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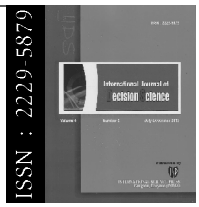

Phase Targeting of Terrorist Attacks: Simplifying Complexity with Analytical Hierarchy Process

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ABSTRACT

This analysis uses the analytical hierarchy process to quantify the priority of the nine phases of a terrorist attack through examining data from twenty-one different terrorist attacks. We use these basic statistical tools and frequencies to gain insights and develop weights for the terrorist attacks to use in our priority scheme. Defense analysis experts are used to provide the input for the pairwise comparisons used for the decision criterion within analytical hierarchy process (AHP). We used the terrorist data and applied AHP to construct the decision weights in order to rank order the phases of a terrorist attack. Priority ordering the phases can provide valuable information to counter-terrorist operators. We found that terrorist training, networking, planning, and operational prep make up over 65% of the ranking weights. Thus, four of the nine phases make up 65% of the terrorist time and effort as found in these twenty-one attacks.

Keywords: *Terrorist attacks, statistical analysis, phases, phase targeting AHP*

INTRODUCTION

Do terrorist attacks follow an observable pattern in their pre-attack activities? If there is a pattern, how reliable is it? Can we use this pattern as an indicator or warning of imminent terrorist activity? More specifically, can we use these indications and warnings to predict the timing of a future terrorist attack? (Freeman *et al.*, 2010).

The above quotation illustrates one of the many difficult situations analysts, decision makers, and counter-terrorist operators (CTO) face in dealing with terrorism home and abroad. For years, our own analysts at the Naval Postgraduate School have applied a multitude of data analysis processes at these data sets in an attempt to discern useful patterns from this data. The processes have not resulted in any useful success. We decided to apply multi-attribute decision making (MADM) to help in our analysis. The goal of our research is to rank the nine phases proposed by Freeman across twenty one terrorist's events. It is our assertion that intelligence assets may concentrate of the most prominent of these nine phases in order to stop the terrorist event from occurring.

Securing Americans against terrorist attack within the United States and abroad is a difficult task and requires a methodology that assists the analysts and decision makers in their decision making. The United States and its allies are facing international challenges such as rogue states and non-state actors (i.e. terrorists). These challenges threaten peace and stability worldwide. Those challenges, coupled with sluggish economies worldwide have created a need to focus limited resources on the appropriate facets of national defense. Unlike state actors, terrorists are not limited by international diplomatic constraint. As such, the question remains: can a terrorist attack be identified *pre-facto*?

We seek to add a quantitative aspect to Freeman et al.'s work by utilizing multi-attribute & multi-criterion principles of the Analytical Hierarchy Process (AHP) to interpret their raw data into a more focused understanding of *which* phases of a terrorist attack of to focus our intelligence collection efforts upon. We briefly discuss AHP, explain its process, and provide the scope and limitations of its process. We explain the

methodology utilizedin thecompletionofthiswork. We present our results, discussions, and conclusions of this phase targeting analysis.

THEANALYTICAL HIERARCHY PROCESS BACKGROUND

The Analytical Hierarchy Process is a structured technique for organizing and analyzing complex decisions. It was developed by Thomas L. Saaty (1980) using both mathematical and psychological constructs. Saaty developed this process while working for the United States Department of Defense. He applied AHP during his work rationing electricity to industries. According to Saaty, the AHP theory reached maturation in 1973 underhis direction ofthe Sudan Transport Study. Many applications of AHP have been used in business, industry, and government since its inception.

The process seeks to model complex problems with both qualitative and quantitative factors, and has been applied to the analysis of terrorism in the past such as in Northern Ireland (Saaty et al, 1989).The process has three key components:

- identifying the objective;
- identifying/determining the keyfactors important to the decision. These are known as the criteria and then further analyzed and broken into sub-criteria allowing large amounts of data to be managed more effectively
- decision maker prioritizes the criteriainpairwise comparison.

We will expand this application to multiple terrorist events,

Although AHP has been applied to many complex problems including diplomacy, threats, and concessions (Saaty *et al.*, 1989) it is not without controversy. There is opposition to the process because of possible rank reversal. Rank reversal is primarily concerned with the transitive properties of a factor when new variables are introduced into the problem. Tsagdis (2009), in his analysis of the AHP for application in the Hellenic Air Force, provides a simple explanation of the problem.

> *...suppose that the alternatives A and B are ranked as second and third, respectively. The introduction of an new alternative, let us assume C, may reverse the rank between A and B, and B become more preferable than A.*

Numerous authors, such as Dyer (1991) and Forman (1991, 1993, 2002) have demonstrated both strengths and weaknesses in the AHP. Although these weaknesses exist they are of minimal relevance to this study. Additionally, determining phase targeting through AHP may prove to be more beneficial in providing insights into strategy and the counter-terrorist operators (CTOs) decision making process, rather than resolving targeting issues that would be affected by rank reversal.

AHP Framework and Process

We only desire to briefly discuss the elements in the framework of AHP. AHP can be described as a method to decompose a problem into sub-problems. In most decision, the decision maker has a choice among several to many alternatives. In our case the alternatives are the nine phases of pre-attack identified by Freeman *et al.* These phases are:

(1) Networking and Indoctrination: This incorporates the introduction of terrorist cell members and their expose to radical doctrine through instruction, meetings, and cohabitation.

(2) Terrorist Training: The participation of cell members in organized training activities.

(3) General Planning: The decision to conduct a terrorist attack and choice of a general target such as a ship, bar, building, etc.). The phase includes shopping for potential targets,

(4) Recruitment: The selection or the activation of cell members for a specific terrorist operation by senior members of the terrorist elements. An assumption here is that senior members exist.

(5) Financing: The collection and allocation of funds for a specific terrorist attack. As Freeman points out sometimes the financing comes before the decision to make an attack as with the USS Cole.

(6) Operational Planning: The selection of the specific target, detailed reconnaissance, and specific operations planning.

(7) Weapons Procurement: The receipt of materials or weapons to be used in the attack (fertilizer, rockets, detonators, accelerants, etc.)

(8) Logistical Preparation: Logistical actions taken in preparation for the terrorist attack, including safe house rental. Vehicles procurement, documents procurements, electronics, etc.)

(9) Operational Preparation: Physical preparation for the imminent terrorist attack including explosives construction, vehicle alteration, explosive training, multimedia work.

Each alternative has a set of attributes or characteristics that can be measured, either subjectively or objectively. The attribute elements of the hierarchal

process can relate to any aspect of the decision problem—tangible or intangible, carefully measured or roughly estimated, well- or poorly-understood—anything at all that applies to the decision at hand. In this case, we are using the twenty one historical attacks as the attributes.

In its simplest sense we can state that in order to perform AHP we need an objective, a set of alternatives, each with attributes to compare.

Objective Statement: This is the decision desired: rank the nine phases to determine if some phases are more essential.

Alternatives: 1, 2, 3, …,8, 9 Phases

For each of the alternatives there are attributes to compare.

Attributes: *a1, a2,…, a21:* 21 cases of terrorist attacks.

Once the hierarchy is built, the decision maker(s) systematically evaluate its various elements pairwise (by comparing them to one another two at a time) using Saaty's nine point scale, with respect to their impact on an element above them in the hierarchy. In making the comparisons, the decision makers can use concrete data about the elements, but they typically use their judgments about the elements' relative meaning and importance. It is the essence of the AHP that human judgments, and not just the underlying information, both can be used in performing the evaluations.

The AHP converts these evaluations to numerical values that can be processed and compared over the entire range of the problem. A numerical weight or priority is derived for each element of the hierarchy, allowing diverse and often incommensurable elements to be compared to one another in a rational and consistent way. This capability distinguishes the AHP from other decision making techniques.

In the final step of the process, numerical priorities are calculated for each of the decision alternatives. These numbers represent the alternatives' relative ability to achieve the decision goal, so they allow a straightforward consideration of the various courses of action.

AHP Uses and Applications

While it can be used by individuals working on straightforward decisions, the Analytic Hierarchy Process (AHP) is most useful where teams of people are working on complex problems, especially those with high stakes, involving human perceptions and judgments, whose resolutions have long-term repercussions. It has unique advantages when important elements of the decision are difficult to quantify or compare, or where communication among team members is impeded by their different specializations, terminologies, or perspectives.

Decision situations to which the AHP can be applied include:

- Choice - The selection of one alternative from a given set of alternatives, usually where there are multiple decision criteria involved.
- Ranking - Putting a set of alternatives in order from most to least desirable.
- *Prioritization* - Determining the relative merit of members of a set of alternatives, as opposed to selecting a single one or merely ranking them.
- Resource allocation - Apportioning resources among a set of alternatives.
- Benchmarking - Comparing the processes in one's own organization with those of other best-of-breed organizations.
- Quality management - Dealing with the multidimensional aspects of quality and quality improvement.
- Conflict resolution - Settling disputes between parties with apparently incompatible goals or positions.

We believe that Prioritization is the best results of our application for terrorist phase identification. The procedure for using the AHP can be summarized as:

1. Model the problem as a hierarchy containing the decision goal, the alternatives for reaching it, and the criteria for evaluating the alternatives.
2. Establish priorities among the elements of the hierarchy by making a series of judgments based on pairwise comparisons of the elements. For example, when comparing potential real-estate purchases, the investors might say they prefer location over price and price over timing.
3. Synthesize these judgments to yield a set of overall priorities for the hierarchy. This would combine the investors' judgments about location, price and timing for properties A, B, C, and D into overall priorities for each property.
4. Check the consistency of the judgments.
5. Come to a final decision based on the results of this process.

These steps are more fully described below.

Step 1. Build the hierarchy for the decision

Goal: Prioritize the phases

Criteria: Twenty one historical terrorist acts

Alternatives: The nine phases

Step 2. Judgments and Comparison

Build a numerical representation using a 1-9 point scale in a pairwise comparison for the attributes criterion and the alternatives. The goal, in AHP, is to obtain a set of eigenvectors of the system that measures the importance with respect to the criterion. We can put these values into a matrix or table based on the table 1.:

Table 1: Saaty's Nine Point Scale for Pair-wise Comparison

Intensity of Importance in Pair-wise Comparisons	*Definition*
1	Equal Importance
3	Moderate Importance
5	Strong Importance
7	Very Strong Importance
9	Extreme Importance
2,4,6,8	For comparing between the above
Reciprocals of above	In comparison of elements i and j if I is 3 compared to j, then j is 1/3 compared to i.
Rational	Force consistency; measure values available

Step 3. Using all the eigenvectors combine in order to obtain a comparative ranking. In this study we used stable discrete dynamical system to obtain our stability eigenvectors. To get some additional background on discrete dynamical systems and stability, see Fox (2012) and Giordano *et al.* (2009).

APPLYING THE AHP METHOD-OLOGY TO TERRORIST PHASE PLANNING

According to Freeman *et al.* (2010), there are nine phases leading up to a terrorist attack. They are: Networking, Terrorist Training, Planning, Recruitment, Financing, Operational Planning, Weapons Procurement, Logistical Preparation, and Operational Preparation. Which one of these is the best to focus counter-terrorist and intelligence collection efforts upon? Should intelligence collection efforts expend their limited amount of resources on all of them simultaneously? Such unguided action seems likely to produce inconclusive results, and a high degree of post-facto analysis on why the attack was not prevented. Which phase to focus can upon be identified, and the AHP is one method to help determine the right application of effort. Numerous constraints are involved in a decision to focus efforts, for example budgetary constraints, infrastructure, capability, etc. The purpose of this study is to provide a possible method that culls the field of options while fulfilling the operational need.

Twenty-one of the twenty-four attacks were utilized in the AHP, because the twenty one provided the best data to convert into an analysis for implementation into the AHP. The other three attacks data were incomplete in terms of the phases so we left them out of the analysis. The independent variable includes 72 months of data per attack prior to the individual strikes by terrorists. The dependent variables are the various phases. When compiled and diagnosed by Freeman *et al.*, a noticeable trend was discerned; however, Freeman's study admits that outliers exist. Furthermore, the specific targeting of phases had been identified by other authors, such as Treverton (2009). In his work, Treverton (2009) notes the importance of *visibility* in the focus of efforts to detect terrorist activity. Two specific examples he cites are recruitment and training—one of which, training, was corroborated bythis analysis. Our efforts rank order Freeman's 9 *Phases* used in the 21 terrorist attacks.

One way to penetrate the information advantage maintained by the terrorist, which is truly maintenance of the strategic and tactical elements of *surprise*, is to develop a methodology of maximizing its targeting efforts. The AHP in this model concluded, in order of precedence, the phases of *Terrorist Training*, *Networking*, and *Planning* as the threemost important phases of the nine phases analyzed from the data. Indeed, these three phases accounted for approximately 55% of the decisive weights and this is a significant portion when compared to the other six phases combined.

In order to complete the analysis, the process requires the establishment of the three key components outlined in the introduction. The objective is to identify the phase or phases that provide the most effective operational targeting by national intelligence services. Second, the criteria are analyzed: the independent variable is identified (time before the attack) and the dependent variables are converted from nine different qualitative phases into a binomial distribution that helps to establish the head to head pairwise comparison for application in the AHP using Saaty's the nine point scale.

To provide the reader with a basis of comparison, the data is analyzed simply. Table2 lists the phases from most common to least common when taken as a percentage of sheer occurrences in the data. Decision makers utilizing this simple approach are intuitively led to a possible false decision. *Logistical Preparation*, *Operational Planning*, and *Weapons Procurement*

appear to be the most likely phases to be identified, and should therefore be targeted. However, once the AHP is applied to the data, a new pattern emerges. Then new results are discussed later in this paper.

Table 2: Original Phase Manifestation Percentages

Phase	*Relative Frequency*	*Rankings*
Logistical Prep.	14.4%	1
Operational Planning	13.0%	2
Weapons Procurement	12.5%	3
Operational Prep.	11.6%	4
Planning	11.1%	5
Financing	11.1%	5
Recruitment	10.2%	7
Networking	9.7%	8
Terrorist Training	6.5%	9

The first step in the AHP for this study is establishing an equilibrium point for each phase within each attack. Nine phases require a nine by nine(*9 x 9*) matrix. The matrix pits the nine phases against one another with a specific weight for each phase with in each attack. The comparison is based upon a two filtered processes. This comparison provides weighting to the phases in relation to their actual effects in each attack, and prevents distraction from the correct decision. The first filter is the *frequency* each phase has within a specific attack (see Figure 1). The second filter mechanism is an AHP weighted *head to head* pairwise comparison that each phase undergoes based upon the first raw data analysis for all 216 phase manifestations out of the twenty-one attacks.

In order to obtain the 216 manifestations across the 21attacks the raw data was analyzed. When a phase manifested within any of the 21, attacks anywhere along the 72 month time period prior to an attack, it received a value of one. Next, each phase was weighted in accordance with the percentage (number of times occurred/total) of times it manifested in the 21 attacks to establish the quantitative basis of the data as shown in Table 3.

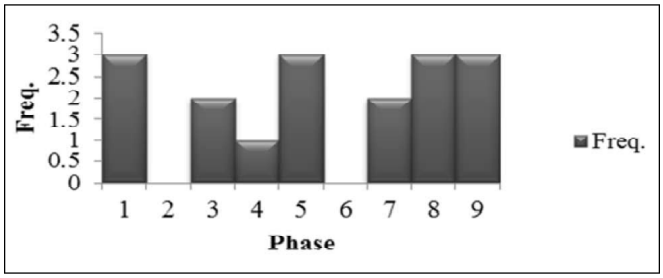

Figure 1: Madrid, 2004, is an example of the data captured and placed into the AHP. The *frequency* of each phase is critical in assessing the final equilibrium value achieved for each specific phase. The phases in their original order: 1–Networking; 2–Terrorist Training; 3–Planning; 4–Recruitment; 5–Financing, 6–Operational Planning; 7–Weapons Procurement; 8–Logistical Preparation; 9–Operational Preparation.

Next, each individual attack was separated from the whole of the data, and a distribution was determined for each phase leading to a terrorist attack. Figure 1 is an excerpt from the data analyzed; the al-Qaeda inspired Madrid Train Bombings in 2004 provides an example of the information complied for each attack (Freeman *et al.* 2010). As depicted by the graph, the frequency of data collected for each phase is along the Y-axis, and the numeric code number for each phase is along the X-axis. One important note, the original phase numbers have no correlation to any weighting; furthermore, the original phase numbers are a product of the work done by Freeman *et al.* (2010), and their depiction of the general order the phases follows from start to finish.

Table 3: AHP Weighting for each of the phases to establish the *Head to Head Filtering* Criteria

Phase	*Frequency*	*Phase Weight*	*Phase*	*Pairwise*
Networking	21	3	14-17	1
Terrorist Training	14	1	18-21	3
Planning	24	5	22-25	5
Recruitment	22	5	29-31	7
Financing	24	5	> 31	9
Operational Planning	28	7		
Weapons Procurement	27	7		
Logistical Prep.	31	9		
Operational Prep.	25	5		
Total	216			

Each of the nine phases with in each of the twenty analyzed attacks is then filtered in this manner and the eigenvector weights are found and placed into a *9 x 21*matrix. Thus, the stable equilibrium values for each phase are captured in each attack using Excel. The next step of the calculation process is the creation of a *21 x 21* matrix, which models each attack against each attack. The filtering process for this was strictly based upon the quantity of information each attack provided. The twenty-one attacks were statistically modeled based upon their binomial manifestations of phases. The attacks that had the same quantity were valued equally. The *21 x 21*matrix was then normalized and its eigenvector found as a *21 x 1* eigenvector of values for each attack.

The *21 x 1* eigenvector was found in a multi-step process. First, we counted occurrences and then prioritized the finding as shown in Table 4.

Table 4: Prioritization

Attack	*Quantity*	*Operationalize*	*Rank*	
Cole	7	0.032407407	6	Cole
Limburg	3	0.013888889	1	Limburg
Sullivans	11	0.050925926	13	Sullivans
OKC	11	0.050925926	13	OKC
Kearsarge	10	0.046296296	12	Kearsarge
East Africa	16	0.074074074	18	East Africa
Madrid	17	0.078703704	19	Madrid
Bali 2005	6	0.027777778	4	Bali 2005
Bali 2002	11	0.050925926	13	Bali 2002
London	11	0.050925926	13	London
LAX	8	0.037037037	9	LAX
Nine-Eleven	24	0.111111111	21	Nine-Eleven
Khobar Towers	23	0.106481481	20	Khobar Towers
Shoe Bomber	7	0.032407407	6	Shoe Bomber
Dubrovka	9	0.041666667	11	Dubrovka
1993 WTC	12	0.055555556	17	1993 WTC
Achille Lauro	5	0.023148148	3	Achille Lauro
Columbine	8	0.037037037	9	Columbine
Virginia Tech	7	0.032407407	6	Virginia Tech
Australia Embassy	4	0.018518519	2	Australia Embassy
Marriott 2003	6	0.027777778	4	Marriott 2003

Next, using this prioritization a team of defense experts provided the 9 point scale values for the 21 attacks. Discrete Dynamical Systems (DDS) models were applied to obtain the *21 x 1* eigenvector.

Once the *21 x 1* vector was finalized, the two matrices were then ready to be multiplied by one another. A *9 x 21*matrix multiplied with a *21 x 1*matrix yields a *9 x 1* vector, which provided the rank ordering of the nine phases shown in Table 5. The percentages captured form the final outcomes identify the rankings. Note that the top four ranks account for approximately 65.26% of the total phase detectability.

Table 5: The Final Outcome from the AHP Analysis

Phases	*Percentage*	*Prioritization or Ranking*
Terrorist Training	27.4%	1
Networking	16.4%	2
Planning	11.4%	3
Operational prep.	10.0%	4
Financing	8.56%	5
Recruitment	8.00%	6
Operational Planning	7.20%	7
Weapons Procurement	6.10%	8
Logistical Prep.	4.86%	9

DISCUSSION

Operating in the 21st century, has just begun, from its inception the new threat to the international status quo for peace is not war mongering nation states bent on world domination. Quite the contrary, the biggest threat to peace worldwide is international terrorism by entities like al-Qaeda and Hezbollah. The WMD commission update highlights the threat of nuclear, biological, and chemical threats in correlation with WMDs (Commission on WMD, 2009). Rogue states with malign interests and lacking a technical delivery method may seek alternative deployment means, in the form of terrorism, to implement their international agendas, though this point is debated amongst scholars (Tucker, 2012).

Detecting such a terrorist attack before it occurs is essential and exponentially more difficult when efforts are unfocused and misaligned. In his work *Intelligence for an Age of Terrorism* Treverton (2009) explains the use of Bayesian analysis to develop strategy during the Cold War. The use of statistical processes for decision making is no less applicable now and provide an excellent point of departure when considering economy of force. Treverton (2009) also explains the importance of *uniqueness* and *visibility* in developing strategy. While intuition tells us that Logistical Preparation, Weapons Procurement, and Operational Planning may be the most detectable due to their *post facto* manifestation, the use of the AHP forces us to rethink our priorities when focusing funding and resources towards the detection of terrorist attacks.

Based upon the AHP conducted for this study, Terrorist Training was the most likely phase to manifest itself before an attack occurred. While the quantitative analysis provides a percentage output against the other phases it does not indicate how successfully target in any one phase will likely be. Therefore, the CTO must be careful when relying solely on quantitative analysis for decision making.

Since the AHP utilized in this study identified Terrorist Training as the most detectable phase, although experiment for how a CTO would operationalize this realization. The CTO, having full confidence that the weights provided in the AHP are accurate to the situation, makes a decision backed by the AHP to focus his or her efforts on Terrorist Training. The CTO then utilizes all available means of intelligence gathering focused on Terrorist Training. Next, a secondary collection priority is placed on terrorist Networking. The two in concert provide a metaphorical notch and front sight post for the counterterrorist operator's targeting picture of the terrorist threat—as the two

phases align and are collected upon a framework on which to base the intelligence situation is created. While our enemies are not as apparent as they were during the World Wars or the Cold War, they are not as amorphous as presumed. The use of the AHP lends focus to the collection effort and provides a framework to reference the threat situation.

A second experiment provides perspective to the model. This thought experiment assumes a model, which fed real time data and updated consistently. The continuous process provides the CTO with a dynamic analytic process that demonstrates phases in the terrorist attack cycle as it *evolves*. Utilizing the AHP in this manner allows the CTO to monitor the terrorist threat, and since the methodology is codified as a tool, the terrorist's tactics, techniques, procedures, and strategies become a known—rather than unknown variable in the process. Each action taken by the terrorists creates a manifestation, which creates another data point to further strengthen the quantitative trend analysis. Regardless of the terrorist's successor failure, the data is validated and the model onlybecomes stronger.

This work's AHP identified *Terrorist Training* and terrorist *Networking* to be the most important phases to target; in as much as more data is created through intelligence gathering— especially as collection efforts become more refined and reliable—CTOs will witness trends changing. Such evolution provides the CTO with an *increase* in situational awareness, rather than increased factorials, which have no place and only generate confusion. Similarly, as trends are analyzed and depicted in the AHP, achieving a clear situational picture provides modern day CTOs with results enjoyed by the likes of Roosevelt and Churchill when utilizing Operations Magic and Ultra, respectively (Andrew 1996). The proposition to provide such situational understanding is not out of the realm of possibility, and should not be discounted because of the under developed nature of the study. Quite the contrary, the stakes are high enough that an AHP approach to understanding the situation should be further studied and refined. As Crenshaw (2011) explains,

> *…terrorism is a form of surprise attack outside the context of war, it usually takes time to identify and locate the perpetrators. By the time the government acquires convincing evidence of a responsibility, the public's outrage may have dissipated and justifying a punitive response will be difficult. However, responding quickly without conclusive information will likely appear clumsy and vindictive.*

Crenshaw's observation validates the need for a usable, quantitative tool.

CONCLUSION

The AHP is an excellent tool for directing study of complex problems, and provides a quantitative starting point for strategy when used in conjunction with case study, other quantitative and qualitative means, and real world intelligence fusion. The AHP is not a panacea for determining which phases are the most detectable, and as different salient points come to light, different phases are likely to manifest themselves as the harbingers of an attack. The importance of this work is not to determine which phase is universally critical; rather this work seeks to provide one more assessment tool to make the terrorist picture more clearly in a fog of unanalyzed data.

Governments need tools to anticipate attacks. The AHP developed for this study is one possible tool that, given the proper attention, could simplify strategic choices. The AHP conducted edifies a statement made by Treverton (2009)in *Intelligence for an Age of Terrorism*: "For indicators, visibility is also critical." He continues,

> *…terrorist planning, for instance, will be invisible to intelligence until long after the fact, left in terrorist staging areas, or available only with luck…*

With the right tools and focus, the CTO can rely less on luck and more on modern data collection. The AHP conducted by this work determined that Terrorist Training and Networking to be the two most likely phases to be detected. While this study validates one of Treverton's assumptions, it differs in recruitment. Finally, the outcomes identified in this work provide another added benefit; Terrorist Training and terrorist Networking provide the CTO with the most time to follow the terrorist's progress in the development of their attack—having the correct focal point can provide insight into other options and connected events, thereby perpetuating there liability of the tool and the subsequent increase to the CTOs attack prevention capabilities.

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BIOGRAPHICAL NOTES

Dr. William P. Fox is a professor in the Department of Defense Analysis at the Naval Postgraduate School. He received his BS degree from the United States Military Academy at West Point, New York, his MS at the Naval Postgraduate School, and his Ph.D. at Clemson University. Previous he has taught at the United States Military Academy and Francis Marion

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Major Nicholas Thompson is a Special Forces officer in the US Army that just completed his Master of Science degree from the Department of Defense Analysis at the Naval Postgraduate School.

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