered from the rapidly changing flight timetables, and have detonated while the aircraft was still on the ground, causing only minimal damage.
148 See for instance Marret, op. cit. (2003).
149 Weizman, Steve, "HAMAS Pleased with Addition of Poison to Bombs," Associated Press (12 December 2001).
150 See for instance: Azhari bin Husin, "The Bali Project," Document found on the computer of chief JI bomb-maker and planner of the second Bali attacks, after his elimination in October 2005.
151 Mickolus, op. cit. (1980) p. 84.
152 Ibid. p. 91.
153 Wilkinson, op. cit. (2000) p. 163.
154 Wardlaw, Grant, *Political Terrorism*, (London: Cambridge University Press, 1982) p. 116.
155 Wilkinson, op. cit., p. 163.
156 Enders W., Sandler T. and Cauley J., "U.N. Conventions Technology and Retaliation in the Fight Against Terrorism: an Econometric Evaluation," *Terrorism and Political Violence*, Vol. 2, No. 2 (1990).
157 Hoffman, Bruce, "Terrorist Targeting: Tactics, Trends, and Potentialities," *Terrorism and Political Violence*, Vol. 5, Issue 2 (1993) p. 12.
158 Wilkinson, op. cit. (2000) p. 163.
159 Mickolus (1989) p. 77.

160 Ibid. p. 11.
161 Enders, op. cit.
162 Wilkinson, op. cit. (2000) p. 161.
163 Rosen, op. cit., p. 52.
164 Hoffman, op. cit. (1993).
165 Smith, David E., "The Training of Terrorist Organizations." Internet, available at: www.globalsecurity.org/military/library/report/1995/SDE.htm (accessed on 10/04/05).
166 Ibid. 116–117.
167 Karmon, Ely, "The Anti-Semitism of Japan's Aum Shinrikyo: a Dangerous Revival." Internet, available at: www.ict.org.il/articles/aum_antisemitism.htm (accessed on 1/9/04).
168 Lewis, James R., *The Encyclopedia of Sects, Cults and New Religions*, (New York: Prometheus Books, 1998) p. 68.
169 Kaplan, David E. and Marshal, Andrew, *The Cult at the End of the World*, (New York: Crown Publishers, Inc., 1996) p. 15.
170 Ibid. p. 16.
171 Lewis, op. cit., p. 68.
172 Lifton, Robert J., *Destroying the World to Save It*, (New York: Owl Books, 1999) p. 37.
173 Ibid. p. 209.
174 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.
175 Cameron, Gavin, "Multi-track Microproliferation: Lessons from Aum Shinrikyo and Al Qaida," *Studies in Conflict and Terrorism*, Vol. 22, No. 4 (1999).
176 Kaplan and Marshal, op. cit., p. 47.
177 Miller, Judith, *Germs: Biological Weapons and America's Secret War*, (New York: Touchstone, 2002) p. 160.
178 Center for Nonproliferation Studies, *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001). Internet, available at: cns.miis.edu/pubs/reports/aum_chrn.htm (accessed on 12/12/02).
179 Broad, William J., "Sowing Death: A Special Report; How Japan Germ Terror Alerted World," *New York Times*, (26 May 1998).
180 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001). Internet, available at: cns.miis.edu/pubs/reports/aum_chrn.htm (accessed on 12/12/02).
181 Cameron, op. cit., p. 295.
182 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.
183 Overseas Security Advisory Council, "Aum Shinrikyo." Internet, available at: www.ds-osac.org/Groups/group.cfm?contentID=1276 (accessed on 6/3/05).
184 Kaplan and Marshal, op. cit., p. 85.
185 Karmon, Ely, "The Anti-Semitism of Japan's Aum Shinrikyo: a Dangerous Revival." Internet, available at: www.ict.org.il/articles/aum_antisemitism.htm (accessed on 1/9/04).
186 "Aum Planned Attack on Imperial Family," *Mainichi Daily News*, (11 September 1995).
187 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001). Internet, available at: cns.miis.edu/pubs/reports/aum_chrn.htm (accessed on 12/12/02).
188 "Aum Released Anthrax in Tokyo in 1993: Police," *Japan Economic Newswire*, (25 July 1995).

189 Broad, op. cit.
190 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).
191 Kaplan and Marshal, op. cit., p. 125.
192 Lifton, op. cit., p. 170.
193 "Aum Suspected of Trying to Murder Buddhist Leader: Report," Agence France Presse (20 May 1995).
194 Daly, op. cit., p. 18.
195 Kimura, Ray, *Aum Shinrikyo: Japan's Unholy Sect*, (North Charleston SC, BookSurge Publishing, 2002) p. 58.
196 Croddy, Eric, *Chemical and Biological Warfare: A Comprehensive Survey for the Concerned Citizen*, (New York: Copernicus Books, 2002) p. 65.
197 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.
198 "Asahara Ordered 1994 Sarin Attack, Aum Biologist Says," *Japan Economic Newswire*, (14 January 1999).
199 Olson, Kyle B., "Aum Shinrikyo: Once and Future Threat?" Internet, available at: www.cdc.gov/ncidod/EID/vol5no4/olson.htm (accessed on 1/8/05).
200 Interview with Jeff Penrose, former Head of Intelligence of the Australian Federal Police, 15/10/04.
201 Ibid.
202 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001). Internet, available at: cns.miis.edu/pubs/reports/aum_chrn.htm (accessed on 12/12/02).
203 "Sect Intended to Release Lethal Bacteria," *Mainichi Daily News*, (13 June 1995).
204 Kimura, op. cit., p. 95.
205 Daly, op. cit., p. 8.
206 Kimura, op. cit., p. 95.
207 Smithson and Anne-Levy, op. cit., p. 87.
208 Kaplan and Marshal, op. cit., p. 242.
209 Mickolus, Edward F., *Terrorism, 1992–1995: A Chronology of Events and a Selectively Annotated Bibliography*, (Westport, CT: Greenwood Press, 1997) p. 794.
210 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001). Internet, available at: cns.miis.edu/pubs/reports/aum_chrn.htm (accessed on 12/12/02).
211 Talmadge, Eric, "Tokyo Narrowly Escapes Another Toxic Gas Attack," Associated Press (6 May 1995).
212 Olson, Kyle B., "Aum Shinrikyo: Once and Future Threat?" Internet, available at: www.cdc.gov/ncidod/EID/vol5no4/olson.htm (accessed on 1/8/05).
213 Ibid.
214 Cameron, op. cit.
215 Lifton, op. cit., p. 64.
216 Rosenau, William, "Aum Shinrikyo's Biological Weapons Program: Why Did it Fail?" *Studies in Conflict and Terrorism*, Vol. 24, No. 4 (2001).
217 Kaplan and Marshal, op. cit., pp. 155–156.
218 Jurgensmeyer, Mark, *Terror in the Mind of God: The Global Rise of Religious Violence*, (London: University of California Press, 2000) p. 114.
219 Ibid. p. 66.
220 Kimura, op. cit., p. 56.
221 Ibid. p. 191.
222 Kaplan and Marshal, op. cit., p. 225.

223 Daly, op. cit., p. 14; Cameron, op. cit.
224 Parachini, op. cit., p. 398.
225 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.
226 Rapoport, David C., "Terrorism and the Weapons of the Apocalypse," *National Security Studies Quarterly*, Vol. 6, No. 3 (1999) p. 58.
227 Kaplan and Marshal, op. cit., p. 121.
228 Lifton, op. cit., p. 15.
229 Ibid. p. 18.
230 Olson, Kyle B., "Aum Shinrikyo: Once and Future Threat?" Internet, available at: www.cdc.gov/ncidod/EID/vol5no4/olson.htm (accessed on 1/8/05).
231 Cameron, op. cit., p. 250.
232 Rosenau, op. cit., p. 290.
233 Lifton, op. cit., p. 40.
234 Cameron, op. cit., p. 284.
235 Kaplan and Marshal, op. cit., p. 163.
236 Ibid. p. 171.
237 Cameron, op. cit., p. 284.
238 Center for Nonproliferation Studies: *Chronology of Aum Shinrikyo's CBW Activities*, (March 2001). Internet, available at: cns.miis.edu/pubs/reports/aum_chrn.htm (accessed on 12/12/02).
239 Kaplan and Marshal, op. cit., p. 91.
240 Cameron, op. cit., p. 294; Smithson and Anne-Levy, op. cit., pp. 75, 81.
241 Kaplan and Marshal, op. cit., pp. 151, 206.
242 Kaplan and Marshal, op. cit., p. 132.
243 Rosenau, op. cit., p. 294.
244 Smithson and Anne-Levy, op. cit., p. 77.
245 Ibid. p. 81.
246 Hudson, Rex, *Who Becomes a Terrorist and Why?* (Guildford, CT: Lyons Press: 1999) p. 154.
247 Katz, Samuel M., *Israel versus Jibril: The Thirty Year War Against a Master Terrorist*, (New York: Paragon House, 1993) p. 14.
248 Sterling, Claire, *The Terror Network*, (New York: Holt, Reinhart, Winston, 1981) p. 273.
249 Sayigh, Yezid, *Armed Struggle and the Search for State: The Palestinian National Movement, 1949–1993*, (Oxford: Oxford University Press, 1997) p. 204.
250 Sloan, Stephen and Anderson, Sean, *Historical Dictionary of Terrorism*, 2nd Edition, (London: The Scarecrow Press 2002) p. 399.
251 Emerson, Steven and Duffy, Brian, *The Fall of PanAm 103*, (G.P. Putnam's Sons, New York: 1990) p. 113.
252 Katz, op. cit., p. 13.
253 Simon, Jeffrey, *The Terrorist Trap: America's Experience with Terrorism*, 2nd edition (Bloomington, IN: Indiana University Press, 2001) p. 437.
254 Becker, Jillian, *The PLO*, (New York: St. Martin's Press, 1984) pp. 23, 107.
255 Simon, op. cit., p. 98.
256 Harmon, Christopher, *Terrorism Today*, (London: Frank Cass, 2000) p. 155.
257 Ibid.
258 Quillen, Chris, "A Historical Analysis of Mass Casualty Bombers," *Studies in Conflict and Terrorism*, Vol. 25, No. 5 (2002).
259 Mickolus, Edward F., *Transnational Terrorism: A Chronology of Events, 1968–1979*, (Westport, CT: Greenwood Press, 1980) p. 274.
260 Ibid. p. 277.

261 Ibid. p. 278.
262 Katz, op. cit., p. 48.
263 Ibid.
264 Sterling, op. cit., p. 274.
265 Mickolus, op. cit., p. 294.
266 Ibid. p. 328.
267 Katz, op. cit., p. 44.
268 Mickolus, op. cit., p. 336.
269 In 1972, the group sent over 200 envelopes containing explosive devices to officials around the world, killing several people. One of these envelopes even contained 40 grams of cyanide powder, with the intention of producing hydrogen cyanide gas upon its contact with oxygen (Mickolus, op. cit., 1980, p. 361).
270 Rodan, Steve, "Poised to Strike," *The Jerusalem Post*, (12 November 1993).
271 Black, Ian, *Israel's Secret Wars: A History of Israel's Intelligence Services*, (New York: Grove Press, 1991) p. 338.
272 O'Neill, Bard, *Insurgency and Terrorism*, (Dulles VA: Brassey's, Inc) p. 108.
273 If this claim is indeed true, the attack would mark a historical event of the first suicide bombing ever to occur on Israeli territory. Ibid.
274 Katz, op. cit., p. 54.
275 Ibid.
276 Philps, Alan, "Violent Threat to US for Backing 'Monster Israel'," *Daily Telegraph*, (10 May 2001).
277 Mickolus, op. cit., p. 454.
278 Ibid. p. 459.
279 Katz, op. cit., p. 59.
280 Mickolus, op. cit., p. 528.
281 Ibid. p. 528.
282 Ibid. p. 529.
283 Katz, op. cit., p. 78.
284 Ibid. p. 69.
285 Sayigh, op. cit., p. 401.
286 Mickolus, op. cit., pp. 778–779.
287 Cobban, Helena, *The Palestinian Liberation Organization: People, Power and Politics*, (Cambridge: Cambridge University Press, 1984) p. 162.
288 Emerson and Duffy, op. cit., p. 114.
289 Katz, op. cit., p. 79; Mickolus, op. cit., p. 64.
290 Sayigh, op. cit., p. 397.
291 Simon, op. cit., p. 236.
292 Katz, op. cit., pp. 94–95.
293 Ibid. p. 96; Fatah struck a separate deal, 4,600 prisoners out of whom 100 had been convicted.
294 Reuter, Christopher, *My Life as a Weapon: A Modern History of Suicide Bombing*, (Princeton: Princeton University Press, 2004).
295 Black, op. cit., p. 434.
296 Wallis, Rodney, *Lockerbie: The Story and the Lessons*, (Westport, CT: Praeger, 2001) p. 13; Mickolus, op. cit., p. 341.
297 Emerson and Duffy, op. cit., p. 135.
298 Ibid. p. 119.
299 Katz, op. cit., p. 137.
300 Black, op. cit., p. 462.
301 Cited in Katz, op. cit., pp. 146–147.
302 Katz, op. cit., p. 147.
303 Asser, Martin, "Ahmed Jibril and the PFLP-GC," BBC (20 May 2002).

304 Katz, op. cit., pp. 234–235.
305 Rudge, David, "Back in the Terror Business," *The Jerusalem Post*, (31 August 2001).
306 Satloff, Robert, "Syria's Accession to the Unsecurity Council and U.S. Policy," The Washington Institute for Near East Policy, Policy Watch #566 (5 October 2001).
307 www.pflp-gc.org.
308 Rodan, op. cit.
309 Seale, Patrick, *Abu Nidal: A Gun for Hire*, (New York: Random House, 1992) pp. 76–77.
310 Cobban, op. cit., p. 161.
311 Tal, David, "The International Dimension of PFLP-GC Activity." The Jaffee Center for Strategic Studies, JCSS Project on Law Intensity Warfare and The Jerusalem Post INTER-International Terrorism in 1989 (Tel-Aviv, 1990) pp. 61–77.
312 Emerson and Duffy, op. cit., p. 253.
313 Tal, op. cit.
314 Emerson and Duffy, op. cit., p. 266.
315 Mickolus, op. cit., p. 159.
316 Tal, op. cit.
317 Cobban, op. cit., p. 162.
318 Ibid.
319 Rodan, op. cit.
320 Emerson and Duffy, op. cit., p. 114.
321 Katz, Samuel M., *Jerusalem or Death: Palestinian Terrorism*, (Minneapolis: Lerner Publications, 2004) p. 37.
322 Katz, op. cit. (1993) p. 23.
323 Bloch, Jonathan, *Global Intelligence: The World's Secret Services Today*, (London: Zed Books, 2003) p. 169.
324 Hudson, op. cit., p. 153.
325 Simons, Geoff, *Libya: The Struggle for Survival*, (New York: St. Martin's Press, 1993) p. 11.
326 Emerson and Duffy, op. cit., p. 257.
327 Hudson, op. cit., p. 151.
328 Sayigh, op. cit., p. 451.
329 Katz, op. cit., p. 61.
330 Emerson and Duffy, op. cit., p. 114.
331 Tal, op. cit.
332 Katz, op. cit., p. 133.
333 Mickolus, Edward F., *International Terrorism in the 1980s: A Chronology of Events Volume I., 1980–1983*, (Ames: Iowa State University Press, 1989) p. 66.
334 Katz (1993) p. 134.
335 Shindler, Colin, *The Land Beyond Promise: Israel, Likud and the Zionist Dream*, (London: I.B. Tauris & Co., 2002) p. 213.
336 Rodan, op. cit.
337 Bloch, op. cit., p. 169.
338 Schiller, David, "A Battleground Divided: The Palestinian Fedayeen." In Rapoport, David, *Inside Terrorist Organizations*, (London: Frank Cass, 2001) p. 102.
339 Levitt, Matthew, "Confronting Syrian Support for Terrorist Groups," *Middle East Intelligence Bulletin*, Vol. 5, No. 5 (May 2003).
340 Ibid.
341 Bechor, Guy, "Closer Cooperation between Jibril and Hizbullah," *Ha'aretz*, (21 December 1994), p. 2.

342 Katz, op. cit. (1993) p. 25.
343 Sterling, op. cit., pp. 273, 278.
344 Harmon, op. cit., p. 155; Katz, op. cit., p. 80.
345 Jane's: Realism and restraint among the Palestinian rejectionists? Internet, available at: www.janes.com/. . ./news/jir/jir001013_2_n.shtml (accessed on 12/10/04).
346 Hudson, op. cit., p. 105.
347 Katz, op. cit. (1993) p. 188.
348 Napoleoni, Loretta, *Terror Incorporated: Tracing the Dollars Behind the Terror Networks*, (New York: Seven Stories Press, 2005) p. 59; Levitt, op. cit.
349 Winslow, Charles, *Lebanon: War and Politics in a Fragmented Society*. (London: TJ Press, 1996) p. 270.
350 Gambill, Gary C., "Sponsoring Terrorism: Syria and the PFLP-GC," *Middle East Intelligence Bulletin* Vol. 4, No. 9 (September 2002); NSA electronic intercept, cited in Kick, Russ, *Everything you Know I Wrong: The Disinformation Guide to Secrets and Lies*, (New York: The Disinformation Company, 2002) p. 191.
351 Bechor, op. cit.
352 Katz, op. cit., p. 21.
353 Tal, op. cit.
354 Katz, op. cit., p. 108.
355 Emerson and Duffy, op. cit., p. 254.
356 Jewish Virtual Library, "Decline in Terror Fatalities in 2004." Internet, available at: www.jewishvirtuallibrary.org/jsource/Terrorism/stats2004.html (accessed on 25/02/05).
357 Collins, Aukai, *My Jihad*, (New York: Pocket Star Books, 2002) p. 80.
358 Gidduck, John, *Terror at Beslan*, (Golden, CO: Archangel Group Inc., 2005) p. 68.
359 Arquilla, John and Karasik, Theodore, "Chechnya: A Glimpse of Future Conflict?" *Studies in Conflict and Terrorism*, 22 (July-September 1999).
360 Radio Free Europe/Radio Liberty: "Fact Box: Major terrorist Incidents tied to Russian-Chechen War." Internet, available at: www.rferl.org/featuresarticle/2004/09/d981dd2d-8b08-41ff-a2e2-ada25338093c.html (accessed on 11/12/04).
361 Murphy, Paul J., *The Wolves of Islam: Russia and the Faces of Chechen Terror*, (Dulles: Brasseay's Inc, 2005).
362 Rensselaer, W. Lee III, *Smuggling Armageddon: The Nuclear Black Market in the Former Soviet Union and Europe*, (New York: St. Martin's Press, 1998) pp. 135–136.
363 Kolchak, Anna, "The Development of Chechen Terrorism." Internet, available at: english.pravda.ru/main/18/87/347/10444_chechen.html (accessed on 23/2/05).
364 ITAR-TASS: Antiterrorist Center Official Says CIS Countries May Experience Suicide Attacks, FBIS ID #CEP20030703000288; Paz, Reuven, "Suicide Terrorist Operations in Chechnya: An Escalation of the Islamist Struggle," *Middle East Intelligence Bulletin*, Vol. 2, No. 6 (2000).
365 Fred Weir: Chechen Rebels Go Kamikaze, *Christian Science Monitor*, (6/7/2000); *Nezavisimaya Gazeta*: Preponderance of Women Among Chechen Suicide Bombers Examined, FBIS ID#:CEP20040902000199.
366 Murphy, op. cit., p. 177.
367 *Pravda.RU*: Chechen terrorist planned to seize parliament's building in Moscow. Internet, available at: newsfromrussia.com/accidents/2003/06/20/48458.html.
368 These charges were later discovered not to be operational due to missing power sources, in fact they seemed to have been decoys designed to make a rescue operation as difficult and as risky as possible.

369 Confirmed by one of the terrorists Abu Said, who remarked in an a live interview for Azeri TV: "Yes, they will definitely attack. We are waiting for this attack." FBIS ID# CEP20021026000120.
370 Basayev, Shamil, "Statement of Chief of the Military Council of State Defense Council 'Majlis al-Shura' of Chechen Republic of Ichkeria Abdullah Shamil Abu-Idris concerning the events of October 23–26, 2002 in Moscow." Internet, available at: 62.212.121.113/www.kavkazcenter.com/eng/articlebe27.html?id=605 (accessed on 19/10/04).
371 Ibid.
372 ITAR-TASS: Russia steps up security at Chechen administration building, FBIS ID#: CEP20021024000297.
373 Murphy, op. cit., p. 205.
374 Ibid. p. 211.
375 Ibid. p. 208.
376 *Pravda*: Explosives were smuggled into Znamenskoye as construction materials. Internet, available at: newsfromrussia.com/accidents/2003/05/14/46910.html.
377 *Moskovskiye Novosti*: Recent Terrorist Acts in Chechnya Apparently Aimed at Specific Individuals, FBIS ID# CEP20030521000291.
378 Murphy, op. cit., p. 211.
379 Ibid. p. 229.
380 Ibid. p. 231.
381 *Rossiyskaya Gazeta*: Moscow Daily Says Basayev, Umarov Commissioned, Others Committed Mozdok Bombing, FBIS ID#: CEP20030805000094.
382 Murphy, op. cit., p. 232.
383 *Vremya Novostey*: Russian Law Enforcement Identifies Beslan Ringleader as Chechen Ruslan "The Colonel" Khuchbarov, FBIS ID#: CEP20040910000096.
384 Zaks, Dmitry, "Chechens Wary as Kadyrov Wins by Landslide," *Agence France Presse*, (7/10/03).
385 Ganor, Boaz, "Analysis: Train, Remote Detonation, Suicide Attack – Chechen Terrorists Kill 44," *Center for Tactical Counterterrorism Bulletin*, (19 December 2003).
386 Uzzell, Lawrence, "Basayev Claims Responsibility for Terrorist Bombings," *Chechnya Weekly*, Vol. 5, No. 1 (2004).
387 Murphy, op. cit., p. 235; However, in the atypical absence of Basayev's claim of responsibility there is some uncertainty about RAS involvement.
388 *Startfor Analysis*: "Islamist Militants at Work: A Study of the Kadyrov Assassination," (24 June 2004).
389 Murphy, op. cit., p. 239.
390 Kavkaz-Tsentr News Agency: Basayev Says "Special Operations" Prepared for "Occupying Forces," FBIS ID#: CEP20040617000031.
391 RFE/RL Fact Box: Major Terrorist Incidents tied to Russian-Chechen War. Internet, available at: www.rferl.org/featuresarticle/2004/09/d981dd2d-8b08-41ff-a2e2-ada25338093c.html.
392 Chivers, C.J. and Meyers, Steven Lee, "Chechen Rebels Had Precise Plan," *New York Times*, (6 September 2004).
393 Strauss, Julius, "Chechnya 'Black Widows' Linked to Sabotage of Russian Jets," *Daily Telegraph*, (28 August 2004).
394 Walsh, Nick Paton and Beaumont, Peter, "When Hell Came Calling at Beslan's School No 1," *The Observer*, (5 September 2004).
395 Steele, Jonathan, "Bombers' Justification: Russians are Killing our Children, so We are here to Kill Yours," *Guardian*, (6 September 2004).
396 Walsh, Nick Paton and Beaumont, Peter, "When Hell Came Calling at Beslan's School No 1," *Observer*, (5 September 2004).

397 Nur Pasha Kulayev interviewed on Russian NTV station, (4 September 2004).
398 Nivat, Anne, *Chienne De Guerre*, (New York: PublicAffairs, 2001) p. 92.
399 Statement of Chief of the Military Council of State Defense Council "Majlis al-Shura" of Chechen Republic of Ichkeria Abdullah Shamil Abu-Idris concerning the events of 23–26 October 2002 in Moscow. Internet, available at: 62.212.121.113/www.kavkazcenter.com/eng/articlebe27.html?id=605.
400 Ibid.
401 Kavkaz Center: Transcript of Shamil Basayev Interview for Channel 4 News. Internet, available at: kavkazcenter.com/eng/article.php?id=3500 (accessed on 8/4/05).
402 Even though 12 civilians died in the fighting as well, the attackers made a specific effort to avoid civilian casualties.
403 Politkovskaya, Anna, *A Small Corner of Hell*, (Chicago: University of Chicago Press, 2003) p. 142.
404 Quoted in Murphy, op. cit., p. 91.
405 Ibid. pp. 90–91.
406 Ibid. p. 11.
407 Ibid. p. 99.
408 Basayev quoted in Nivat, op. cit., p. 41.
409 Kavkaz Center: Interview With Chechen Commander Amir Ramzan, the Commander of one of Chechen Jama'ats operating against Russian forces in the Northern Caucasus (28 November 2003).
410 Kavkaz Center: Transcript of Shamil Basayev Interview for Channel 4 News. Internet, available at: kavkazcenter.com/eng/article.php?id=3500 (accessed on 8/4/05).
411 Collins, op. cit., p. 68.
412 Nivat, op. cit., p. 216.
413 Murphy, op. cit., p. 222.
414 US Department of Homeland Security Information Bulletin (5 November 2004).
415 Izvestiya: FSB Sources Cited on Chechen Rebel Bases, FBIS ID#: CEP20041213000138.
416 Rossiyskaya Gazeta: Ex-Kamikaze on Berezovskiy Role in Chechnya Events, Basayev-Maskhadov Relations, FBIS ID#: CEP20020708000182; Kavkaz Center: Chechen Gunmakers Manufacture New Weapon Lom-30. Internet, available at: kavkazcenter.com/eng/article.php?id=3034.
417 Dolnik, Adam and Pilch, Richard, "The Moscow Theater Hostage Crisis: the Perpetrators, their Tactics, and the Russian Response," *International Negotiation*, Vol. 8, No. 3 (2003).
418 Chivers, C.J., and Meyers, Steven Lee, "Chechen Rebels Had Precise Plan," *New York Times*, (6 September 2004).
419 Basayev interview for Prima News Agency (May 2002).
420 Statement of Chief of the Military Council of State Defense Council "Majlis al-Shura" of Chechen Republic of Ichkeria Abdullah Shamil Abu-Idris concerning the events of 23–26 October 2002 in Moscow. Internet, available at: 62.212.121.113/www.kavkazcenter.com/eng/articlebe27.html?id=605 (accessed on 8/4/05).
421 *Guardian*: "Transcript of Osama bin Laden's 'Letter to the American People'." Internet, available at: observer.guardian.co.uk/worldview/story/0,11581,845725,00.html (accessed on 04/04/05).
422 Kavkaz Center: Transcript of Shamil Basayev Interview for Channel 4 News. Internet, available at: kavkazcenter.com/eng/article.php?id=3500 (accessed on 8/4/05).
423 Ibid.
424 Murphy, op. cit., p. 22.

425 Ibid. p. 54.
426 Mansfield, Laura, "Chechen terrorists follow al-Qaida manual." Internet, available at: www.worldnetdaily.com/news/article.asp?ARTICLE_ID=40298 (accessed on 12/12/04).
427 Murphy, op. cit., p. 22.
428 MacKinnon, Mark, "Russia's 'bin Laden'," *Globe and Mail*, (10/12/03).
429 Barayeva's Martyrdom video; Khava was the cousin of Budyonnovsk team member Arbi Barayev and the aunt of Dubrovka team leader Movsar Barayev.
430 Murphy, op. cit., p. 34.
431 Dolnik and Pilch, op. cit.
432 CBS News: "Russia's Elusive Top Terrorist." Internet, available at: www.cbsnews.com/stories/2004/10/12/world/main648725.shtml (accessed on 04/04/05).
433 Politkovskaya, op. cit., p. 26. However, the author has interviewed two Abkhazia veterans in Nalchik, who both claimed to have never received such training.
434 Murphy, op. cit., p. 16.
435 *Rossiyskaya Gazeta*: Ex-Kamikaze on Berezovskiy Role in Chechnya Events, Basayev-Maskhadov Relations, FBIS ID#: CEP20020708000182.
436 Izvestiya: Chechnya Expert Rechkalov Eyes Basayev's Ability To Move About Freely, FBIS ID#: CEP20041210000379.
437 Fuller, Liz, "Chechen Warlord Warns Of New Terrorist Attacks," Radio Free Europe Online. Available at: www.rferl.org/featuresarticle/2004/11/71c6fa28-4e4f-4429-ab06-535bff78b11c.html (accessed on 12/1/05).
438 Darling, Dan, "Al-Qaeda in Chechnya," *Winds of Change*, (22 April 2004).
439 ITRA-TASS: Russian officials estimate 1,600 active militants in Chechnya, FBIS ID#:C EP20030214000134.
440 Basayev, Shamil, "Nothing Can Stop This Jihad." Internet, available at: kavkazcenter.com/eng/article.php?id=2266 (accessed on 15/1/05).
441 Politkovskaya (2003) p. 180.
442 Murphy, op. cit., p. 157.
443 Ibid. p. 19.
444 Novosti: Russian Security Officer Examines Al-Qa'ida Role in Chechnya, FBIS ID#: CEP20041006000087.
445 ITAR-TASS: FSB Official Says Al-Qa'ida Trains Suicide Bombers for Attacks on Russia, FBIS ID#: CEP20040206000153.
446 Wong, Chun Wai and Lourdes, Charles, "Indonesian Radical Groups Learning Chechen Terrorist Tactics." Internet, available at: thestar.com.my/news/list.asp?file=/2004/9/27/nation/8943512&sec=nation (accessed on 17/1/05).
447 Murphy, op. cit., p. 141.
448 ITAR-TASS: Chechen Militants get Fresh Support from Middle East, FBIS ID#: CEP20020208000329.
449 ITAR-TASS: Russian Colonel Says Chechens Getting Funds From Al-Qa'ida-Linked Groups, FBIS ID#: CEP20040408000247.
450 Izvestiya: Chechnya Expert Rechkalov Views Basayev's Funding Sources, Reward for His Head, FBIS ID#: CEP20041211000180.
451 Dougherty, Jill, "Chechen claims Beslan attack," CNN (17/09/04). Available at: edition.cnn.com/2004/WORLD/europe/09/17/russia.beslan/ (accessed 18/9/04).
452 Izvestiya: Chechnya Expert Rechkalov Views Basayev's Funding Sources, Reward for His Head, FBUS ID#: CEP20041211000180.
453 ITAR-TASS: Russian Colonel Says Chechens Getting Funds From Al-Qa'ida-Linked Groups, FBIS ID#: CEP20040408000247; Interfax: Moscow-Based Prima Bank Implicated in Funding of Recent Terrorist Attacks, FBIS ID#: CEP20041027000102; Murphy (2005) p. 136.

454 Rossiyskaya Gazeta: Moscow 2002 Terrorism Case Sent to Court, Linked to Dubrovka Hostage Taking Case, FBIS ID#: CEP20040203000091; Radio Free Europe/Radio Liberty: "Basaev Claims Beslan Attacks. Internet, available at: www.rferl.org/featuresarticle/2004/09/427b2c89-948d-4b8e-b9e7-15c3d7858c1d.html (accessed on 09/09/04); Murphy (2005) p. 21.
455 Murphy, op. cit., p. 144.
456 Izvestiya: FSB Sources Cited on Chechen Rebel Bases, FBIS ID#: CEP20041213000138.
457 Fuller, op. cit.
458 Athens Elevtherotipia: New Book on Greece's 17N Addresses Terrorism's Place in Greek Political Culture, FBIS ID# GMP20020526000049.
459 Athens News Agency: Attorney Claims Tselendis Shot Matis in 17N Murder, FBIS ID#: GMP20030916000208.
460 Kassimeris, George, "Europe's Last Red Terrorists: The Revolutionary Organization 17 November, 1975–2000," *Terrorism and Political Violence*, Vol. 13, No. 2 (Summer 2001) p. 68.
461 Mickolus, Edward F., *Transnational Terrorism: A Chronology of Events, 1968–1979*, (Westport, CT: Greenwood Press, 1980) p. 574.
462 Kassimeris, op. cit. (Summer 2001) p. 70.
463 Mickolus, Edward F., *International Terrorism in the 1980s: A Chronology of Events Volume I., 1980–1983*, (Ames: Iowa State University Press, 1989) p. 459.
464 Kassimeris, op. cit. (Summer 2001) p. 70.
465 Mickolus, op. cit. (1989) p. 98.
466 Kassimeris, George, *Europe's Last Red Terrorists: The Revolutionary Organization 17 November*, (London: C. Hurts & Co., 2001) p. 77.
467 Kassimeris, op. cit. (Summer 2001) p. 71.
468 Ibid. p. 72.
469 These warnings were released in response to the terrorist hijackings of TWA and Egypt Air flights originating in Athens.
470 Kassimeris, op. cit. (Summer 2001) p. 72.
471 Ibid.
472 Ibid.
473 Mickolus, op. cit. (1989) p. 369.
474 Kassimeris, George, "17N: Greece's secret socialist specter," Jane's Intelligence Review 09/06/00. Internet, available at: newsite.janes.com/security/international_security/news/jir/jir000609_1_n.shtml (accessed on 4/11/03).
475 Kassimeris, op. cit. (2000).
476 Mickolous, op. cit. (1989) p. 582.
477 Ibid. p. 635.
478 Mickolus, Edward F., *Terrorism, 1988–1991: A Chronology of Events and a Selectively Annotated Bibliography*, (Westport, CT: Greenwood Press, 1993) p. 122.
479 Ibid. p. 209.
480 Athens News Agency: Tzortzatos Amits Participation in 27 crimes Including Bakoyiannis, FBIS ID#: GMP20020720000021.
481 Mickolus, op. cit. (1993) p. 462.
482 Ibid. p. 462.
483 Interview with Mr. Keith Weston and Mr. Mark Tuley, Police Intelligence Counterterrorism Unit, UK (16 November 2003).
484 Athens News: Greek "Terrorist" Group's History of "Deadly Attacks" Cited, FBIS ID# GMP20000609000135.
485 Mickolus, op. cit. (1993) p. 520.
486 Ibid. 623.
487 Kassimeris, op. cit. (Summer 2001) p. 78.
488 Mickolus, op. cit. (1993) p. 733.

489 Ibid. p. 778.
490 Kassimeris, op. cit. (Summer 2001) p. 78.
491 Mickolus, Edward F., *Terrorism, 1992–1995: A Chronology of Events and a Selectively Annotated Bibliography*, (Westport, CT: Greenwood Press, 1997) p. 187.
492 Kassimeris, op. cit. (Summer 2001) p. 77.
493 Ibid.
494 Mickolus, op. cit. (1997) p. 632.
495 Ibid. p. 603.
496 Somewhat surprisingly, an anonymous caller again called in a warning prior to the next rocket attack against the IBM office in Athens, which took place only five weeks after the Piraeus embarrassment (Mickolus, op. cit., 1997, p. 617).
497 Ibid. p. 632.
498 Kassimeris, op. cit. (Summer 2001) p. 78.
499 Mickolus, Edward F., *Terrorism, 1996–2001: A Chronology*, (Westport, CT: Greenwood Press, 2002) p. 124.
500 Hudson, Rex, *Who Becomes a Terrorist and Why?* (Guildford, CT: Lyons Press, 1999), p. 221.
501 Sloan, Stephen and Anderson, Sean, *Historical Dictionary of Terrorism*, 2nd Edition, (London: The Scarecrow Press 2002) p. 364; Athens News Agency: Greece's 17 November Said Behind Bank Blasts, FBIS ID#: FTS19990506001255; Athens News Agency: November 17 Said Behind Rocket Attack on PASOK Office, FBIS #: FTS19990402000714; Mickolus, op. cit. (2002) p. 194.
502 Ibid. p. 248.
503 Institute for Counter-Terrorism, "Breakthrough in Cracking 17 November Terror Group," Internet, available at: www.ict.org.il/spotlight/det.cfm?id=806 (accessed on 01/11/03).
504 This typewriter was eventually replaced by a word processor.
505 Kassimeris, George, "Greece: Twenty Years of Political Terrorism," *Terrorism and Political Violence*, Vol. 7, No. 2 (Summer 1995), p. 80.
506 Kiffisias Avenue and Central Athens.
507 Interview with Keith Weston and Mark Tuley, Police Intelligence Counterterrorism Unit, UK (16 October 2003).
508 Athens Elevtherotipia: New Book on Greece's 17N Addresses Terrorism's Place in Greek Political Culture, FBIS ID# GMP20020526000049.
509 Kassimeris, op. cit. (1995) p. 75.
510 Athens Elevtherotipia: New Book on Greece's 17N Addresses Terrorism's Place in Greek Political Culture, FBIS ID# GMP20020526000049.
511 Athens News Agency: Witness Places Xiros at 17N Safe house; Yiotopoulos Rejects New Evidence, FBIS ID# GMP20030520000198.
512 Athens News Agency: Greek 17N Member Refers to Bus Attacks by Terrorist Group During Trial, FBIS ID#: GMP20030408000177.
513 Athens News Agency: 17 November Claims Murder of Greek Ship-owner, FBIS ID#: FTS19970530000227.
514 Mickolus, op. cit. (1993) p. 528.
515 Interview with Dr. Bruce Hoffman (29 July 2005).
516 Interview with Keith Weston and Mark Tuley, Police Intelligence Counterterrorism Unit, UK (16 October 2003).
517 Ibid.
518 Greek police collected only minimal forensic recovery from 17N bombings.
519 Athens News Agency: University Peer Describes Suspected Chief of Greek Terrorism Organization 17N, FBIS ID#: GMP20020804000049.
520 Ibid.

521 Ibid.
522 Athens News Agency: Partner of Alleged Greek Terrorist Leader Continues Testimony in 17N trial, FBIS ID#: GMP20030719000023.
523 Athens News Agency: Counter-terrorism Service interrogates New 17N Suspect, FBIS ID#: GMP20020802000041.
524 Athens News Agency: Suspect Kondhilis Offers More Insight Into 17N; Serifis Denies Involvement, FBIS ID#: GMP20030829000158.
525 Thessaloniki Macedonian Press Agency: More Evidence on Greek Terrorist 17N Organization from Xiros' Testimony, FBIS ID#: GMP20020822000113.
526 Athens News Agency: Two Defendants of Greek Terrorist 17N Group Take Stand During Ongoing Trial. Accessed through Lexis-Nexis Academic Universe on 29/10/03.
527 Athens News Agency: Court Hears Defense Testimony for 17N Suspects Serifis, Telios, FBIS ID#: GMP20030827000207.
528 Athens News Agency: 17N Suspect Confesses to Pulling Trigger on British Diplomat, FBIS ID#: GMP20020812000026.
529 *Epanastatikos Laikos Agonas*.
530 Athens News Agency: 17N Suspect Confesses to Pulling Trigger on British Diplomat, FBIS ID#: GMP20020812000026.
531 Athens News Agency: Court Hears Defense Testimony for 17N Suspects Serifis, Telios, FBIS ID#: GMP20030827000207.
532 Kassimeris, George, "Urban Guerilla or Revolutionary Fantasist? Dimitris Koufodinas and the Revolutionary Organization November 17," *Studies in Conflict and Terrorism*, Vol. 28, No. 1 (2004) p. 31.
533 Kassimeris, op. cit. (1995).
534 Ibid.
535 Ibid.
536 Ibid.
537 The group's accounting books suggest that designated assassins received about four times more money than other members (Athens News Agency: Trial of Greek 17N Group Continues With Cases on Bakoyiannis, Turkish Diplomats, FBIS ID#: GPM20030919000198).
538 Athens News Agency: Attorney for alleged 17N Top Assassin Concludes Final Statement, FBIS ID#: GMP20031002000033.
539 Athens I Kathimerini: N17 Terror Suspects to Lose Assets, FBIS ID# GMP20030223000085.
540 *Birmingham Post*: Greek Terror Gang Had Takeaway Plans (8 August 2003).
541 Athens News Agency: Suspected 17N Terrorists Apparently Patrons of Greek Film Industry, FBIS ID#: GMP20020813000128.
542 Interview with Keith Weston and Mark Tuley, Police Intelligence Counterterrorism Unit, UK (16 October 2003).
543 Mickolus (1993) p. 471.
544 Ibid. p. 535.
545 Interview with Keith Weston and Mark Tuley, Police Intelligence Counterterrorism Unit, UK (16 October 2003).
546 Athens News Agency: Court Hears Defense Testimony for 17N Suspects Serifis, Telios, FBIS ID#: GMP20030827000207.
547 Hudson (1999) p. 168.
548 Athens Ta Nea: Greek Paper Profiles "Elusive Leader" of 17 November Terrorist Group, FBIS ID#: LAT20020602.
549 Quoted in Burke, Jason, *Al Qaeda: Casting a Shadow of Terror*, (London: Tauris, 2003).
550 Ventzke, Ben and Ibrahim, Aimee, *The al Qaeda Threat: An Analytical Guide to al Qaeda's Tactics and Targets*, (Alexandria: Tempest Publishing, 2003) p. 8.

551 Gorriti, Gustavo, *The Shining Path*, (Chapel Hill: University of North Carolina Press, 1999) p. 137.
552 Sloan, Stephen and Anderson, Sean, *Historical Dictionary of Terrorism*, 2nd Edition, (London: The Scarecrow Press 2002) p. 45.
553 Cited in Gunaratna, Rohan, *Inside al Qaeda*, (New York: Columbia University Press, 2002) p. 103.
554 Ventzke and Ibrahim (2003) p. 37.
555 Drake, C.J.M., *Terrorists' Target Selection*, (New York: St. Martin's Press, 1998) p. 91.
556 Hoffman, Bruce, "The Debate Over Future Terrorist Use of Chemical Biological, Nuclear and Radiological Weapons" (RAND 2000) p. 13.
557 In this regard, innovation was hardly necessary as children would more easily be subdued and controlled, and would presumably create more pressure on the Kremlin to refrain from rescue operations.
558 Bell, J. Bowyer, *The Dynamics of the Armed Struggle*, (London: Frank Cass, 1990) p. 88.
559 Hoffman, Bruce, "Terrorist Targeting:, Tactics, Trends, and Potentialities," *Terrorism and Political Violence*, Vol. 5, Issue 2 (1993) p. 378.
560 Dobson, Christopher and Payne, Ronald, *The Terrorists, Their Weapons, Leaders and Tactics*, (New York: Facts on File Inc., 1982) p. 134.
561 Ronfeld, David and Sater, William, "The Mindset of High-Technology Terrorists: Future Implications from the Historical Analog." In Alexander, Yonah and Ebinger Charles K., *Political Terrorism and Energy*, (New York: Praeger Publishers, 1982) p. 22.
562 Marret, J.-L., Bomb Attacks as an Example of Terrorist Techniques. Institute for Counter-Terrorism. Internet, available at: www.ict.org.il/articles/articledet.cfm?articleid=435 (accessed on 25/09/03).
563 Written by the leader of the National Alliance, William Pierce.
564 Lifton, Robert J., *Destroying the World to Save It*, (New York: Owl Books, 1999) p. 335.
565 Burke, op. cit., p. 148; Gunaratna, op. cit., p. 224.
566 Qur'an sura 47, verse 4. al-Mawardi Abu al-Hasan, *al-Ahkam as-Sultaniyyah*, (London: Ta-Ha Publishers Ltd., 1996) p. 192.
567 Marks, Tom, "Making Revolution with Shining Path." In Palmer, David Scott ed. *Shining Path of Peru*, (New York: St Martin's Press, 1994) p. 214.
568 Purdy, Walter, "From Munich to Manhattan and Beyond: Lessons Learned from 30 Years of Terrorism." Lecture presented at a Terrorism Research Center Seminar titled Terrorism, Tactics, Training and Technology, Washington, DC, 8–10 January 2003.
569 Kaarthikeyan, D.R., *The Rajiv Gandhi Assassination*, (New Delhi: New Dawn Press, 2004).
570 Gorriti, op. cit., p. 85.
571 PBS Documentary: "Meeting bin Laden" (PBS, 2005).
572 Sendero Luminoso: "Military Thought of the Party," 1982.
573 David E. Smith: The Training of Terrorist Organizations Internet, available at: www.globalsecurity.org/military/library/report/1995/SDE.htm (accessed on 19/9/04); Boaz Ganor, "Suicide Attacks in Israel," *Countering Suicide Terrorism*, (Herzliya: International Policy Institute for Counter-Terrorism, 2000), p. 136.
574 Dolnik, Adam, "Learning to Die: Suicide Terrorism in the 21st Century." In James J.F. Forest, *The Making of a Terrorist*, (Westport, Connecticut: Praeger, 2005).
575 Sloan and Anderson, op. cit., p. 487.
576 Dolnik, Adam and Gunaratna, Rohan "Jemaah Islamyiah and the Threat of

Chemical and Biological Weapons Terrorism," *Terrorism and Political Violence*, (forthcoming).

577 Geraghty, Tony, *The Irish War*, (Baltimore: Johns Hopkins University Press, 1998) p. 178; Nance (2003) p. 34.

578 Gunaratna, op. cit., p. 61.

579 Jose E. Gonzales, "Guerillas and Coca in the Upper Huallaga Valley." In Palmer, op. cit., p. 139; Horgan, John and Taylor, Max, "Playing the Green Card – Financing the Provisional IRA, Part 1." *Terrorism and Political Violence*, Vol. 11, No. 2 (Summer 1999).

580 Abu Khalil cited in Crenshaw, Martha: Why Terrorism Declines, *Terrorism and Political Violence*, 3, (1991) p. 85.

581 Katz, Samuel M., *The Hunt for the Engineer*, (New York: Fromm International Publishing, 1999) p. 153.

582 Smith, op. cit.

583 Sprinzak, Ehud, "From Messianic Pioneering to Vigilante Terrorism." In Rapoport, David: *Inside Terrorist Organizations*, (London: Frank Cass, 2001) p. 209.

584 Bell, J. Bowyer, *IRA Tactics & Targets*, (Dublin: Poolbeg, 1990) p. 19.

585 White, Robert and Falkenberg-White, Terry, "Revolution in the City: On the Resources of Urban Guerillas," *Terrorism and Political Violence*. (Winter 1991) p. 105.

586 Cited in Ventzke and Ibrahim (2003), pp. 23–24.

587 Ibid. 98.

588 Goritti (1999) p. 86.

589 Lebow, Richard Nel, *Between Peace and War*, (Baltimore: Johns Hopkins University Press, 1981) pp. 101–119.

590 Sloan and Anderson (2002) p. 253.

591 Hoffman, Bruce, "Terrorist Targeting:, Tactics, Trends, and Potentialities," *Terrorism and Political Violence*, Vol. 5, Issue 2 (1993) p. 377.

592 Another aspect that must be pointed out is that some factors such as "targeting logic" or "openness to new ideas" have proven to be a double-edged sword, having the capacity to contribute to both directions of the innovation scale. But since we are particularly concerned with the prospect of radical innovation possibly leading to mass destruction level, such variables will mainly be considered in terms of their potential to bringing about an escalatory outcome.

593 Ehud Sprinzak and Idith Zertal, "Avenging Israel's Blood." In Tucker, Jonathan B., *Toxic Terror: Assessing Terrorist Use of Chemical and Biological Weapons*, (Cambridge, MA: MIT Press, 2000) p. 26.

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