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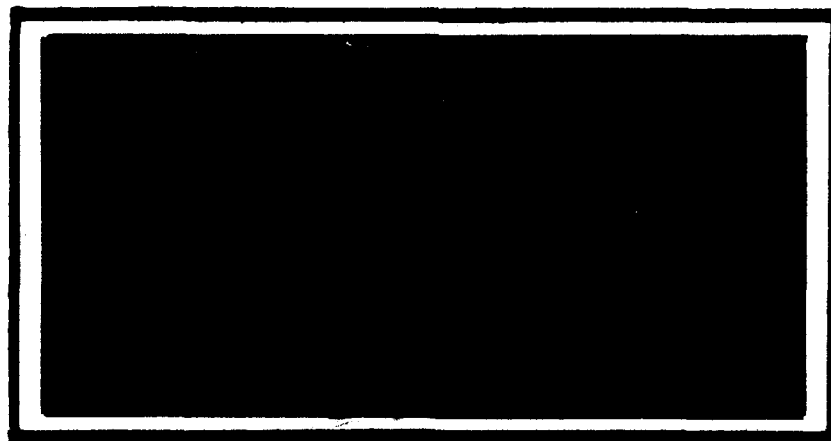
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AFIT/GLM/LSM/90S-30

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WILL THE UNITED STATES EVENTUALLY
BE HELD HOSTAGE BY ITS OWN HIGH TECHNOLOGY
CONVENTIONAL WEAPONS? THE EFFECT OF
TECHNOLOGY TRANSFER ON INTERNATIONAL TERRORISM

THESIS

Paul C. Kovarovic
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WILL THE UNITED STATES EVENTUALLY BE HELD HOSTAGE
BY ITS OWN HIGH TECHNOLOGY CONVENTIONAL WEAPONS?
THE EFFECT OF TECHNOLOGY TRANSFER ON INTERNATIONAL TERRORISM

THESIS

Presented to the Faculty of the School of Systems and Logistics
of the Air Force Institute of Technology
Air University
In Partial Fulfillment of the
Requirements for the Degree of
Master of Science in Logistics Management

Paul C. Kovarovic, B.B.A.

Captain, USAF

September 1990

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Abstract

This thesis reveals a disturbing transformation. International terrorists' present unsophisticated arsenals are slowly evolving into high-technology conventional weaponry. Alarming, an increasing portion results from U.S. and Western technology because of technology transfer. With the abating trend of terrorist attacks predicted to continue, the thesis discerns this does not suggest a decline in terrorism. On the contrary, through product and process technology transfers, the number of organizations that possess the technological capabilities to produce advanced Western weapons has skyrocketed in the last decade. Therefore, though attacks continue to decrease, terrorists' carnage will likely increase due to the technologies they acquire.

With the global diffusion of technologies, countries are relying less on U.S. markets. This thesis acknowledges it is virtually impossible to restrict U.S. exports to industrial countries without severely restricting American competition. However, "strong fences" must be built around "small areas" to thwart the terrorist acquisition of U.S. and Western technology. This thesis posits to educate U.S. leaders on terrorism, place a stronger emphasis on working export controls as the system currently exists, and limit the number of U.S. and Western private arms suppliers.

WILL THE UNITED STATES EVENTUALLY BE HELD HOSTAGE
BY ITS OWN HIGH-TECHNOLOGY CONVENTIONAL WEAPONS?
THE EFFECT OF TECHNOLOGY TRANSFER ON INTERNATIONAL TERRORISM

I. Introduction

Thesis Overview

The purpose of this research is to extensively investigate the relationship between international technology transfer and international terrorism. Beginning with an exhaustive literature review, this research is further enhanced by an analysis of a present-day international terrorist group--the Abu Nidal Organization (ANO). In the general literature of terrorism, little attention has been given to the effects technology transfer has on terrorism, especially with regard to conventional weaponry. As a result, this study will contribute significantly to the base of knowledge that is currently undeveloped on the subject.

This research will specifically focus on how and where international terrorists obtain their conventional weapons. The thesis will analyze if United States (U.S.) and Western high technology conventional weaponry is available for terrorists to use, because of technology transfer, against Western nations. The ANO will be analyzed to also assess any implications the terrorist group has, due to the kinds of weapons it possesses, for future U.S. international technology transfer decisions. Having studied international technology transfer and its effects on international terrorism in general, as well as its effects on the ANO in particular, the objective of this research is to

understand the ramifications of international technology transfer with respect to international terrorism. The research will likewise serve as a valuable information source and reference for future such studies. Therefore, international managers working technology transfer issues may be exposed to the seriousness of protecting high technology from terrorists and from countries that sponsor terrorism.

General Issue

The success of today's businesses, or even countries, is dictated by their level of technological expertise and intelligence. For example, instead of typewriters on workers' desks in offices, there are now computers. When new technologies become available, there are superior technologies waiting to render the "new" technologies obsolete. An example is the constantly improving computer microchip. Most computers depreciate in value as soon as they are taken home, simply because of outdated microchip technology.

The same is true for military weaponry. With the rapid proliferation of Western military conventional and unconventional high technology to non-NATO nations, there is a growing concern among the Western world that international terrorists will obtain those sensitive technologies through technology transfer and use them destructively to achieve their goals. "This topic is an area that is being looked into... we will see a higher degree of sophistication in terrorists in the future" (86). Just as new technology has helped societies to counter terrorism, it has also given terrorists new methods of attack and greater powers of destruction. Because terrorists generally do not use sophisticated weaponry, they have restrained their violence to low

technological methods like kidnapping, hijacking, car bombs, and shootings because their objectives are satisfied through those techniques and they are cost effective.

However, since the mid-1970s, there has been government concern about the potential use of high technology weapons (though mainly nuclear, biological, and chemical (NBC)) by terrorist organizations (76:69). Therefore, with terrorist targets now becoming increasingly "hardened" (better defended), the world cannot assume that terrorists will adhere to their current methods of violence. In fact, former, ambassador at-large for counter-terrorism, L. Paul Bremer, believes that "terrorists will make greater use of high technology in their attacks" as a way to gain more attention (16:63). Because international technology transfer has become part of the business world to such an extent, sensitive technologies transfer into many different hands--some friendly, some deadly. Conventional weaponry is easier to operate, obtain training for, and is more inexpensive than unconventional weaponry. As a result, there is public and governmental concern today that international terrorists may choose high technology Western conventional weaponry to satisfy their objectives.

Definition of Terms

Some key terms are worth understanding in the context of this research before continuing with this chapter.

International Technology Transfer. International technology transfer occurs when a nation's manufacturing, design and marketing know-how of a defense article is given or transferred to another nation legally or illegally.

Product Technology Transfer. The import of defense products and services that have few substitutes. The final product, or end-item, best describes this type of transfer (83:3).

Process Technology Transfer. The import of knowledge necessary to produce the final product is process technology transfer (83:3). This type of transfer, when done covertly, disrupts regional stability. This is especially true when countries that sponsor terrorism and possess the production capability, obtain the technology.

Terrorism. Because terrorism is so widely defined, one definition is difficult to come up with. Terrorism is "a fad word used promiscuously...what we have is a sloppy use of a word that is imprecisely defined to begin with" (49:24). As defined by the Central Intelligence Agency, terrorism is:

...the threat or use of violence for political purposes by individuals or groups acting for or in opposition to established governmental authority, when such actions are intended to shock or intimidate a target group wider than the immediate victims. (112:48)

International Terrorism. As defined by the State Department's Office of Combatting Terrorism:

International terrorism is terrorism conducted with the support of a foreign government or organization and/or directed against foreign nationals, institutions, or governments. International terrorism has involved groups seeking to overthrow specific regimes, to rectify national or group grievances or to undermine international order as an end in itself. (123:21)

State-Sponsored Terrorism. This form of terrorism exists as a result of a country supporting the goals and activities of a terrorist organization. Typically, aid is in the form of arms, funds, training and training sites, and safe havens. This type of terrorism is the

"abuse of legitimate power, of the methods of control normally available to a state for purposes of national defense, domestic order and state security" (123:16).

Conventional Weaponry. Conventional weapons are those weapons such as handguns, rifles, precision-guided munitions, anti-tank, and anti-aircraft missiles that are intended to stop an opposing force.

Unconventional Weaponry. Unconventional weapons include nuclear, biological, and chemical weapons. These weapons can be intended to destroy an entire civilization.

High Technology Conventional Weaponry. For the purposes of this research, with an understanding of the low-tech arsenals terrorists currently adhere to, high technology conventional weaponry is broadly defined as all conventional weaponry that has been produced or designed after the Vietnam Conflict. Whenever "high technology" or "high-tech" are used in this thesis, they refer to high technology for terrorists--not necessarily high technology as perceived by the populous (i.e., super computers and fighter jets).

Background

The growing sophistication of modern technology is as useful to terrorists who rebel against established order as to the societies that have secreted it, thus bringing about a paradoxical weakening of Western countries. (84:132)

"Palestinian terrorists attacked an El-Al airliner with a Soviet RPG-7 rocket in 1975 and employed the Strela SA-7 missile again in 1975" (1:227). The ANO also fired a rocket at a Jordanian Alia airliner in Athens, Greece in 1985. These terrorist technological advances create tension and anxiety in the minds of leaders and citizens of the free

world. Today, terrorists use advanced remote-controlled bombs and rockets, tomorrow possibly a missile made from Western manufactured parts. Terrorist targets are now becoming more and more "hardened" as Western governments attempt to toughen their counterterrorism laws, and anti-terrorist units respond quickly to attacks. Therefore, the standard tactics used by international terrorists and the types and quantities of weapons they use could be changing with an emphasis on high technology conventional weapons. "It might be necessary [for terrorists] to find a new form of coercion in order to keep up the effectiveness of terrorism" (84:119).

The type of terrorist group that would conceivably obtain high technology conventional weapons is a state-sponsored group (31:148). Countries such as Libya, Syria, and Iran are three of the biggest sponsors of international terrorism. The amount and lethality of the conventional weapons those three countries provide is alarming, especially when considering the high probability that those nations will provide international terrorists with such high technological conventional weapons as the new Soviet-made AK-74 advanced automatic rifle, and the SAM-7, or maybe even the U.S. Stinger missile. Unfortunately, due to the relationship that exists between the sponsor and the terrorist, tracing the path of terrorist weapons acquisition is a perplexing task.

Some scholars of terrorism believe modern technology has aided the terrorists cause more through the "instantaneous worldwide notoriety and attention" given them through contemporary news reporting than it has through the transfer of high technology conventional weapons (63:105).

Unfortunately though, advanced technologies bring about new and different forms of vulnerabilities. Likewise, new weapons have been developed to match those vulnerabilities.

Statement of the Problem

This study attempts to determine the effect international technology transfer has had on the ability of international terrorists to obtain Western high technology conventional weapons. A synthesis of these findings, together with an analysis of the brutal international terrorist group, the ANO, will then determine if those weapons are useful or actually detrimental to international terrorists.

Investigative Questions

The following research questions are the crux of guiding this research:

1. What kind of weaponry do international terrorists currently employ?
2. How do these terrorists obtain their present arsenals and how do they receive logistical support?
3. How are Western arms transferred and what is the control process Western nations have on transferring conventional weapon technology?
4. What role do Third World countries play in transferring Western conventional arms technology to international terrorists?
5. How easily can international terrorists obtain high technology conventional weapons and who are the suppliers?

Justification

Hardly a day goes by without the news of a hijacking, a political assassination, or a bombing somewhere in the world (65:3).

"International terrorism has unfortunately become part of the daily diet of the evening news" (65:3). With the increased sophistication in conventional weapons, the temptation for terrorists to use those improved weapons is becoming a reality. In testimony to the U.S. House of Representatives Armed Services Committee on 6 February 1985, former U.S. Army Chief of Staff, General John A. Wickham, said this about the level of conventional weapon refinement.

We are on the threshold of some enormous technological changes in conventional weapons. The yield of the weapons, the lethality of the weapons, the accuracy of the weapons means that we can build in the next four to five years, conventional weapons which will approximate nuclear weapons in lethality, and we are moving in that direction (11:8-9)

Now five years later, the fear is spreading that terrorists will soon use those weapons. The transfer of high technology to countries that sponsor terrorism, or to the terrorist groups directly, must be stopped. In today's complex political world, one nation's ally is another nation's foe and vice-versa. Almost unavoidably, high technology Western conventional weapons are becoming part of the international terrorists arsenal.

Much of the limited literature on "technological terrorism" stresses that the U.S. should develop new technologies to counter terrorism (64). The literature also emphasizes prevention (avoiding terrorist incidents by protecting critical targets) and control (establishing command and control to effect a timely response to an incident). Also, the thrust of scholarly research on political violence

has tended to focus on "causes" or "conditions" influencing levels of violence (7:329). This study focuses on a different issue--how to effectively manage the transfer and export of high technology conventional weapons to terrorist states and groups.

International technology transfer is a powerful, yet delicate, tool in U.S. foreign policy. The legal transfer of Western high technology weapons (specifically conventional weapons) is vital to a nation's economic strength and to the receiving country's military might. However, it is also imperative that export controls be placed on transferring high technologies, due to a resultant weakening of the transferring nation's national defense when the wrong country obtains the technologies.

The ANO is a prime choice for a case analysis for two reasons: first, it is world renowned for being one of the most, if not the most, brutal terrorist organizations in operation today; and second, it is also believed to be one of the few Middle Eastern terrorist groups which will remain in existence even if its aim of establishing a Palestinian homeland is resolved. The literature points to the fact that Abu Nidal will find a nation to sponsor him to conduct any form of terrorism.

Scope of the Research

This study, specifically in the literature review of Chapter III, will thoroughly explore the issues surrounding international technology transfer through the U.S. export control system, and how transfers affect international terrorism. The study will consider the impact of certain countries that share Western conventional weapon technologies with countries that sponsor terrorism and how those technologies are

actually used against Western allies, including the U.S. Investigating the trends in terrorists acquisition of U.S. and Western technology, the study will analyze the potential of terrorist attacks using high technology weaponry for the future. The research will not delve into a number of issues that are addressed in most of the terrorism literature, namely, the responses to terrorism, a list of terrorist attacks, the history of terrorism, the potential for nuclear terrorism, and the behavioral aspects of terrorists.

There is a separate and substantial technology transfer effect on the possible use of nuclear terrorism. However, using high technology nuclear weaponry, implying sophistication and the deaths of thousands of people, carries a risk of unprecedented response. "No country would let a [unconventional] high-tech attack go unpunished. In fact, it would probably attempt to exterminate the perpetrators of the crime" (84:120). Nevertheless, this study will focus only on high technology conventional weaponry. The research findings of this study will integrate the data gathered through the extensive literature review with the case analysis of the ANG. After synthesizing the two data forms, this research will build on an undeveloped base of knowledge on international technology transfer and international terrorism. This thesis is not attempting to arrive at any "bottom-line" or cataclysmic conclusions. More importantly, the tactic taken in the thesis will hopefully contribute to further study. There are a lot of "ifs" associated with a qualitative study. However, the study does investigate a topic few have attempted to study; therefore, this thesis is meant to be a learning tool, not necessarily a policy tool.

Organization of Presentation

This thesis is organized in five chapters. After this introduction, chapter II presents the methodology of the research. The methodology consists of a mixture of three different methods: the first is an extensive literature review; second is a case analysis; and third is personal interviews of some key terrorism, technology transfer and export control specialists in Washington, D.C.

Chapter III presents the extensive literature review of available data. The areas of interest for this thesis include the channels of technology transfer for international terrorists, the types of conventional weapons that international terrorists currently use as well as those they may potentially use, how terrorists benefit from technology transfer, and finally how the U.S. export control system operates in preventing the unwanted terrorist acquisition of Western technology.

Chapter IV of the thesis will present the analysis of the ANO. The organization's background, tactics, structure, types of weapons it uses and potentially will use, as well as the group's current status, will be investigated for implications of U.S. and Western technologies in the group's arsenal.

Chapter V of the thesis will offer findings of and recommendations on the effects technology transfer has on international terrorism.

II. Methodology

Chapter Overview

This chapter discusses the three methodologies used to obtain the necessary data to perform the research. Leading off the chapter discussion are the actual types of research methods used for the thesis. Immediately following is the methodology justification. Concluding the chapter is a review of the limitations experienced with regard to the methodologies used.

Research Method

The particular method chosen for this research is actually a combination of the historical method, a case analysis of the ANO, and personal interviews. Historical research "is often defined as the writing of an integrated narrative about some aspect of the past based on critical analysis and synthesis of sources" (74:64). Borg and Gall said the historical method, "...is a systematic and objective location, evaluation and synthesis of evidence in order to establish facts and draw conclusions concerning past events" (13:260). The current knowledge of high technology terrorism and how it is affected by international technology transfer is limited and does not permit the use of surveys and statistical methods. In fact, there really is no overlap at all between the mounds of writings on technology transfer and terrorism. So, an extensive historical literature review will serve as an explanatory and speculative discussion on this relatively unresearched issue. The information obtained must then be synthesized into a usable form to represent an accurate account of the subject matter. That synthesis of knowledge will

investigate the potential for international terrorists to use Western high technology conventional weapons.

The second research methodology employed is a case analysis of the ANO. A case analysis, deemed less rigorous by many researchers, is essential in this research. The researcher must strive to prove that an actual terrorist group is obtaining Western high technology weaponry to show the relationship between technology transfer and terrorism. Otherwise, there is no corroborating evidence to substantiate the research effort. A case analysis "represents an intensive study of phenomena using a variety of data sources and tools" (74:84). Seen as both fortunate and unfortunate, "researchers have no standard procedure to follow" and "must be flexible and attempt to glean information and insights wherever they may find them" (152:84). A case analysis looks at a particular subject in excruciating detail and pieces together facts that corroborate a literature review.

To obtain primary data, personal interviews were conducted. Because of the nature of the research topic, primary data was difficult to find. Interviews, therefore, help to substantiate content validity with primary sources. The interviewees, listed in Appendix A, were chosen based on their expertise in the subject area as well as on recommendations from a panel of experts in the Dayton area. An interview is "a two-way conversation initiated by an interviewer to obtain information from a respondent" (48:160). The interviews were conducted face-to-face in Washington, D.C.

Methodology Justification

The study of terrorism is ever-present and on-going. However, the current base of knowledge on technology transfer and its relationship to international terrorism is still in its infancy. Thus, the three research methods chosen will not only contribute to this thesis effort, but also, these methods will assist in introducing and developing a comprehensive vault of knowledge. Therefore, this research effort will further develop an understanding of the important link between the transfer of conventional weapon technology and the international terrorists that obtain that technology. This thesis will also take a leading edge role and pave the way for future researchers to further study this delicate, yet explosive, issue.

Because of the lack of concrete information on the subject matter, the historical method utilizing an extensive literature review is crucial in establishing a foundation for this research. The synthesis of knowledge gathered from information that already exists from the comprehensive review of the literature will provide data that is not only relevant to the topic, but also provide the opportunity to introduce ideas that have not yet been meshed together in formal writing. The secondary data gathered from the historical method also is essential in providing corroborating evidence for the primary data gathered. According to Lang and Heiss:

...through history one can develop a background perspective and insight into a person, problem, event or institution not obtainable through other types of research. In historical research, which is often most concerned with qualitative results, the historical methodology does generate the answers. (74:65)

Therefore, to adequately build a solid infrastructure on the topic at hand, the historical methodology was instrumental and necessary.

The case analysis methodology allows the researcher to investigate and observe relationships with that of the existing pool of knowledge discerned from the historical method. Injecting additional rigor into this research effort, the case analysis allows for corroboration of existing knowledge gained from the literature review. This methodology also yields the challenge of investigating and discovering new knowledge, when synthesized with the literature review. The ANO case analysis is critical in providing data that will be invaluable to the research effort. It will provide, firsthand, the direction in which at least one international terrorist group is moving with respect to obtaining U.S. high-technology conventional weapons. Renowned as one of the most ruthless international terrorists groups with state-sponsorship, the ANO is a prime terrorist group to study. Receiving state-sponsorship from different countries since its inception in 1973, the arsenal of the ANO has the potential firepower of a small army.

The interview methodology is the sole source of gathering primary data for this thesis. The survey method, again, was not germane to this study due to the introductory nature of the research problem. The use of primary sources is summed up well by Lang and Heiss:

Generally, research which is non-statistical draws upon two kinds of sources: primary and secondary. Primary sources are the original documents and remains, the first witness to the event, with only the mind of the observer coming between the original event and the user of the source. (74:72)

The interviewees, though not "first witnesses to the event," were selected for their expertise in the subject matter and the questions asked

were based on the ideas and discoveries obtained from the literature review and the case analysis. The questions, which were semi-structured in nature, meaning the interviewee had the option to inject pertinent information that may have been left out of some of the questions, investigated the relationship found between the base of knowledge in the review of literature and from the findings of the ANO. The interview questions are included in Appendices B and C. The officials interviewed were from a variety of organizations. Some, in fact, were monitoring terrorist activities specifically on those of the Abu Nidal Organization on a daily basis. The organizations included the Central Intelligence Agency, the Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict, the Defense Technology Security Administration, and the Defense Intelligence Agency.

The three methods used in this research will allow for an extensive investigation of the effects that international technology transfer has on the ability of international terrorists to obtain Western high technology conventional weaponry.

Limitations of the Research

Due to limited time and funds, only U.S. Government officials were interviewed. Thus, primary sources outside the government were not used. Besides the potential for bias, the thesis is therefore somewhat limited because no terrorism or technology transfer scholars or authors outside the government were interviewed. The thesis could have been enriched a great deal with additional contributors. As stated earlier, the subject matter of this thesis is not an easy one for academic research. One of the reasons is due to the dearth of reliable sources available concerning

the weapons terrorists use. Because terrorists operate clandestinely for the most part, they are not predisposed to reveal the kinds of weapons and technologies they use. Consequently, the thesis is also quite limited because no classified information was used. Though not classified, there is one source in the research that was requested to remain anonymous. That same secrecy theme holds true when investigating the states that sponsor international terrorism.

Because a terrorist group like the ANO is especially secretive and compartmentalized, fact and gross speculation, truth and untruth, all weave together where actual facts blur into myths and legends (93:4). Because of the lack of "hard" information on the ANO in particular, considerable doubt is cast on revealing the whole truth about the organization. This thesis will simply add another "interim report" on the operations of Abu Nidal.

One of the most significant obstacles an historical researcher must hurdle is to ensure the sources used are valid and genuine. Therefore, well-documented and accurate data are paramount in overcoming internal and external criticisms. In fact, Lang and Heiss state

...it seems that unless the student is attempting a piece of historiography or a textual study in literature, it should not be necessary to subject the documentary sources to an exhaustive set of maxims of criticism. However, the fundamental task of the researcher is to get as close as possible to the truth. (74:73)

Along with the internal and external criticisms, there are also potential errors in historical research. Borg and Gall list six:

1. Selection of a research area in which sufficient evidence is not available to conduct a worthwhile study or test the hypothesis adequately.
2. Excessive use of secondary sources of information is frequently found in studies not dealing with recent events.
3. Investigation of a broad, poorly defined problem.
4. Failure to evaluate historical data adequately.

5. Research procedures are influenced by personal bias.
6. Recitation of facts without synthesis or integration into meaningful generalizations. (13:267-268)

The two other primary methods used in this research, case analysis and personal interviews, are also criticized widely. The case analysis is critiqued for its inability to derive complete and dependable data (74:85). Personal interviews are criticized because the interviewer may "alter the questions or bias the results." (48:161) To avoid falling prey to the above mentioned criticisms and errors, the researcher must first and foremost recognize the fact that those problems do exist and that there is a perceived lack of rigor associated with the methods used in this study. Once recognized, the study can commence with thoughts of how to combat those problems. This research will use the following method of operation to stymie pitfalls and criticisms:

1. Due to the magnitude of the literature review, the use of secondary source data must be from an all-encompassing data base.
2. From that all-encompassing base of sources, different kinds of sources must be used to corroborate findings.
3. Avoid bias by remaining critical of sources at all times. Try to corroborate all sources with at least one other source.
4. Interviews will serve as primary data to enhance the other data gathered.
5. The case analysis will develop a more comprehensive body of knowledge on Abu Nidal that will only aid in learning more about that particular terrorist group. Unfortunately however, because there is quite a lot of classified information on the ANO, the thesis is again limited, as this is an unclassified study.

By using the above techniques, the criticisms cited in this section can be skillfully avoided and the finished research effort will be a polished source in the subject area.

III. Literature Review

Chapter Overview

This chapter discusses the information and facts discovered while reviewing the literature that was germane to this study. The sources used were varied and included trade journals, books, bulletins, popular magazines, conference proceedings, student papers, newspaper articles, Congressional hearings, laws, and television news shows. Information was obtained on channels of technology transfer as they relate to international terrorism, the actual and the potential conventional weapons of terrorists, how terrorists benefit from technology transfer, as well as on the intricacies of the U.S. export control system.

Channels to Transfer Technology to Terrorists

International terrorists may obtain technologies through many different methods. In general terms, there are five channels used and available to terrorists:

1. Voluntary supplier states and their industries.
2. Other terrorists or non-state groups.
3. Arms merchants, who are scattered around the world and who hunt for weapons after every conflict.
4. The criminal underworld.
5. Involuntary government sources (i.e., theft from warehouses).
(100:209)

Voluntary Supplier States. State sponsorship, the critical first element when studying the relationship between technology transfer and international terrorism, "reduces constraints on terrorists permitting them to operate at a higher level of violence" (66:351). The literature emphasizes state-support as the most effective form of support, thus the importance of the first channel of transfer.

To ascertain the impact technology transfer has on terrorism, states that sponsor terrorism become a crucial element in the investigation. The life-blood of international terrorist operations is money. Without it, terrorists cannot conduct attacks and thus achieve the media attention that they thrive on. There are two basic forms of financial support for terrorist operations: state-support and self-finance (112:68). Because many of the newer weapons technologies available today require advanced skills, greater expertise, and more money than most international terrorists groups possess, it is cost prohibitive to obtain advanced, high technologies...for "all but the largest and best-financed terrorist organizations" (18:66).

As a result of state support, terrorists do not have to rely on self-finance. Ahmed Jibril, accused of the terrorist attack on Pan Am Flight 103 over Lockerbie, Scotland in December 1988, said in a private meeting that he "got paid \$10 million by Iran" to carry out the act (122).

M.K. Pilgrim, from the Center for International Security Studies, says this of international terrorists.

Today's [international] terrorists are, in general, highly trained, well-financed, political actors with a sophisticated arsenal of propaganda designed for maximizing media attention; and they have at their disposal an ever-increasing supply of high technology weapons. (112:48)

In fact, the literature so far has likened state-sponsored international terrorism to big business! Ahmed Jibril's Popular Front for the Liberation of Palestine-General Command (PFLP-GC) for example, has all the workings of a multinational corporation with its "hierarchical management structure, lawyers, accountants, public relations spokesman,

secretaries and clerks" (112:51). The PFLP-GC receives its income from a variety of sources. Taxes are levied on Palestinians, and Palestinian citizens actually tithed a portion of their income for the cause.

The sophisticated conventional weaponry that the West produces requires training and also test areas that most terrorists do not have access to. Former U.S. Ambassador at Large for Counter-Terrorism L. Paul Bremer, says the following about sponsorship and the availability of applicable resources:

A sovereign state can dispense sums of money impossible for an organization to raise alone. And almost any [sponsoring] country can provide training and testing facilities at a closed military base. (18:66)

A lone terrorist would find it difficult to properly fire weapons and plan strategies. Without safe havens, those strategies could not be planned. "Being able to live without fear of immediate arrest and punishment is of enormous psychological value to a terrorist" (17:45). The past Reagan Administration as well as the current Bush Administration "view state-supported terrorists as substantially more dangerous than those operating independently. State sponsorship gives clear advantages to the terrorist" (17:45). For instance, terrorists receive falsified identification documents (like passports), travel documents, a ready source of weapons, and transportation of those weapons. Because embassies receive exemptions from baggage searches, weapons and technologies arrive in terrorists' hands through diplomats functioning as smugglers by the most serious breach of the Diplomatic Pouch rules (123:301).

Though the exact amount of Western weapons that these sponsored groups are receiving is unclear, and there has not been persuasive

evidence that the availability of these weapons has led to the rampant use of them by terrorists, there is no room for complacency.

The U.S. in conjunction with its Western allies, cannot become inconsistent or ambiguous in policies toward state-supported international terrorism. Terrorists are patient; they only need the opportunity to "piecemeal" technologies over time to come up with advanced Western weapons, or countermeasures to antiterrorist methods (86).

An important question to ask when studying if high-tech Western conventional weaponry is falling into terrorists hands is not what the terrorists capabilities or abilities are, but what are the terrorists intentions or motives. Terrorists are not out to take over the world. They have specific purposes for terrorism and, therefore, "if [terrorist targets] can be rapidly identified and attacked with great accuracy [with conventional means], explosive [nuclear] power ceases to be important (58:90). Consequently, by obtaining effective high-tech conventional weapons through voluntary supplier states, terrorists receive the best of both worlds--enhanced firepower plus hyped media attention due to weapon sophistication.

Though the theme was for unconventional weapons, former Justice Arthur J. Goldberg's statement about the availabilities of new technologies can also apply to conventional weapons and state-sponsored terrorism.

Modern terrorism with sophisticated technological means at its disposal [through sponsorship] and the future possibility of access to biological and nuclear weapons, presents a clear and present danger to the very existence to civilization itself. (1:226)

In the Arab world, for example, there are many major links to international terrorism (see Figure 1). The most active sponsors include Libya, Syria, Algeria, and South Yemen. Iran is also included in the figure. Though Iran is not an Arab country, it is in the same geographical "Arab World." These and other countries provide everything from arms, training, and funds, to safe haven and passports (6:119-133). The Soviet Bloc has its share of sponsors also. Cuba, Bulgaria, Nicaragua, and East Germany provide the bulk of training, arms and money to many international terrorists. The Soviet Union, though it would deny it, also sponsors international terrorism. Freely admitting that Western technology transfers contribute to over 5000 Soviet military research projects each year, the Soviets actually sell arms and technologies to countries that sponsor terrorism (according to the State Department) like Libya, Syria and Iran (42:iv).

For instance, in the late 1970s, the Soviet Union was supplying Strela ground-to-air missile to Libya, to bolster its tactical defense systems. Libya then passed a portion of this consignment to the Palestinian terrorists (92:191). That same arrangement exists today. Though the actual weapon systems appears to be from Soviet manufacture, the amount of Western technology that could be in those weapons is more alarming. Because one country, like Libya, which receives weapons and technologies from the Soviet Union, sponsors more than a handful of terrorists, there is a potential for those weapons Libya receives to have embodied Western technology, and therefore, available for use by terrorists.

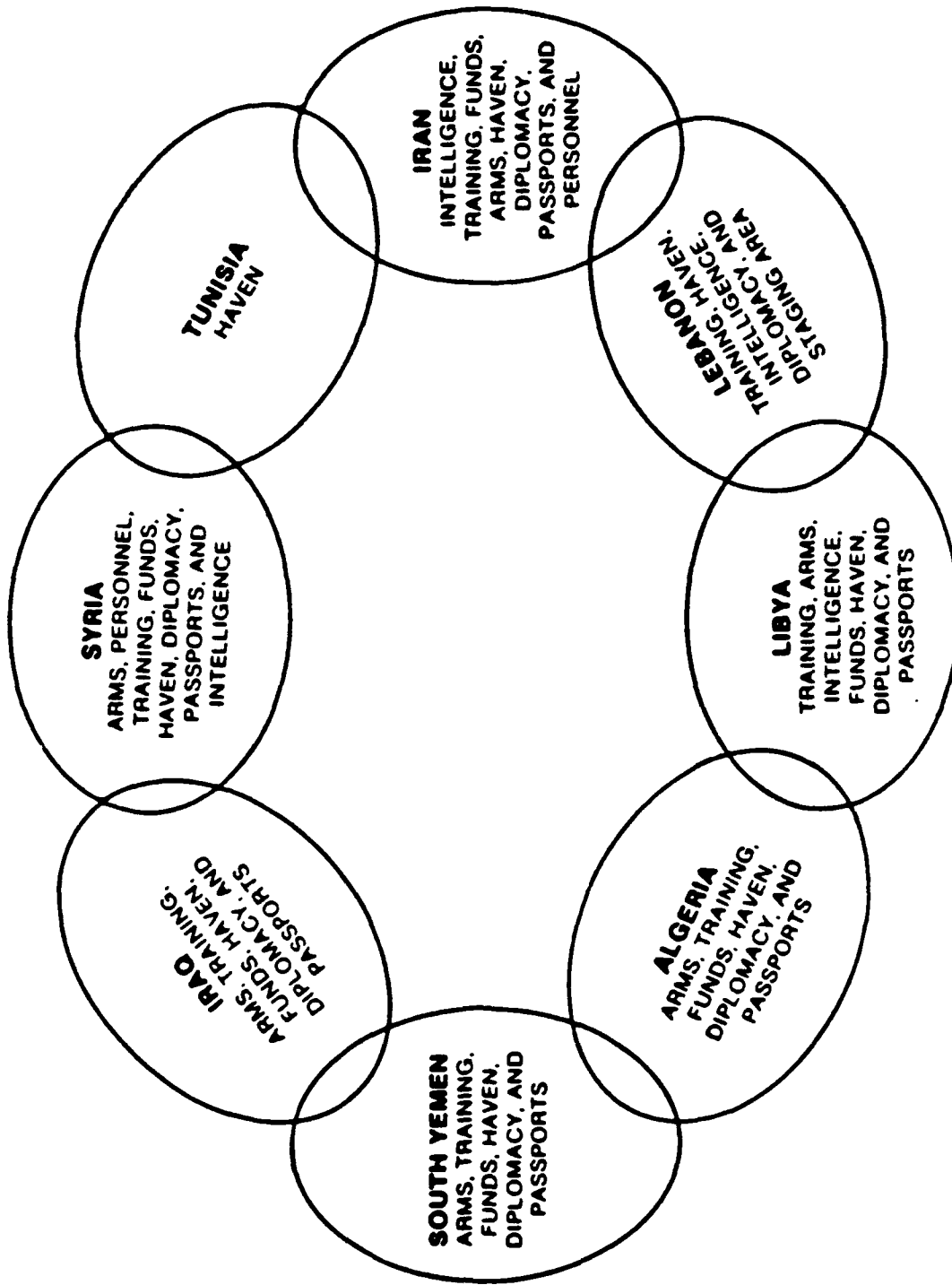


Figure 1. Major Links in International Terrorism--Arab World (47)

The American Link to International Terrorism. Though most definitely not government policy, there are some Western organizations that do in fact sponsor international terrorism. As a result, "some [terrorist] weapons come from Western nations who sell to buyers who sell to other buyers and who may not be too careful about where some of the weapons end up" (135:15). One of the Western nations is in fact the U.S. Agents from the Bureau of Alcohol, Tobacco and Firearms (ATF), constantly battle the "weapons underground" in the U.S. tracking down countless numbers of U.S. weaponry bound for overseas ports. Portentously, they do not find all missing arms. The ATF espouses that many of the thousands of illegal weapons floating around in the domestic black market end up in international terrorists hands. As far back as late 1977, the ATF seized seven hundred weapons in Maryland and Virginia, including submachine guns and rocket launchers, as well as sixty-thousand rounds of ammunition, all intended for "hostile" overseas destinations (135:18). One ATF representative said, "in our judgement they [the weapons] were available to anyone with the money (135:18). Oil rich Middle Eastern countries certainly have the money, and many of those nations, as seen in Figure 1, sponsor terrorism aimed at Western targets.

NORAIID, a New York-based organization that openly supports the Provisional Irish Republican Army (PIRA), has continued to provide dollars and weapons to the PIRA. "In 1981, eight-thousand four-hundred weapons were seized [in Ireland] and in that same year more than eighty-five percent of the arms captured originated from the U.S." (92:224). Because Libya is a known sponsor of the PIRA, one might question just

how many U.S. weapons have been transferred to Libya and then on to other organizations Libya sponsors, like the ANO, who target Western citizens (145:56).

During the trial of five members of NORAIID charged with conspiracy for supplying weapons to the PIRA, "the defendants openly admitted that they had been actively involved in smuggling guns from the U.S. to Eire for over twenty-five years" (92:106). In 1984, London newspapers, The Times and the Daily Telegraph reported that "PIRA's purchasing officers were negotiating the purchase of surface-to-air Redeye missiles in the U.S." (92:107). Those particular purchasing agents were caught. How many times have the terrorists eluded the law in the U.S.? As mentioned earlier, some terrorists have for as long as twenty-five years!

The potential and opportunity for high technology small arms suppliers to profit from terrorists is too inviting at present. Some "strong fences" must be erected around some small supplier areas to prevent terrorist from obtaining U.S. and Western weaponry.

Terrorist training camps are another way of providing state-support. Without these camps, weapon familiarization, terrorist techniques and advanced training would not take place and the effectiveness of the international terrorist would surely decline. According to an Abu Nidal Organization defector, Nidal Muhammad, the training environment consists of six months of grueling training, running six miles a day, four hours of physical training (in addition to the running), weapons familiarization on automatic weapons, pistols and mortars, and also advanced training. According to Muhammed, "We learned how to kill people with a variety of methods, how to enter buildings

quietly, stalk people through the streets, then escape" (109:27).

Unfortunately, according to the literature, some of the training these terrorists receive comes from Western sources, including individuals from the U.S.

Three Libyan exiles interviewed by the Italian Corriere Della Serra in August 1980 testified that at camps in Kufrah, Sinawan, Ghadames and elsewhere [in Libya], the instructors were Palestinians, Europeans, and Americans, formerly in the employ of the CIA. (46:17).

Colonel Gadhafi has admitted he supports guerrilla groups in the U.S. and attempts to forge links with U.S. citizens who are knowledgeable in military fields useful to him (92:131). In fact, according to author Desmond McForan, "various American citizens run terrorist training camps for Gadhafi in Libya" (92:131). On 4 February 1982, the London television station IBA ITN during News at One suggested that some of these individuals are instructors, some act as hitmen against Libyans in the U.S. and others, more devastatingly, transfer technology by "illegally organizing the exploitation of U.S. arms and explosives" to Libya (92:131).

Seeming like a nightmare, the reality of U.S. and Western citizens aiding terrorists exists. As a consequence of the connection, Western arms and technologies are no doubt in terrorists' arsenals.

Other Terrorists or Non-state Groups. In the second channel of transfer there exists a global network of terrorist cooperation. Most involves training, safehavens, logistical support and weapons smuggling. U.S. and Western leaders must not disregard the fact that the technologies international terrorists receive from other terrorist groups will only intensify as U.S. and Western export controls diminish.

Interestingly, Palestinian terrorists favor a relationship with non-Arab terrorist groups. Both sides receive a type of sponsorship as a result. There are three categories of Arab/non-Arab relationships according to Z. Gad, an Israeli who studies terrorism:

1. An operational terrorist cooperation, the aim of which is to increase the terrorist potential of the group. Thus, the capability of both the Arab and non-Arab is increased.
2. Military cooperation between terrorist organizations of national liberation movements. This enhances the military capability between organizations. It includes transferring weapons and supporting training.
3. Political and humanitarian cooperation. Committees of support established by such organizations strive to assist the Palestinian organizations in areas such as propaganda, fund-raising, and medical aid. (56:136)

Both Palestinians and non-Arabs also provide safe havens and logistical support to each other. Libya may provide most of the funds, Syria most of the guns, and Lebanon most of the recruits, but it is the Palestinian cause, "the lack of a homeland," that fuels the Palestinian terrorist (108:25).

Terrorists are not the only benefactors of this channel of transfer. The sponsoring non-state organization, as Gad points out, also benefits handsomely. Once again, money weighs heavily in an organization's decision to assist terrorists. Maintaining large, well-trained forces is expensive and a small group of terrorists costs less per year when compared to training regular soldiers. It can also cause far more havoc in an enemy state than could the soldiers (17:45). By using third party terrorists, the non-state organization can mortally wound its enemy and yet also deny responsibility for the act.

As a result of this type of relationship, terrorists have the potential to obtain and use U.S. and Western technologies. Using Libya

as an example again, it provides the terrorists it sponsors (like the ANO and the PFLP-GC) with the MILAN and Vigilant anti-tank guided missiles, manufactured in West Germany and Great Britain respectively, Glock pistols from Austria and Roland surface-to-air missiles from France (79:342-343; 51:353). Therefore, as a result of this channel of transfer, terrorists very well may use U.S. and Western technologies by sharing with each other as the ANO and the PFLP-GC are known to do. The deadly combination of other terrorist group assistance (arms, training, supplies) and individual groups actually willing to carry out terroristic acts, with an arsenal of conventional weapons, makes terrorism a difficult "enemy" to fight (151:60).

Arms Merchants and the Criminal Underworld. With the rapid changes and the "democratization" of the communist world, many Americans and Congressional leaders are ready to drastically scale back the armed forces. It seems that many people today feel that the threat against the U.S. is disappearing. The evolving view sees the future armed forces of America to be designed for special operations commando raids (i.e., small and cheap) in isolated areas of the world.

However, this thesis posits the sentiment that the threat is not disappearing; it is diversifying. The number of non-aligned free world nations, newly industrialized countries and radical nations, with the technological capabilities of small superpowers, are growing stronger defensively everyday. Sounding to some as a nightmare, the prospects of Mohammad Gadhafi having the capabilities to target Washington, D.C. from across the ocean may be more of a reality today. In fact, Eugene Tafoya, a former Green Beret and holder of the Bronze Star, and former

CIA agents Edwin Wilson and Frank Terpil are three American citizens involved with illegally purchasing sophisticated U.S. arms for Libya (92:132). Just as terrorist organizations do, these Americans set up front companies around the world and in the U.S. to supply the Libyan training camps with current weapons and technologies. For example, Wilson and Terpil, through Wilson's front company, Intercontinental,

were involved with arrangements to supply Libya with 400,000 pounds of explosives together with delayed-action timers...pilfering night-vision scopes, a low-light television camera, and a remote control helicopter from China Lake Naval Weapons Center in California. (92:132)

The smuggling of explosives and delay-action timers was entirely accomplished under the guise of a minefield clearing operation for an oil company. The front company masked the real intentions of the shipment.

As is usually the case when American citizens are involved with terrorism, money is the driving force behind their actions. These men received one million dollars up front from Colonel Gadhafi and twenty-thousand dollars per month to go to Libya and train terrorists (92:134-135).

With the collapse of Eastern Europe, the nuclear weapons business, from the standpoint of the superpowers at least, will slowly decline. Therefore, the demand in the conventional weapon market will arguably rise. Thus, companies both in the U.S. and especially in Western Europe, might now tend to focus on selling sophisticated conventional weapons to whoever will buy. Inauspiciously, some of the buyers may be front companies for terrorist organizations, or even diverters--who fit in precisely with the third and fourth channels of transfer.

The Role of Diverters. Diverters are Western businessmen acting as brokers that arrange for the illegal transfer of high technology from the West to the East (including many countries from the crumbling Warsaw Pact). Posing as an individual or a firm, the diverter's role in the past and for the future is of concern. This is especially true because diverter operations are shrouded with secrecy. The diverter basically handles all of the problems associated with the illegal sales to Eastern Bloc countries. As a Westerner, the diverter knows the ins and outs of Western trade (shipping, financing, purchasing) and also the difficulties in working with the East. Critical to terrorist organizations and to terrorist sponsoring nations, diverters also "absorb all of the risks" (59:4). However, because the diversion tactics blend in well with legal trade, diverters are difficult to identify.

As businessmen, diverters mirror legal traders both in appearances and on paper. They do this by setting up front companies and by keeping two sets of financial records. Because these diverters have close ties with Eastern Bloc customers, the question of whether they will continue to flourish is of extreme importance when studying technology transfer and terrorism.

Many Eastern Bloc countries have rather substantial hard currency problems. They therefore must sell products to bolster their economy as they strive for democracies. Will these newly "democratized" governments continue to sell technologies to countries that sponsor terrorism? Quite possibly. According to some experts on technology security at the Defense Technology Security Administration, countries

like Czechoslovakia, with an established high-tech small arms industry, "will need to keep companies open and the workers working to keep the hard currency flowing" (86). Therefore, a new danger surfaces. "Some East-Bloc companies, desperate for foreign currency, could begin selling weapons to anyone with cash," including diverters (45:44).

With the resulting communist decline, and the ensuing chaos, there will be "less detection of terrorist traveling abroad," and working with diverters, those Eastern Bloc countries will tend "to cut deals with the KGB and the CIA" because they need a benign environment to operate from, not subject to pressures [export controls] of the U.S." (55). The countries may then in turn, sell U.S. supplied technologies to terrorist front companies, unbeknown to the U.S. As U.S. ties with these Eastern countries tighten, the relaxing of export controls could be just what terrorists have been waiting for to obtain higher technology weaponry from the West. "Present [and future] policy toward the Eastern Bloc will probably not enforce export controls [although on paper it may look that way]. The U.S. does not want to burden the steps to democracy" (55).

That thought appears to carry more weight than some would want to believe. As the U.S. opens its doors to previous communist regimes-- that in the past sponsored terrorism--the door opens even wider for those diverters who wish to sell U.S. and Western technologies to terrorist sponsoring countries. Summing up the attitude of diverters, "the 1980s have witnessed a proliferation of economically motivated suppliers more interested in keeping...costs low rather than controlling the policy behavior of their customers" (15:ix). The bottomline is that

diverters, like the above mentioned suppliers, are interested in profits and profits only.

Diverters then, it appears, flourish on their line of work. If a job description existed for a diverter, it would include: "enjoys traveling, meeting people, and thrives on beating the U.S. export control system." Money is the name of the game for diverters, and they accordingly receive handsome profits. It is not uncommon for diverters to mark up high demand items by as much as two-hundred percent per transaction (59:14). One diverter in fact, received "\$1,000 for each day of service in a Bloc country, plus expenses and the cost of spare parts (59:14).

With the Middle East still appearing to be a pressure cooker and terrorism many times providing the fire, diverters may find that area of the world to be of prime real estate for work. "Oil rich nations in the region have an abundance of cash and are using it to buy modern weapons" of Eastern and Western origin now deemed surplus in Eastern Europe and the Soviet Union (90:10).

General H. Norman Schwarzkopf (USA), Commander-in-Chief of the Central Command, highlighted that even if the U.S. does not legally sell advanced weapons in the region, "there are plenty of other [Western] nations that will" including Britain and France (90:10). This provides a fertile environment for the diverter to obtain sophisticated weaponry for terrorist-sponsoring states and thus--terrorists.

Because large-scale diverters have built up a stable of worthy suppliers in the West, the likelihood of higher technology Western products arriving in the Middle East via diverters in the foreseeable

future appears bright. With oil rich nations willing to pay cash for conventional weapons, diverters--driven by profits--may not be able to turn away from apparent lucrative deals.

Today, the opportunity for diverters to establish a gamut of new front companies is great. Once these companies open, the strategic placement of new arms caches may soon follow. The warning signs of a diverter are many but are not easy to detect. For U.S. and Western suppliers, the following danger signals foretell a diverter:

1. Evasive responses to manufacturers questions.
2. Customer reluctance to provide end user information.
3. End user has no track record of need for the customary application of equipment being purchased.
4. New customer willingness to pay cash.
5. Little or no available customer background information.
6. Complex shipping or payment instructions and requests that shipments be broken down into components before shipping.
7. Requests for supplemental equipment, such as transformers, that would not be required in the stated country of the end user. (59:15)

Rigorous internal controls are needed for defense companies concerned with preventing future terrorist attacks. As the world continues to change, diverters assisting terrorists will become more widespread.

Involuntary Government Sources. "Thefts from military depots are another source of terrorists' arms" (100:214). Terrorists in Latin America rely on this form of arms acquisition heavily mainly because many of these groups do not receive any kind of state support or maintain any international links. Therefore, both military and police depots have developed into major sources of arms for Latin American terrorists.

The U.S. is not without its own source of military theft for terrorists. The Commercial Appeal, a Memphis paper, documented that the

United States Air Force Inspector General's office found that "well versed insiders can order virtually any item from military stores, and have it delivered anywhere in the world" (100:214). The boxes are inauspiciously marked as "medical supplies" or "electronic parts."

In another example, insiders and smugglers work together to obtain U.S. technologies for terrorists. Weapons "stolen from a U.S. facility in Butzbach, West Germany, subsequently found their way to the Baader-Meinhoff gang and ultimately were used...in the September 1974 takeover of the French Embassy in The Hague" (100:215).

To estimate the precise amount of Western weapons in terrorists arsenals is like estimating the number of sand granules on a beach; it is quite difficult given the clandestine operations of terrorist groups. It is imperative to note that "there are leaks in the arms pipeline, whereby sophisticated weaponry can be obtained by terrorists" (52:89).

Granted the U.S. alone cannot stop terrorism. However, if the U.S. and its allies apply some measure of self-restraint to their country's profit motive or "entrepreneurial spirit," terrorist groups will not have the access to Western technologies they currently enjoy through the five channels analyzed. This is not to say that profit is bad. On the contrary, the economy of the U.S., created by a profit-motive, is the strongest in the world. However, when private arms suppliers and businesses such as those described in this section see only dollar signs instead of a truly global view--which includes the potential for high technology terrorism--the world becomes a more dangerous place to live.

Conventional Weapons Available to Terrorists

Having completed the analysis of the five channels of technology transfer to terrorists, the terrorists conventional weapons of choice will be investigated. When studying the types of conventional weapons that international terrorists use, and more importantly in the context of this thesis, those they will potentially use, the researcher must ask three important questions posed by Richard Clark in his book,

Technological Terrorism:

1. Is the technical knowledge available, and to whom and at what level of experience?
2. Are the materials available?
3. Is the willingness to use those instruments present? (26:2)

The weapons of terror have remained consistent throughout the last two decades. Bombs, guns, low technology explosives, and grenades have been the international terrorists' "bread and butter." The three essential requirements for terrorists' previous weapons have been availability, simplicity, and efficiency (43:104). Today, two of the three requirements, availability and efficiency, still seem to be valid. The third, simplicity, is becoming obsolete. Whether terrorists want that change or not is really immaterial. The fact is that technology is shaping the world--a world that includes terrorists. As a result, the conventional weapons which terrorists use are becoming more complex and high-tech. International terrorists do not just throw bombs and shoot guns today. They engineer timing devices on explosives and attack aircraft with RPG-7 surface-to-air missiles (1:227).

"Today's terrorist therefore, tends to be a professional rather than a bomb-throwing amateur;" he is able to "exploit a range of Western technologies--from satellite communications to heat-seeking missiles"

(73:90). Usually these kinds of weapons are sold either covertly or overtly. In 1987, when Iran's Ambassador to the United Nations, Said Rajaie Khorassani was asked where his country was getting its arms from, the tough-talking envoy shot back: "If you have the money, you can buy all the weapons you want in the open market" (32:1276). This corroborates what the ATF spokesman said nearly ten years earlier. In fact, Iran's arms network is so tightly organized it obtains weapons from three of its staunchest adversaries, including the U.S. (TOW missiles, HAWK missile parts, and spares for the F-14) (32:1276).

Terrorists prefer tactical, or short-term violence, to strategic, or long-term violence. Hence, the more advanced technology the terrorist uses, the more destruction they cause and the more important their act of violence is in the eyes of the world. This type of importance is evidenced by the number of books and publications written on the Pan Am Flight 103 high-tech bombing as well as the ensuing Presidential Commission to investigate the tragedy. With the creation of new, advanced conventional weapons, the individual weapons for U.S. soldiers are now starting to change. Brian Jenkins, the director of the Security and Subnational Conflict Program at Rand Corporation and a noted expert on terrorism, has this to say about the impact of high technologies on international terrorism:

The curve of the individual soldier's capacity for destruction is zooming upward, propelled by the military research and development programs which are currently supported by the national governments of the industrially advanced countries, ironically those who will be most vulnerable if some of the weapons now being developed come into the hands of dissident groups willing to employ violence.
(63:107)

Weapons that were once bulky and difficult to carry are now being scaled down and miniaturized to the point that one person can carry an anti-aircraft rocket. These small, inexpensive (when compared to unconventional weapons), mobile weapons are being produced in large quantities and distributed worldwide. The probability that terrorists will obtain and use them is rising higher with each passing day. In fact, as recently as 12 January 1990, four individuals believed to be members of the Irish Republican Army attempted to purchase a U.S. Stinger missile and other U.S. weapons in West Palm Beach, Florida (150:5A). Though the individuals were apprehended, that incident raises concern about the terrorists' craving for Western high technology conventional weaponry.

Besides the Stinger, some other hand-held surface-to-air conventional weapons that terrorists might desire include the U.S. Redeye, the British Blowpipe and the Swedish RB-70. All of these weapons are more powerful and more deadly than any terrorist weapon previously used. The availability of these weapons is also escalating.

Here is a partial list of the types of weapons, by manufacturing country, that terrorists employ. As can be seen from the list, many of the weapons are rather old and low-tech. Thus, there is much room for an advance in technology in terrorists arsenals.

<u>Weapon</u>	<u>Manufacturer</u>
Kalashnikov (AK-47) assault rifle	USSR, Czech, DRG,
Romania VZ-58 assault rifle	Czech
VZ-61 Skorpion Submachine gun	Czech
VZor 7.65mm automatic pistol	Czech
PM 63 Submachine gun	Poland
WZ 63 Submachine gun	Poland
RGD-3 Hand grenade	USSR
SA-7 Strela Surface-to-air missile	USSR
RPG-7 Anti-tank missile launcher	USSR
M10	USA

M60 Machine gun
MP-5
RB-70 Anti-Aircraft Launcher

USA
W. Germany
Sweden
(46:20-22; 92:83)

Though many of the present weapons are not of U.S. or Western origin, many of the Western weapons are sold by private arms dealers and eventually find their way into the black markets of Paris, Lisbon, Brussels, Amsterdam, and Rome (92:83). Once in Western black markets, any terrorist organization, but especially those with state support and financing, can easily obtain the weapons.

However, because targets are now better defended, terrorists will use the best weapons that they can obtain. U.S. arms control through the U.S. export control system, a difficult and complex process, cannot possibly stop all weapons from finding their way into terrorists hands (63:109).

Scholars are starting to take note that Western governments seem to neglect in their costs of international business the transfer of their companies arms and technologies to terrorists. The British seem to be one of the major culprits.

These businessmen prefer pragmatic hard cash to meeting strategic needs. In 1984, John Berry, a 48 year-old former sales manager for LOTUS cars who lived in Norwich, was accused of supplying electronic timing devices for terrorist bombs to Arabs in Beirut. (92:215)

In another example, the Austrian government sold Syria more than 4,500 Steyr SSG sniper rifles in the mid-1980s (51:353). Therefore, those types of weapons could have been shipped to terrorists Syria sponsored including the ANO.

One Western high technology conventional weapon that international terrorists could use extensively, if they possessed it, is the Army's proposed replacement for the M-16A2--the Advanced Combat Rifle (ACR). Currently four companies from three different Western countries (U.S., W. Germany, and Austria) are vying for the contract. This combat rifle, which is in development, is projected to increase the effectiveness over the present M-16A2 by 100% (62:49).

Even though many believe that combat rifles do not have much influence in the battlefield of tomorrow, with the various advanced technological weapons that are available, the ACR is being developed to give soldiers suppressive force capability. This is also an important element for terrorists, if they obtain this weapon. The ACR uses caseless rounds (no brass case ejected), and is designed to increase hit probability, which is another important feature for a terrorist. Terrorists cannot afford to miss a target when one shot is sometimes all that is afforded due to a quick escape. The rifle can fire on semi-automatic or fully-automatic with a mere flip of a switch. The ACR also

...uses either three-round salvos or duplex ammunition, and the projectile dispersion which is calibrated to compensate for timing errors with at least one of the projectiles to hit a torso-like target with the first squeeze of the trigger. (62:50)

After the Swedes introduced the RB-70 anti-aircraft launcher in 1978 and sold them to countries in Africa, the Middle East and Asia, Western governments feared the weapons would fall into terrorist hands. Unfortunately, the fears became reality. "West German police got a persistent tip that Baader-Meinhof gang members were planning a rocket attack on a championship soccer game. Raiding the headquarters in Berlin, police seized four launchers" (135:14-15).

In examining Libya and Syria, two Middle Eastern countries who reportedly renounced terrorism, it is interesting to note where the countries received conventional weapons technology in the 1980s when they did sponsor terrorism (132:3). In many cases it was non-Warsaw Pact. It is also essential to study where those countries then distribute the weapons; TABLE 1 shows both connections. From the table, it is apparent that NATO countries like France, W. Germany, Italy, Great Britain, Spain, Belgium, and even the U.S. have all supplied potent technologies to the two terrorist-sponsoring countries sampled.

TABLE 1

INBOUND AND OUTBOUND WEAPONS FLOWS FOR
LIBYA AND SYRIA

<u>Libya</u>	
<u>From</u>	<u>Receiving Arms/Technologies</u>
	<u>Type</u>
Austria	Artillery pieces, small arms (Glock)
Belgium	Semiautomatic rifles (7.62mm)
Brazil	Multiple rocket launchers
Czechoslovakia	Semtex (plastic explosive)
France	Combat aircraft, helicopters, surface-to-air missiles, anti-tank guided missiles
Great Britain	submachine guns (9mm L-34 A1)
Italy	Missile corvettes, submachine guns, artillery
Spain	Recoilless rifle
Sweden	Explosives, anti-aircraft missiles (RB-70)
USA	TOW missiles, guns/heavy mortars (155mm howitzer)
USSR	Combat aircraft, tanks, surface-to-air missiles
	<u>Supplies Arms/Technologies</u>
<u>To</u>	<u>Type</u>
Syria	Soviet arms
Iran	Soviet weaponry, Austrian artillery
Irish Republican Army	Small arms, guns/heavy mortars
Palestinian Military Organizations	Multiple rocket launchers, surface-to-air missiles, artillery pieces surface-to-surface missiles, missile corvettes,
	<u>Syria</u>
<u>From</u>	<u>Receiving Arms/Technologies</u>
	<u>Type</u>
Austria	Steyr SSG sniper rifles (automatic)
France	Anti-tank guided missiles, semi-automatic rifles
West Germany	Laser range finders, MILAN missiles
Libya	Soviet-made air-to-air missiles
USSR	Artillery, combat aircraft, surface-to-air missiles, surface-to-surface missiles
	<u>Supplies Arms/Technologies</u>
<u>To</u>	<u>Type</u>
Palestinian Military Organizations	Small arms
Iran	Surface-to-air missiles, anti-tank guided missiles

(78:338-343,396-400,446-447; 22)

Even though many U.S. weapons (except the TOWs), were obtained as a result of abandoning them after the Vietnam conflict--and thus were less advanced technology--the terrorists still have them (51:444). Now terrorists have a taste of Western weapons. With respect to the other NATO countries as well as the non-aligned countries, there seems to be a potential catastrophe waiting to happen. Just as countries like Iraq tried to import nuclear timing devices through NATO countries like Great Britain, terrorist organizations with their sponsors (Iraq once sponsored Abu Nidal) may also attempt to use the same methods to import high technology Western conventional weapons. This potentially raises the anxiety levels of those against relaxing international export controls (126:45).

Potential Conventional Weapons of Terrorism

Because of the pervasiveness of terrorism, "it has lost much of its shock value," and to stay in the headlines, terrorist groups craving for more attention, may "use new weapons and tactics previously shunned by terrorist groups" (133:A-14). To regain that "shock value," terrorists' tactics may enable them to seize dual-use as well as military technologies for future weapons. With the continuing explosion of electronic and other sophisticated dual-use technologies, certain sophisticated weapons are becoming much easier to build.

Consider the cruise missile. It is a prime example of how recent technological developments have been incorporated into modern arsenals. The missile, which flies like an airplane, carries its conventional or unconventional warhead for a range of over 1000 kilometers, and can deliver its warhead "to within thirty to forty meters of its target"

(10:16). The fact that the U.S. could use the missile against the Soviets is becoming a matter of irrelevance today. However, could Colonel Gadhafi or the terrorists he sponsors use the missile against Western targets? Some experts raise just that concern. In fact, as recently as 21 April 1990, Colonel Gadhafi said that he "would have fired missiles at New York had he possessed them when U.S. planes bombed Tripoli in 1986 (57:16A). "If we had a deterrent force of missiles able to reach New York we would have directed them at that very moment," Gadhafi was quoted as saying (57:16A). Even though that act would have been likened to a military response, it does indicate that a terrorist country does desire the capability to use ballistic missiles. Therefore, if terrorist countries desire those weapons for attacks against the U.S. because of U.S. retaliation to terrorist acts, those weapons will surely be passed on to the terrorist organizations that are aligned with those countries.

The airframe for the cruise missile is easily available through the international arms market--as a modified fighter. Guidance for the "missile" is also readily available. "For example, the Global Positioning System (GPS) for satellites...will allow small receivers on earth to calculate a position within 100 meters" (117:70). GPS units can be bought for \$3,000 and carried in one hand; though not intended for weapons, modification would not be very difficult. "The accuracy would be adequate for hitting a city with nerve gas--which is also easy to make" (117:70). Optically tracking technology for the missile is also of concern. Such technology, which has such civilian uses as guiding forklifts, can also fit into the head of an anti-tank missile.

"A commodity market in...sensors and navigational systems favors limited offense--i.e., terrorism--by a renegade country" (117:70).

The handsized satellite receivers are also used as detonation devises. Unfortunately, as this receiver technology proliferates,

an enterprising terrorist group might covertly place dozens of command-detonated bombs connected to small satellite receivers at a variety of locations, and then detonate them simultaneously or selectively via satellite transmission. (116:75)

Advanced missile technology is already beginning to transform warfare--and possibly terrorism. Antitank missile technology advancements are prime developmental examples of potentially using enhanced dual-use technologies and embodying them in weapons. Take the U.S. TOW (Tube-launched, Optically-tracked, Wire-guided) missile, along with the British Swingfire and the European MILAN--all in the international family of antitank missiles. The optic technology, which is part of the photonics category of the twenty critical technologies identified by the DOD, in the TOW helps to distinguish it as one of the most reliable conventional missiles on the market (39:7; 78:28). The missile is found in the arsenals of twenty-four countries, and some of them were listed in TABLE 1 as providing arms to at least Libya and Syria, including West Germany, Iran, Spain, Sweden, and Great Britain (10:46).

At approximately \$15,000 per copy, (approximately 400,000 TOWs have been produced with new production of advanced models at almost 1,000 per month), it is a relatively cheap weapon that "kills" \$3 million tanks. Because the TOW only weighs eighty kilograms and is fired from a vehicle or from a tripod stationed on the ground, it appears to be a likely candidate for terrorists to use to regain "shock value." With a range

of nearly four kilometers and its warhead capable of penetrating the armor of all existing tanks, it surely could penetrate the fuselage of a civilian airliner (11:28).

Because the TOW is in the same international family as the West German MILAN, which is already in the hands of Libya and Syria (as shown in TABLE 1), the question is then, will these weapons be used and how soon? It appears that "in the coming years, the nature of terrorism will almost certainly change and become more aggressive" (10:126). An important fact to realize is that at least five-hundred TOW missiles and the accompanying technologies are now in the hands of a terrorist-sponsoring state--Iran, as a result of the "arms for hostages" deal in the Iran/contra scandal.

Computer Viruses. High technology weapons of preconceived notions of war are of great concern when in terrorist hands. However, with the new applications of technology, there are new risks for a different kind of conventional "weapon" terrorists may use--computer viruses.

The so called computer virus can alter computerized records, can destroy data and [even] control systems. Its potential to wreak havoc in the government, financial [the four major electronic funds transfer networks alone carry the equivalent of the Federal Budget every two to four hours], business and the academic sectors, has become a matter of national security. (73:112)

Computer viruses are lines of computer code that are hidden within the normal programming instructions. They are viruses because, like their biological cousin, they are very contagious. Unfortunately, the idea of a terrorist infecting major computer systems is not something out of a science fiction novel. For example, in 1988,

an invidious attack was discovered in Israel. Designed as a weapon of political protest, the virus code contained a time bomb that would have caused all infected programs to erase their files on May 13, the fortieth anniversary of the demise of Palestine. (73:113-114)

Even though these "attacks" may not kill anyone directly, they will force the government and the media to focus attention on the terrorist act and to expend energy and money to fight it. Because these types of "attacks" have occurred it does show that terrorists do possess the intelligence and ability to employ this "weapon."

International Terrorists Benefit from Technology Transfer

The transfer of military weaponry from one country to another--by grant, loan, or sale--"has been an accepted element of foreign policy since the inception of the nation-state system" (50:71). U.S. policy encourages the legitimate transfer of conventional weapon technology for the sake of U.S. national security and for strengthening the defense posture of U.S. allies. Unfortunately, as the past has shown, once Western high technology conventional weapons are transferred and sold, controlling the distribution after the sale is out of the sellers hands. In other words, "once terrorists have gotten their hands on man-portable rockets and other high technology conventional weapons," controlling the future export of those weapons at acceptable levels of economic and social costs may be impossible to achieve. (72:91)

Terrorist Implications in the Third World. Third World countries are obtaining the technical know-how to produce sophisticated Western weaponry with incredible speed and lethality. Because they also crave security autonomy, there is a terrorist implication.

Third world development and production of short-and medium range ballistic missiles is both spreading and growing in sophistication. The most disturbing aspect of this development is the willingness of countries such as Brazil and Argentina, among others, to sell these weapons to irresponsible, terroristic countries like Libya. (103:17)

With Third World countries now receiving Western high technology weapons through legal technology transfers, there is a danger involved with respect to some of those countries supplying terrorists with those same Western goods. The link that exists between many Third World nations with international terrorism is unfavorable and real. In the context of this thesis, the Third World equates to all nations except members of NATO, the Warsaw Pact, European countries not belonging to either alliance, Japan, Australia, and New Zealand.

Even though none of the Third World countries can actually compete with the U.S. and the U.S.S.R. in weapons production, today more and more of these countries are developing a modern military technological base. One of the primary means by which these developing nations acquire missiles is through "technology transfer" (137:17). The result is that small nations now have complete high technology arsenals, and the U.S. and the U.S.S.R. do not have the monopoly on high technology weapons as they once did.

Even though the Soviet threat appears to be declining, a different type of threat is diversifying to the Third World. "A growing number of other [Third World] nations already have short-range ballistic missiles that can threaten U.S. allies [with terrorism]" (89:25). With this proliferation of weapons technologies, producers inevitably are spreading these sophisticated technologies worldwide. Terrorist sponsoring countries would also fit into this category. Iraq, which

sponsored Abu Nidal in the early to mid-1980s, is a prime example of a Third World nation doing everything possible to build up a large missile arsenal. Although a Third World country, because its per capita income is less than \$2,000, its weapons arsenal is "First World." With the launching of a rocket into space, "the Iraqis are capable of doing things we never anticipated," says W. Seth Carus, a missile-proliferation expert at the Naval War College Foundation--things like sponsoring terrorism again (81:34).

Although there is no hard unclassified evidence that Iraq is a sponsor of international terrorism, there is room for speculation of new terrorist attacks with Western technologies by organizations that adhere to the Iraqi ideology--like the ANO. Especially with President Bush considering to lift the ban on "normal commercial products" to China including dual-use technologies, the door opens wider for Iraq and other Middle Eastern countries to obtain those technologies (25:12A). Not only are the Chinese "eagerly seeking to sell" short and medium-range missiles to terrorist countries like Syria and Iran, but it also helped Iran build a new Tandar-68 surface-to-surface missile (81:34). China also provides Iraq with high-speed centrifuges for sophisticated bombs.

If the U.S. sells dual-use technologies to China, there is a golden opportunity for countries like Iran, Iraq, and Syria, which purchase the technologies from China, to then turn around and supply their terror organizations with the high-tech equipment--U.S. high-tech equipment. Iraq's Saddam Hussein has already assembled a worldwide procurement network using banks, Western companies, and inconsistent Western exports laws to obtain technology that can be use to make weapons (44:44). Who

is to say then if Syria or Iraq, once sponsors of Abu Nidal, may soon sponsor him again, providing higher technical training, to levy attacks against Israel, each other, or Western targets?

In an international system in which destructive power has been a leading determinant of national status, it is not surprising that Third World nations would try to acquire the most sophisticated technologies available in the international market. This suggests the potential for fundamental alterations in the international security environment in the coming decades--alterations many times due to terrorist threats (107:9). If terrorists obtain these weapons (presupposing they do not already have them) their aim of drawing attention to their cause would be satisfied as the U.S. and other Western powers take additional steps to protect military and civilian establishments at home and abroad.

Even with supposed "stringent" export controls, and the recently formed seven nation Missile Technology Control Regime (MTCR) in 1987, which restricts exports of certain missile technologies and components, ballistic missiles are proliferating in the developing world at an alarming rate. "The potential for a takeover of launch facilities by subnational groups," like terrorists, or worse the sale of missiles to terrorists, is significantly higher in the Third World than it is in traditional missile countries because international terrorists are mainly from Third World countries (137:17).

Disputes being more aggressive and conflicts more commonplace because of the high value of weapons--including missiles-- encourages a

"use them or lose them" attitude. For these two reasons, Third World countries may recruit terrorists to carry out their aggressions.

Though the "U.S. has not transferred ballistic missiles to the Third World [directly] since 1974," many West European allies continually do so, as well as "individuals willing to sell technical and material assistance" (137:17). Consequently, the diverter then resurfaces.

Because of the missiles and technologies available as a result of West European sales, diverters then make use of their expertise transferring available technologies through unwitting partners. Thus, many times the technologies transferred to the Third World are also involuntarily supplied. "Developing countries offer high salaries to scientific mercenaries to leave sensitive jobs in the U.S...to join their arms development programs" (137:19). Many countries also set up front companies, as well as apply illegal methods to circumvent the U.S. export control system. These missile developments portend a much more violent and destabilizing world security environment--an environment that includes terrorism.

No one person has voiced concern over the transfer of missile technology among free nations to Third World nations more than Rear Admiral Thomas Brooks, Director of Naval Intelligence. He said the efforts to control "missile and nuclear proliferation in the Third World [through MTCR] 'have been largely ineffective and are likely to remain so'" (125:583). In criticizing the MTCR, he also said, "major loopholes exist. For example, missile components and technologies can be exported

if the buyer pledges they are destined for space launch efforts rather than for military utility" (125:583).

With the resultant spread of regional arms races, the producers of missile technologies around the globe must focus on strengthening nonproliferation benchmarks. A country like Iraq or Libya may decide to test its strength by sponsoring a terrorist organization to attack Western targets--high interest Western targets.

As the number of Third World countries obtain the technical know-how to produce sophisticated weaponry, and with their desire for "security autonomy," there is a concern of the two superpowers being brought in to fight a global or regional conflict (58:93). As can be derived from TABLES 2A and 2B, the Soviets provide, on average from 1980-1987, 43.69 percent of all arms delivered to Third World nations. In comparison, the U.S. provides, on average, 18.44 percent of all arms delivered. The conclusion is not unexpected. Because the U.S. and the Soviet Union provide roughly two thirds of all arms and their associated technologies to Third World recipients, it is only logical for those countries to especially seek superpower assistance in regional conflicts. However, though the two superpowers continue to provide the bulk of weapons technology to the Third World, that overall percentage is steadily declining.

TABLE 2A

ARMS DELIVERIES TO THE THIRD WORLD, BY SUPPLIER
1980-1987
(IN MILLIONS OF CONSTANT 1987 U.S. DOLLARS)

Country	Years							
	1980	1981	1982	1983	1984	1985	1986	1987
<u>Non Communist</u>								
United States	7343	7245	9009	10443	5863	5741	6239	7504
France	3717	5011	3905	4659	4414	4963	4060	2325
Great Britain	2358	3138	1859	1519	1293	741	828	1495
West Germany	1387	1453	565	1379	2679	563	98	365
Italy	992	1428	1300	1266	1184	894	468	90
All Others	2372	3846	5321	3100	5593	3186	2308	1925
Total	18168	22121	21959	22367	21026	16088	14000	13704
<u>Communist</u>								
Soviet Union	19216	18051	18639	18433	17667	14432	14859	18590
China	402	495	1457	1767	2221	699	1264	1265
All Others	1734	2988	3561	2707	3508	3754	2698	2395
Total	21352	21533	23657	22907	23396	18885	18822	22250
Grand Total	39520	43654	45616	45273	44422	34974	32822	35954

(60:121)

TABLE 2B
 ARMS DELIVERIES TO THE THIRD WORLD, BY SUPPLIER
 1980-1987
 (EXPRESSED AS A PERCENT OF GRAND TOTAL, BY YEAR)

Country	Years							
	1980	1981	1982	1983	1984	1985	1986	1987
<u>Non Communist</u>								
United States	18.58	16.60	19.75	23.07	13.20	16.42	19.01	20.87
France	9.41	11.48	8.56	10.29	9.94	14.19	12.37	6.47
Great Britain	5.97	7.19	4.08	3.36	2.91	2.12	2.52	4.16
West Germany	3.51	3.33	1.24	3.04	6.03	1.61	.30	1.02
Italy	2.51	3.27	2.85	2.80	2.67	2.56	1.43	.25
All Others	6.00	8.81	11.67	6.85	12.59	9.11	7.03	5.35
Total	45.97	50.67	48.14	49.40	47.33	46.00	42.65	38.12
<u>Major West European</u>								
(includes France, Great Britain, West Germany and Italy only)								
	21.39	25.27	16.72	19.49	21.54	20.48	16.61	11.89
<u>Communist</u>								
Soviet Union	48.62	41.35	40.86	40.72	39.77	41.27	45.27	51.70
China	1.02	1.13	3.19	3.90	5.00	2.00	3.85	3.52
All Other	4.39	6.84	7.81	5.98	7.90	10.73	8.22	6.66
Total	54.03	49.33	51.86	50.60	52.67	54.00	57.35	61.88
Grand Total	100.00	100.00	100.00	100.00	100.00	100.00	100.00	100.00

(60:121)

As a result, the technology that was transferred in the past is now being embodied into indigenous productions facilities in some of those countries. For example, U.S. origin technology has already been incorporated into weapon systems in both Chile and South Africa as a result of Israel transferring the technology (69:178). Even though the countries mentioned do not openly sponsor terrorism, according to the State Department, this does point to a path where the future could pose difficulties in controlling technology from transferring to third party countries from a Third World country--possibly third party countries that actually do sponsor terrorism! Third World countries that transfer

U.S. product and process technology can disrupt U.S. foreign policy, especially when the countries receiving the technology are "deemed ineligible for direct U.S. arms purchases because of their human rights behavior or their support for terrorism" (69:177). And while the U.S. has been relatively effective in applying technology export controls to the Third World, "it has proven much more difficult to prevent the transfer of U.S. designed and U.S. equipped hardware produced in other [Third World] countries (69:178).

There are approximately ten Third World countries that purchase the majority of arms from foreign suppliers (99:86). These ten countries purchase roughly sixty percent of the total arms purchased by the 130-plus Third World countries (99:86). The ten countries are Algeria, Cuba, Egypt, India, Iran, Iraq, Israel, Libya, Saudi Arabia, and Syria with the underlined nations openly sponsoring terrorism, according to the U.S. The U.S. and Soviet Union account for approximately two-thirds of all exports to the Third World with France, West Germany, Italy, and the United Kingdom (all Western nations) providing the bulk of the remaining exports.

The Soviet Union provides weapons to a handful of the ten countries mentioned, including those that the U.S. considers to sponsor terrorism. The Soviets also have campaigns to obtain, by legal and illegal means, Western military technologies. Western technology has enhanced, for example, the Soviet T-72 and T-80 tanks, a variety of fighter and attack aircraft, artillery fuses and shells, and also submarine and surface warships (24:78). It is also true that Western nations have their own campaigns to obtain Soviet technologies. Herein lies yet another

danger. With the Soviets enhancing their own arsenal with Western technology, they are sure to enhance the arsenals of the countries they provide military assistance--including those that sponsor terrorism.

With contractor competition as it is in the lucrative global arms market, producers must keep up with the latest technologies. Hence, countries often sell technologies abroad before acquiring them for their own arsenals (11:128). Therefore, the most sophisticated weapons and supporting technologies are available worldwide. "The world's arsenals now contain so many advanced conventional technologies that any determined group, of for example, terrorists, can acquire the weapons it wants" (11:129).

Technology Transfer--A Background in the U.S.

International technology transfers are supposed to benefit both U.S. and allied nations' national security as well as U.S. and allied nations' economies. These, however, are conflicting objectives because in many cases, by contributing to national security, the flow of technology must be stemmed to countries that do not share the same U.S. interests. Therefore, over the years, as countries tended to crave U.S. technology and especially today with the world going through so much radical change, there are technology transfer supporters and critics. A brief technology transfer background is necessary to inform the reader of the differing sides on the complex issue.

Supporters.

National Security. Proponents argue that when the U.S. shares technology abroad, the recipients then are strengthened militarily and economically--thereby reducing the U.S. defense and economic burdens in

the future by "detering adventurism by would-be aggressors" (69:24). "Under the NATO aegis, the U.S. engages in cooperative projects to capitalize on their combined technological and industrial capabilities" (12:36).

There are a host of ways in which the U.S. may attempt to share technology apart from actual sales, including coproduction, codevelopment, joint ventures, and contractor teaming. In each of these methods, supporters contend the U.S. achieves allied equipment, standardization, allied acceptance of strategic, tactical and doctrinal concepts, and also better quality weapons systems with skills drawn from more than one nation (119:4). The bottom line belief is that the U.S. thus fosters a strong, healthy defense posture. In view of U.S. foreign policy, "maintaining our friends and allies helps to preserve our national security" (124:44).

Political Benefits. The idea of politically protecting the dwindling U.S. industrial lead, and thereby providing a technological edge is also critical according to supporters of technology transfer. Governmental technology transfer policies try to attain three political goals: providing technologies to strengthen U.S allies, to encourage international trade, and to reduce the unfriendly threat (131:17). Through international technology transfer, all three goals are met and other intangible political benefits are also met (54:2). Transoceanic technology transfer eases allied doubts about American willingness to enter into partnerships overseas thereby attempting to forestall allied weapons competition (119:4). Because of the high political content of many international programs, due to technology transfer, most midprogram

changes are kept to a minimum. By transferring technology, the U.S. maintains international relationships and reduces the possibility of losing vital military bases overseas (124:44). James Kitfield, senior editor of Military Forum elucidates how international technology transfer aids the U.S. politically, when looking at the FSX cooperative program with Japan,

The FSX deal warrants praise for satisfying three main criteria. A key U.S. ally and protector of vital shipping lanes would certainly acquire a better aircraft than it could develop on its own. At a time of shrinking defense budgets and a growing trade imbalance with Japan, U.S. companies stand to reap between \$2 billion and \$5 billion in development and production work. Finally, the United States would in theory tap into any technologies developed by a respected trade competitor. (68:149)

For Encouraging U.S. Exports. With the U.S. no longer staking claim to the significant margin of superiority or absolute technology base it once had, U.S. firms feel there is no alternative but to participate in international cooperative relationships to stay competitive. Consequently, many U.S. producers "are strengthening their market position through international alliances--sharing technology, production capacity, and financial risk" (82:5).

According to Robert Hawkins and Thomas Gladwin, there is a catalogue of economic national objectives, relating to international technology transfer, that encourages exports. TABLE 3 lists the objectives.

TABLE 3

NATIONAL OBJECTIVES OF TECHNOLOGY TRANSFER

Primary Economic Objectives

1. High and continued economic growth in real income per capita.
2. High domestic employment levels.
3. Relative stability of average prices.
4. Equitable income distribution.
5. Maintenance of effective competition.
6. Limited and smooth structural adjustment in the economy.

Related Economic and Social Objectives

1. Preservation and improvements of environmental quality.
2. Consumer protection.

Objectives of Humanitarian Sentiment and a Peaceful World Community

1. Enhance the economic development of poor countries.
2. Enhance humanitarian and democratic behavior in other countries.

(61:215)

Hawkins and Gladwin stress that by transferring U.S. technology, all of the above objectives, when aggressively pursued, can reach fulfillment, thus contributing to the economic growth of the U.S.

Because the government does place controls on the transfer of technology, many U.S. technology-based industries believe that control practices can actually hurt America. The National Academy of Science found that these industries feel that,

the risks of restricting the flow of information within the firms and between Europe, Asia and North America...may ultimately be costly to American society. They believe that [technology] openness is vital to the economic vigor of the United States.
(103:44)

Many technology transfer supporters, including former Secretary of Defense, Caspar Weinberger, argue that businesses will indeed suffer, and therefore the U.S. economy, if the U.S. does not transfer technology abroad. When the U.S. too stringently controls its technology, potential foreign buyers then look to alternative sources creating new competitors for the U.S. (and maybe new terrorist opportunities)

(9:147). According to Mr. Weinberger,

We need to continue to meet the legitimate requests for the sale of military equipment [and technology] to friends and allies. In the past we have seen that our failure to provide equipment [and technology] to friends simply forces them to seek the needed equipment elsewhere. (141:121)

What this research is discovering however, is that U.S. "friends" and allies are then frequently turning around and selling U.S. goods and technologies to terrorist-sponsoring countries and countries that do not express the same interests as the U.S. Consequently, the research now focuses on those critics of international technology transfer.

Critics.

National Security. The technological superiority of the U.S. provides a powerful defense deterrent. Unfortunately, as the critics contend, the U.S. defense posture has weakened as a direct result of international technology transfer.

Vladimir Ilyich Lenin bragged more than sixty years ago saying,

the capitalists and their governments will shut their eyes to the kinds of activities on our side...and will in this manner become not only deaf mutes but blind as well. They will open credits for us...They will supply us with the materials and technology which we need for our future victorious attacks upon our suppliers. In other words, they will work hard in order to prepare their own suicide. (136:52)

Mr. Lenin's statement is not unsubstantiated. In the last two decades alone, U.S. intelligence experts have estimated that the "hemorrhaging of U.S. military technologies (not even considering dual-use) enabled the Soviets to reduce the technology gap with NATO from ten to two years" (131:1). Recalling Table 1, terrorists possess a wide range of Soviet manufactured weaponry. Though difficult to assess, the implications for U.S. technology embodied in those weapons are great. In a report entitled, Soviet Acquisition of Militarily Significant Western Technology--An Update, the Soviets freely admit that over five-thousand of their military research projects benefit each year from product and process technology transfers from the West (37:8-1).

Many critics portend the technology security program in the U.S. is severely lacking. Because even the critics do not address terrorism when they stake their claims, the importance of this research is again emphasized.

Restrict U.S. Exports. Arthur Van Cook elucidates that businesses suffer irreparable damage as a result of international technology transfer. He said, "to remain competitive, business concerns must have a market for their products, and one effect of the acquisition of military and dual-use technologies by our adversaries is the crippling of that market" (149:10). After all, what U.S. ally wants to purchase a system knowing well in advance that its adversary can render it ineffective before the system is even fielded?

Job erosion is another concern when technology transfer occurs. With the rapidly changing world and economic conditions, job displacement is common. The problem, critics argue, tends to really be

one of offsetting the decline in one industry with job generation and labor market mobility to maintain the desired overall levels of high employment (9:152). When technology transfer exists, the U.S. releases advanced, sophisticated and therefore, many times competitive technologies abroad. When a commercially astute and aggressive foreign firm (like many Third World nations) snatches the technology, the effect on U.S. production jobs can be particularly destructive. The U.S. as a result, is now limited to where it can sell products and to whom because a new international competitor exists that can also sell the same U.S.-origin product and many times at a cheaper price because of less transportation costs and usually less stringent export controls than the U.S. Thus, product mobility is rapid.

Jack Baranson, in his book, Technology and the Multinationals, says that U.S. production jobs in particular are threatened from three distinct technology transfer implications (9:150-151). First, Baranson argues that the actual transfer of technology produces a natural decline in competition. Next, the author contends that jobs are lost because U.S. corporations seek to take advantage of low-wage, high productivity foreign labor. Third, he asserts that technology transfer has produced a new threat from investments by foreign corporations in "U.S. assembly facilities in the automotive, electronics, aircraft and steel finishing industries" (9:151). Granted, those industries do create work; however, much of the componentry and some semi-finished materials are imported from that foreign firm, thereby reducing the total number of production jobs.

In his book, The International Transfer of Technology, Theory, Issues, and Practice, Richard D. Robinson feels that technology transfer can also become a thorn in the side of U.S. industry. He suggests there soon may develop a slowdown in the commercialization of new technologies because of the technology transfer dilemma. Robinson warns of five potential concerns for job erosion.

1. There will be a gradual loss of a competitive advantage by the more industrialized countries.
2. There will be a shift in manufacturing to more industrialized, politically stable Lesser Developed Countries.
3. There will exist an erosion of control by multinational corporations with the proliferation of joint ventures, partnerships, and other collaboration agreements.
4. A worldwide dissemination of relevant managerial and technical skills will occur.
5. Lesser Developed Country-based firms will surface as competitors and become more active in the international transfer of technology. (120:29)

Though limited in scope, this basic background is needed to furnish the reader with a flavor of what kinds of issues confront the complex world of technology transfer. Rather implicit throughout the sources of this study, international technology transfer and its relationship to international terrorism is not addressed. There is a concern that U.S. and Western "adversaries" may obtain sensitive technologies or that the U.S. industrial complex will lose its position in the world market, but nowhere is there a mention of international terrorists using technology transfer to their advantage. Therefore, the next section of this literature review discusses the implications of technology transfer on terrorism.

High Technology--Terrorists New "Bread and Butter". The worldwide demand for arms has recently decreased. However, the worldwide supply

of those arms has been growing in comparison. With the increasingly competitive international arms market,

suppliers also have been increasingly willing to sell [arms/technology] to any nation, with the result that nations widely censored for human rights violations or engaged in protracted wars have had relatively little trouble obtaining sophisticated weaponry. (53:6)

In light of the changes taking place in the world today, technology is a "hot" commodity. As the U.S. and other West European nations currently attempt to relax export controls--thus the increase in the transfer of technology--in the hope of a more global democracy, the effects could unfortunately encourage an increase in terrorist activities. Though advanced small arms and handheld missiles are not as sophisticated, or high-tech, as an intercontinental ballistic missile or a fighter aircraft, those weapons do represent a much higher level of technology for a terrorist's arsenal. "The world is not likely to collapse into terrorist anarchy" as a result of technology transfer, "but it [terrorism] probably will become more destructive, and therefore will become more important" (63:100-101).

When former President Jimmy Carter altered his policies toward the Soviet Union, assessing the communist threat to be diminished, the Soviets then invaded Afghanistan--thereby altering U.S. policy (91:94). As the world changes more each day politically, could a similar situation arise only this time with an Eastern Bloc country sponsoring a terrorist attack against a Western target? Today, exports and technology transfer are seen as something that must be done to bring about "world peace." Admittedly, the U.S. has an obligation as the world democratic leader to assist in the peace process. However,

policies, especially export policies to countries that either sponsored terrorism or provided logistical and financial aid (like East Germany, Czechoslovakia, and Poland) only a short year ago, must be excruciatingly analyzed.

Terrorist attacks in the past have achieved success through low-tech methods. However, the terrorist bombing of Pan Am Flight 103 over Lockerbie, Scotland in December 1988, portends a new dimension in high-tech terrorism--the ideas of sophisticated devices and training. The bomb that exploded on that flight was made with a sensitive barometric sensor that was activated at a preset altitude and ignited by an advanced electronic detonator, igniting the deadly state-of-the-art plastic explosive Semtex--now commonly used by terrorists. Ahmed Jibril, head of the Popular Front for the Liberation of Palestine--General Command, believed to be responsible for the bombing, bought the Semtex from a country the U.S. is now fostering a relationship with--Czechoslovakia (122). Recently, Tom Brokaw on NBC Nightly News, unveiled that in the past few years, Czechoslovakia has sold one-thousand tons of Semtex to Libya. Only a thin layer (a few grams) of Semtex was needed to annihilate two-hundred seventy people on Pan Am Flight 103 and in the surrounding country-side of Lockerbie.

The U.S. must step with caution into relationships with the "newly democratized" Eastern European countries as the glimmer of a true democracy rises over the horizon. As the U.S. attempts to build strong alliances with the new Eastern Bloc governments, technology transfer is sure to be a strong bargaining chip for building up these countries' economies. Therefore, each country will explore and learn new aspects

of U.S. and Western technology. "Unfortunately, terrorist technology is not standing still either" (30:74). Because terrorism equates to violence for dramatic effect to achieve a certain goal, "terrorists now operate with the best individual weapons they can get their hands on" (63:108). According to noted terrorist expert, Brian M. Jenkins,

Terrorists may want the added firepower for its own sake, simply because it is advanced technology, regardless of its utility to them in all circumstances. They may acquire the weapons first, then think of the targets. (63:108)

Terrorists may want to step up their weapon technology to move past high technology measures that attempt to counter terrorism. Pierre Salinger, during the ABC news program Primetime Live, accentuated that fact. A meeting took place in December, 1986

between Ahmed Jibril, Hafez Dalkimouni, his deputy, and Marwan Khreesat, a bomb-expert. And Jibril said to Khreesat, 'look, they're [the West] doing these special things now in airports, they're running bags through rooms where they can determine whether something will blow up. We've got to move our technology up and build better things'. (122)

The implications are far reaching. Apparently, not only do terrorists want to "move technology up," they also are striving to "build" better weapons. Quite obviously, terrorists await anxiously for the arrival of new U.S. and Western technologies to Eastern Europe as well as in areas around the globe. With infrastructures already established in many Eastern European nations through front companies and diverters, the U.S. must study the effects and warning signs of a crumbling export control system before more Americans are taken hostage or murdered by the U.S.'s own high technology weapons.

Terrorist and technology security experts in Washington, D.C. agree. Mr. James Stofferahn from the munitions control directorate of

the Defense Technology Security Administration (DTSA) voiced concern about technology and its infrastructures influencing the type of weapons terrorists will use.

With better weapons, media exposure will undoubtedly spread. U.S. weapons manufacturers have a favorite gambit. They set up a distribution system [agreements] with a friendly country. That friendly country then sets up a cache of arms in its country. Unfortunately, that friendly country can send those weapons to [other] designated countries without the U.S. knowing it. The State Department really cannot enforce this because only the country who receives the U.S. weapons directly [from the U.S.] is obligated to file a report once a year to the State Department. (129)

Ironically, within the State Department, former ambassador at-large for counterterrorism, L. Paul Bremer, said late in 1988 before the George Washington University Conference on Terrorism that the department also believes "terrorists will make greater use of high technology in their attacks" (16:63).

With respect to high technology terrorism, an important point to realize is that terrorists are trained professionals rather than eager amateurs. Terrorism, as Dr. Robert Kupperman points out, "like a disease organism in the face of antibiotics, must adapt to survive both physically and in the public eye" (71:75). Terrorists must adapt to the changing times. By effectively utilizing technology transfer, terrorists (and terrorist-sponsoring nations) improve their skills and capabilities--much to the dismay of their targets.

As the U.S. and its Western allies strive to develop new relationships with previous adversaries by opening economic doors and allowing more freedom of movement of technology and weapons, there harbors a great degree of terrorist uncertainty toward the U.S. and its allies--as well as terrorist elation. Undoubtedly, terrorists "targets

and weapons are likely to reflect an increasing degree of technological sophistication--ironically turning our greatest strength against us" (71:75).

This now moves the research to evaluate the process of how the U.S. attempts to stem the flow of arms and technologies to adversaries, including terrorists--the U.S. export control system.

The U.S. Export Control System

Overview. The export of conventional arms and associated technologies as a tool of U.S. national security policy has always been somewhat controversial (77:226). From the Nye Commission's arms transfer turf battles of the post-World War II era, and the arms and technology transfer restraints by President Carter, to the current relaxing of export controls by President Bush, arms and technology transfer issues see-saw back and forth.

Exports contribute significantly to the economic well-being of the U.S. They increase employment, production, and contribute favorably to the U.S. trade balance. Too stringent export controls can have adverse effects on domestic employment (foreign companies move to where the supply is) and balance of payments. Therefore, it is critical that the U.S. look favorably on exports. However, exporting without considering national security can have even more dismal consequences. Certain goods and technologies may contribute significantly to the military capabilities of U.S. adversaries--and terrorists--thus adversely affecting U.S. national security.

Since 1976, when the subject of technology transfers through export was first critically analyzed by the DOD in the so called "Bucy Report,"

through today, when the "policy regarding the transfer and export of high technology items to Eastern Europe nations will be relaxed considerably," the U.S. export control system continues to evolve (38; 5:9). The remainder of this literature review will examine historically why the U.S. export control system exists, how it functions with respect to halting terrorism, and how it impacts U.S. industry's desire to sell abroad, in consonance with its effects on enhancing terrorists' arsenals.

Why An Export Control System. Controlling exports is not something new in the U.S. The very first policy on export controls and technology transfer to perceived enemies was in 1917 with the Trading with the Enemy Act. Though restrictive, the Act was criticized as World War II came to a close. "Then the era of maximum technology controls directed against communist countries was introduced by cold war legislation" in 1949 with the emergence of the Export Control Act (61:227). The new Act established a licensing system to prevent the transfer of product and process technology that would increase the military potential of a communist country.

In the ensuing decades, the Export Control Act evolved into the present-day Export Administration Act, as amended (EAA). The EAA is implemented by the Department of Commerce which governs controlled dual-use technologies and administers and enforces the licensing system (which will be discussed later). Along with the Arms Export Control Act (AECA), as amended, which governs exports with unique military functions, these two primary laws provide the U.S. statutory governance for exporting arms and technologies to foreign customers.

The two laws exist for many reasons, but for the purposes of this thesis, the scope of analysis is limited to two national objectives in the U.S. Government's technology export control program:

1. To halt the erosion of U.S. technological lead, and maintain as much of a lead in military-related system quality as possible, and
2. to reduce access by potential adversaries to U.S. militarily important technological and industrial achievements. (128:23)

How the Export Control System Functions.

The Export Administration Act of 1979 (as amended). More specifically, the Congress declared the following policy for U.S. export controls in the EAA:

1. It is the policy of the United States to minimize uncertainties in export control policy and to encourage trade with all countries with which the United States has diplomatic or trading relations, except those countries with which such trade has been determined by the President to be against the national interest.
2. It is the policy of the United States to use export controls only after full consideration of the impact on the economy of the United States and only to the extent necessary--
 - a. to restrict the export of goods and technology which would make a significant contribution to the military potential of any other country or combination of countries which would prove detrimental to the national security of the United States;
 - b. to restrict the export of goods and technology where necessary to further significantly the foreign policy of the United States or to fulfill its declared international obligations; and
 - c. to restrict the export of goods where necessary to protect the domestic economy from the excessive drain of scarce materials and to reduce the serious inflationary impact of foreign demand.
3. It is the policy of the United States (a) to apply any necessary controls to the maximum extent possible in cooperation with all nations, and (b) to encourage observance of a uniform export control policy by all nations with which the United States has defense treaty commitments or common strategic objectives.
4. It is the policy of the United States to use its economic resources and trade potential to further the sound growth and stability of its economy as well as to further its national security and foreign policy objectives.

5. It is the policy of the United States--

a. to oppose restrictive trade practices of boycotts fostered or imposed by foreign countries against other countries friendly to the United States or against any United States person;

b. to encourage and, in specified cases, require United States persons engaged in the export of goods or technology or other information to refuse to take actions, including furnishing information or entering into or implementing agreements, which have the effect of furthering or supporting the restrictive trade practices of boycotts fostered or imposed by any foreign country against a country friendly to the United States or against any United States person; and

c. to foster international cooperation and the development of international rules and institutions to assure reasonable access to world suppliers.

6. It is the policy of the United States that the desirability of subjecting, or continuing to subject, particular goods or technology or other information to United States export controls should be subjected to review by and consultation with representatives of appropriate United States Government agencies and private industry.

7. It is the policy of the United States to use export controls, including license fees, to secure the removal by foreign countries to restrictions on access to supplies where such restrictions have or may have a serious domestic inflationary impact, have caused or may cause a serious domestic shortage, or have been imposed for purposes of influencing the foreign policy of the United States. In effecting this policy, the President shall make reasonable and prompt efforts to secure the removal or reduction of such restrictions, policies, or actions through international cooperation and agreement before imposing export controls.

8. It is the policy of the United States to use export controls to encourage other countries to take immediate steps to prevent the use of their territories or resources to aid, encourage, or give sanctuary to those persons involved in directing, supporting, or participating in acts of international terrorism. To achieve this objective, the President shall make reasonable and prompt efforts to secure the removal or reduction of such assistance to international terrorists through international cooperation and agreement before imposing export controls.

9. It is the policy of the United States to cooperate with other countries with which the United States has defense treaty commitments or common strategic objectives in restricting the export of goods and technology which would make a significant contribution to the military potential of any country or combination of countries which would prove detrimental to the security of the United States and of those countries with which the United States has defense treaty commitments, or common strategic objectives, and to encourage other friendly countries to

cooperate in restricting the sale of goods and technology that can harm the security of the United States.

10. It is the policy of the United States that export trade by United States citizens be given a high priority and not be controlled except when such controls (a) are necessary to further fundamental national security, foreign policy, or short supply objectives, (b) will clearly further such objectives and (c) are administered consistent with basic standards of due process. (139:4-6)

The EAA assigns the Commerce Department with the primary responsibility for the list of controlled dual-use technologies, and for administering and enforcing the licensing system. Establishing a control list which states licensing requirements, the Act serves as a means to further U.S. national security and foreign policy objectives (139:9).

The Commodity Control List (CCL), which is included in the Export Administration Regulations (EAR), is a list of dual-use and commercial technologies, products, and commodities controlled for national security, short supply, and foreign policy reasons. The items on the list are not actually defined specifically. More accurately, the list consists of technologies and technological products defined by performance. A validated license is required to export technologies on the CCL, and, therefore, formal requests for application are required. This fact above tends to drive a wedge between the government and industry.

As required by the EAA, the Militarily Critical Technologies List (MCTL) should be implemented into the CCL (139:11). The MCTL focuses on exports of extreme military and national security importance. Accordingly, the MCTL is a basic building block of the DOD technology security and U.S. export control programs (138:19). Whereas the CCL is

a control list, the MCTL is a technical reference used to develop export control policy. Using classified and unclassified versions, the MCTL operates internationally to persuade U.S. allies to protect certain technologies.

Attempting to refine the MCTL yearly, the Secretary of Defense establishes procedures to review all items on the list for foreign availability. That is to say, the items would be readily available from a foreign source and the control of such an item would then only hurt U.S. industry from selling an already proliferated technology. Consequently, items found to have lost the military criticality would then be removed from the list. In fact, as of 30 March 1990, the Joint Chiefs of Staff scaled the list down considerably.

The Office of Export Administration, which is an element of the International Trade Administration of the Department of Commerce, administers the controls over U.S. exports and reexports of U.S.-origin commodities (103:81).

Due to the importance of reexport controls, the EAA requires foreign purchasers of U.S. technologies to apply for reexport control approval. Consequently, allied governments controlling the reexport of U.S. and Western technologies seem to be a critical link in preventing terrorists from obtaining U.S. technologies. As a result, technology transfer proponents argue these controls put U.S. businesses at a competitive disadvantage with foreign firms that provide fast delivery of like-products of technologies.

However, these controls are warranted because in many instances, even U.S. allies reexport U.S. technology, in some cases to countries

that sponsor terrorism. For example, the British and the French have frequently been less interested in controls on Western arms exports because they have been primarily interested in profits for the industry (141:27). Therefore, according to the EAA, when the U.S. determines that technologies were unlawfully reexported, the Secretary of Defense shall, as long as the diversion continues, "deny all further exports...regardless of whether such goods or technologies are available from sources outside the U.S." (139:19).

The EAR specifies a comprehensive system for reexporting U.S.-origin products and technical data from foreign countries. The controls encompass both finished end-products, and U.S.-origin parts and components built into the end-product but built abroad. Before a product may be reexported, the reexporting country must obtain permission from the Department of Commerce. However, there is a twist in the law. The Commerce Department feels that "no reexport approval would be required for foreign-manufactured products that are exported to most [other] free world nations if the U.S.-origin controlled parts and components constitute twenty percent or less of a product's value" (102:92). Unfortunately, there is a terrorist connection to this "twenty percent or less" reexport control requirement.

It has recently been established that weapons sent to certain Arab countries since 1980 by British manufacturers have in fact, within a year, ended up in the hands of PIRA and Irish National Liberation Army terrorists in Northern Ireland. (92:106)

Therefore, as the U.S. sells technology to Great Britain, and that country embodies the technology into its systems, the potential for U.S.-origin technology falling into terrorists hands increases.

Today, the Bush Administration is pushing to lessen export controls. Some advocates argue that there is a point in which interference with the free exchange of technology and information in the West could be more damaging to Western societies than the loss of technology under more stringent controls. However, technology transfer critics propose that the damage from such relaxation is incremental and not evident until long after irreparable harm has been done. When relaxing export and reexport controls, terrorist activities must not be forgotten.

Though the EAA does include a section on how to avoid transferring technology to countries sponsoring international terrorism, it is brief and limited. Section 6(h) of the EAA of 1979, as amended says the following about countries that sponsor international terrorism:

1. The Secretary [of Commerce] and the Secretary of State shall notify the Committee on Foreign Affairs of the House of Representatives and the Committee on Banking, Housing, and Urban Affairs and the Committee on Foreign Relations of the Senate at least 30 days before any license is approved for the export of goods or technology valued at more than \$7,000,000 to any country concerning which the Secretary of State has made the following determinations:

- a. Such country has repeatedly provided support for acts of international terrorism.

- b. Such exports would make a significant contribution to the military potential of such country, including its military logistics capability, or would enhance the ability of such country to support acts of international terrorism.

2. Any determination which has been made with respect to a country under paragraph 1 of this subsection may not be rescinded unless the President, at least 30 days before the proposed rescission would take effect, submits to the Congress a report justifying the rescission and certifying that--

- a. the country concerned has not provided support for international terrorism, including support or sanctuary for any major terrorist or terrorist group in its territory during the preceding 6-month period; and

b. the country concerned has provided assurances that it will not support acts of international terrorism in the future. (139:24-25)

The law implies that any good or technology under seven million dollars is fair game for exporting. It also implies that a country which more than six months prior to a proposed export can receive the transfer if the president justifies the action. Since Colonel Gadhafi denounced terrorism last October, and provided assurances he will not support international terrorism in the future, his country is theoretically within that six month window (132:5). Does that mean that the U.S., by law, could in fact sell licensed dual-use technologies to Libya? With that potential in mind, the research now turns to the licensing procedures.

As a result of the EAR, which provide the framework for controlling dual-use technology transfer, two main types of licenses are mandated when exporting dual-use technologies.

The first type is a validated license. A validated license may exist for granting limited permission to make exports either for a specified export, issued pursuant to an application by an exporter or for multiple exports, including the following types.

1. A distribution license "permits an approved U.S. exporter to ship unlimited quantities of specified commodities to approved distributors or customers in free world countries" (102:83). This type of license is granted primarily "on the basis of the reliability of the applicant and foreign consignees with respect to the prevention of diversion of goods" (139:7).

2. The comprehensive operations license authorizes "exports and reexports of technology and related goods, including items from the list of militarily critical technologies" (139:7). This type of validated license also charges that audits of licensing procedures be performed "not less frequently than annually" to assure the integrity and effectiveness of the license.

This license is intended to be a technology counterpart to the distribution license available for commercial products. It would allow for multiple exchanges of technical data within a multinational company or network over a given period of time without the requirement for validated licenses for each transfer. (102:90)

3. Two other minor licenses exist. One authorizes exports of material or technology for specific functions and the other for authorizing exports of spare or replacement parts for previously exported goods. Respectively, those licenses are a project license and a service license.

The second main category of licenses is a general license. Quite simply, this type of license authorizes exports without the exporter requiring an application (139:8). In other words, an exporter need not apply to the government for permission to export; this type of license is much less restrictive than the validated license.

Arms Export Control Act of 1976 (as amended). This Act governs exports with a unique military function and is implemented by the Office of Defense Trade Control (ODTC) (formerly the Office of Munitions Control), of the State Department, in accordance with the International Traffic in Arms Regulations (ITAR) (103:29). The AECA unequivocally charges the State Department with control over foreign military sales. Under Section 2 of the AECA, the Secretary of State has

full management responsibility of U.S. arms transfers, and the Secretary of Defense assumes an advisory role. The Secretary of Defense is authorized to review license applications of defense articles and defense services and to provide guidance to persons of the United States involved in the export or import of such articles and services. (69:56)

The AECA is structured to establish a monetary threshold for Congressional intervention in a sale. If the arms transfer is greater than fourteen million dollars for major defense systems, and greater than fifty million dollars for other defense articles or services, Congress will then become involved in the approval process (141:5).

Specifically, the law requires that Congress receive thirty days written notice prior to the offer of a sale. Unfortunately, as the law stands now, the price, not the type of weapon, is the chief determinant. Therefore, according to the law, weapons such as the Stinger and TOW missiles, which fall under the fourteen million dollar threshold, are not considered as lethal or sophisticated as that kind of weapon over the decreed amount. "Such weapons [as the TOW and the Stinger] can be used for purposes clearly at variance with American foreign policy objectives and can have an extremely significant impact on certain regional conflicts" (141:5).

Apparently to discourage countries from buying a particular type of weapon, former Assistant Secretary of State for Political Military Affairs, H. Allen Holmes said before Congress,

We recommend that a nation buy a particular system only if a legitimate defense requirement exists and if the system in question is technically, logistically, and financially appropriate. We also consider regional military balance. (141:72-73)

In considering regional military balances, terrorism must also be considered. Section 40 of the AECA addresses terrorism, and in fact prohibits the export of arms to U.S. designated terrorist states. With potentially lucrative markets in countries where terrorism flourishes, U.S. companies many times attempt to sell arms and technologies to stay competitive. Article 1, section 1 of the AECA,

emphasizes that arms transfers are to be approved only when they are consistent with the foreign policy interests of the United States and that it remains the policy of the United States to encourage regional arms control and disarmament agreements and to discourage an arms race. (141:9)

As individuals and companies strive for profits, realistically this policy can be tactfully overlooked, or even ignored. It certainly is by Western diverters. In the U.S., where a "sound economy contributes to U.S. national security," many U.S. contractors are actually encouraged to sell arms to stay competitive, providing fertile ground for diverters (131:15). Arms and technology transfers in U.S. military sales tend to allow countries like NATO allies and Japan to directly compete with the U.S. in production of those military items. Economists now worry that past and present technology transfers lessen the U.S. technological lead and enhance the competitive position of foreign producers. According to the now famous "Bucy Report," "the release of technology is an irreversible decision. Once released it can neither be taken back nor controlled. The receiver of know-how gains a competence which serves as a base for many subsequent gains" (69:167). A control list is needed and is a part of the AECA.

As noted earlier, the AECA is the statutory authority regulating the export of munitions and the Act mandates that the State Department

have jurisdiction over the control of the munitions exports. ITAR provisions implement section 38 of the Act promulgating "regulations for the import and export of defense articles and defense services, and to establish a U.S. Munitions List" (34:4). The United States Munitions List (USML) in a nutshell enumerates the articles, services, and related technical data that have been designated as defense articles and services and thus controlled and subject to the ITAR (131:27).

Therefore, because the U.S. believes that "conventional arms transfers, when used in a judicious manner, play an important part in promoting international and regional stability, and in securing the security of friends and allies," controlling arms exports, as specified in the AECA, may take a secondary priority (50:73). For example, when the U.S. sold to the Shah of Iran F-14s, Iran had more F-14s in its inventory than the U.S. did--for reasons of regional stability. Unintentionally, a resultant Western neglect of technology transfer ramifications and policy, as well as a desire for industry profits, may mean more terrorists obtaining U.S. weapons indirectly through a multifaceted terrorist distribution system (113:170).

Appropriately, the literature review now focuses on antiterrorism policies and investigates if technology transfer control is of concern to the U.S. Government when attempting to thwart terrorist activities through policies and laws.

Policies and Export Control to Abate Terrorism. To create effective policies to prevent terrorists from obtaining U.S. weapons and technologies, legislators must not only take advantage of all available resources, but also recognize that there are distinct limitations in

dealing with terrorists. Terrorists control the tempo of an attack, they pick their targets carefully and have the advantages of clandestine offenses. "The perception that the U.S. Government must be able to protect its citizens everywhere against everything lays the groundwork for our eventual humiliation. The U.S. is neither omnipotent nor omniscient" (73:119).

According to the State Department, U.S. counterterrorism policy stands on three solid pillars. First, the U.S. does not accede to terrorist demands. Second, in pressuring states which support terrorism, the U.S. shows those states they will be penalized for supporting international terrorism. The 1986 bombing raid on Libya is a prime example. The third foundation is to use the rule of the law against terrorist states and to encourage other nations to do the same.

With American and Western hostages still being held in Lebanon, a logical question to ask is, how is the counterterrorism policy working. On one hand, the State Department appears positive in the U.S.'s role in combatting terrorism. However, with respect to the idea of no concessions, the success of the first pillar has many gaping holes.

The Reagan Administration's damaging Iran-contra affair has had long-lasting effects on the American people's faith in the U.S. Government to combat terrorism. The message is clear. President Reagan himself violated the 'no concessions' policy. Also, when the U.S. removes a country from the terrorist-sponsoring list, for reasons of regional political posturing, as it did with Iraq in 1983 when the U.S. had to oppose Iran in that bloody Middle Eastern war, those type of countries still may continue to sponsor terrorism. For example, many

terrorist experts today believe Iraq to be a major international terrorist sponsoring country. Abu Ibryhim, the master bomb-maker of the downed Pan Am flight 103, is an Iraqi (70:11A).

So even though the State Department feels that "we have largely recovered the credibility lost by the Iran-contra affair," others do not share the same sentiments (20:75). Noel Koch, former Pentagon official responsible for antiterrorism from 1981-1986, said this about the first element of the counterterrorism policy,

...the American record in dealing with terrorism has been marked variously by indifference, indecision, vacillation, venality and incompetence. Yet in spite of the cost in American lives and treasure, U.S. policy toward all forms of terrorism still can be summed up in a single meaningless phrase: 'no negotiations, no concessions,' a policy that has never run the risk of relevance. (70:11A)

The second policy element, pressuring states that support terrorism, seemingly has had greater success than the first. As mentioned earlier in the literature review, state-sponsorers provide weapons, money, training, and a horde of other resources to terrorists-- and then deny any relationship. Therefore, by pressuring the sponsors, the U.S. hopes to break that nexus. Mohammad Gadhafi and Libya were the first to feel the retribution. "The American bombing raid represented a watershed in the international fight against terrorism" (20:62). This action showed that the U.S. was willing to use military action to attempt to stop international terrorism. However, the bombing of Pan Am Flight 103 is a harsh reminder that terrorists do not adhere to policy "threats."

The belief that the bombing was actually a result of the Reagan Administration's failure to deal with terrorism and that Libya was the easiest target, still persists. Once again, Noel Koch elucidates,

The bombing of Libya had a curious impact. The Reagan Administration insisted that it had stopped terrorism cold--especially Gadhafi's role in it. This was nonsense; Gadhafi barely skipped a beat, changing the communications system that had led to the discovery of his involvement in the Berlin bombings, and enlisted a more competent group of surrogates to continue his action. (70:11A)

After the attack, though, not only did the number of Libya's terrorist attacks decline from nineteen to six in a year (1986-1987), but U.S. pressures also forced Syria to expel the violent Abu Nidal from its borders in 1987. Unfortunately, one of Gadhafi's new 'competent groups' was now Abu Nidal's organization.

The last policy pillar is that of bringing terrorists to justice. Fortunately, as attitudes toward international terrorism change in a changing world, foreign governments have "decided to provide law enforcement agencies the resources necessary to deter terrorism" (19:75). Many national police departments now possess the necessary equipment to counter terrorism. That equipment includes surveillance gear, communications equipment, vehicles, and the money to work longer to track terrorists down. Since 1988, countries have tried, convicted and sentenced dozens of terrorists to prisons around the globe. Quite obviously, as evidenced by global involvement, the U.S. cannot stop terrorism alone. The U.S. has made strides in reducing the number of terrorist attacks against Western targets. However, officials must realize that what exists is a false dawn. American officials must not declare that terrorism is finished.

The policy just reviewed is one of reaction. "What terrorism experts should understand but apparently do not wish to acknowledge--is that retaliation based on the collective responsibility for terrorist actions follows precisely the adversary's script" (121:xvi). That policy does not mention the prevention of U.S. weapons and technology transferring to terrorist countries. The next type of policy under review is one of antiterrorism and is in fact a rather recent policy addition. It examines how to attempt to stop the flow of U.S. goods and technology to terrorist countries.

The actual antiterrorism cornerstone stems from a bill entitled, the Antiterrorism and Arms Export Amendments Act of 1988, House Resolution 3651. It was intended to "toughen provisions of the AECA and the EAA governing exports and potential exports to terrorist nations" (142:3). Two fundamental principles of American foreign policy flow from the bill. First, the bill states it is illegal to export munitions to countries that sponsor terrorism, as determined by the Secretary of State. Second, Congress must be continually informed of both overt and covert exports of munitions and technologies to other than terrorist sponsoring countries.

The bill reexamines the laws governing arms and technology exports and antiterrorism. In so doing, Congress discovered that the collection of previously related laws were "riddled with overlapping standards" (142:4). For example, there were no single standards for the following:

1. Determining whether a state supports international terrorism.
2. Identifying which U.S. officials should actually make the determination.

3. Identifying the arms and technologies that are actually subject to restrictions.

4. Identifying the criteria that empower the president to waive statutory restriction.

5. Consistently and adequately informing Congress of all arms exports--both covert and overt (134:2730).

This antiterrorism bill attempted to close loopholes and restate certain existing provisions to ensure that uniform standards are present in U.S. law. Those standards are important, as Representative Howard L. Berman of the Subcommittee on Arms Control, International Security and Science, points out:

It may well be that expert lawyers in the Senate, Commerce and Defense Department have construed an elaborate framework for interpreting these inconsistent positions, but that does not make good law, either for the administration--witness the Iran-contra affair--or for the private American citizens who look to the law for guidance. (142:5)

Making selective amendments to the AECA, the Foreign Assistance Act, the EAA, and the Hostage Act, the bill's focus is actually on the arms and technology exports on goods of military or terrorist value--those items already regulated by current law.

Because H.R. 3651 eventually died in the Senate in 1988, as Congress rushed to adjourn before elections, the drafters of the bill, Mr. Berman and Representative Henry J. Hyde, decided to build more Presidential flexibility into a new bill to receive the support from President Bush (President Reagan opposed H.R. 3651). The new bill, H.R. 91 entitled the Antiterrorism and Arms Export Amendments Act of 1989, is actually one of the main legislative outgrowths of the Iran-contra affair. It intends to approve broad legislation to ban U.S. sales of

weapons and high technologies to sponsors of international terrorism. On 11 October 1989, "the House Foreign Affairs Committee approved a modified version of the bill that was supported by the Bush Administration" (134:2730). Then on 21 November, the Senate also passed H.R. 91. President Bush signed the bill into law on 12 December 1989 (Public Law 101-222 [103 Stat 1892]) (29:34501).

The Antiterrorism and Arms Export Amendments Act of 1989, the first major piece of legislation aimed at preventing terrorists from obtaining U.S. weapons and technology, came some two years after the Iran-contra findings. An abundance of arms and technologies surely could have transferred in those two years. The "main benefit" of the bill according to Representative Lee H. Hamilton, chairman of the House Iran-contra panel, is not even intended to stop terrorists from obtaining U.S. arms and technologies. "The main benefit," he said, "was the public airing of the wrongdoing at top levels of government" (28:3317). Unfortunately, once again the idea of terrorists gaining U.S. weapons and technology is not in the forefront. The following are the major provisions in H.R. 91 that attempt to bar arms and technology transfers to countries that sponsor international terrorism. The bill would

1. prohibit all foreign aid to countries that are found by the Secretary of State to support international terrorism. Countries on the list are Cuba, Iran, Libya, North Korea, South Yemen and Syria;
2. ban government and commercial arms sales to countries on the terrorism list. The president could waive this ban if he reported to Congress, 15 days in advance, that doing so in a particular case is 'essential' to U.S. national security. This ban would not apply covert sales made by the CIA under a presidential order [called a 'finding']. However, the president is required by a 1980 law to tell Congress about all covert actions;
3. impose criminal penalties of 10 years in prison and a \$1 million fine, and civil penalties of up to \$500,000, for persons

found to violate the prohibitions. The penalties would apply to private individuals or government officials;

4. require quarterly reports to Congress on transfers of U.S. arms from one country to another. For example, such a report would be required if Israel sold U.S.-made weapons to Turkey. These reports also must cover any transfers of weapons from the Defense Department to other agencies. In the Iran-contra affair, Congress was never told of Israel's sales of U.S.-made missiles to Iran. Nor was Congress told that the Pentagon gave missiles to the CIA, which in turn shipped them to Iran;

5. prohibit the president from using the 1868 Hostage Act to use illegal means to free U.S. citizens held hostage in foreign countries. (28:3318)

The new bill "restates and strengthens the prohibitions in current law on the export of munitions to countries providing support for acts of international terrorism" (140:19).

Governmental Agencies Controlling Exports. In an effort to ensure national security and at the same time encourage legitimate exports, the Defense Technology Security Administration (DTSA), the Department of Commerce, as well as the State Department, have helped develop and implement effective controls on sensitive technologies.

International trade, in all its phases, but especially trade involving sophisticated technology, involves both potential benefits and potential risks. So, just as the U.S. reaps the fiscal and political benefits of the trade, U.S. adversaries, such as terrorist organizations, aggressively attempt to exploit the technology involved. Striving to build a more effective and streamlined export control system that strengthens the export competitiveness of U.S. industry and provides for national security, DTSA has become the DOD's focal point for technology security efforts.

Established in 1985 with the goal of limiting the Soviet acquisition of militarily significant technology, DTSA's primary defense technology security mission has a five-pronged approach. First, it reviews the international transfer of defense related technologies to insure the transfer is consistent with national security objectives. Second, it attempts to implement the DOD technology security policy relative to the international transfer of defense-related goods and technologies. Next, DTSA strives to process export license applications consistent with national security objectives. The fourth objective is to support U.S. Government intelligence and enforcement activities to restrain the flow of defense-related goods and technologies to potential adversaries. The fifth goal is to support the Under Secretaries of Defense for Policy, and Research and Engineering (40:1-2). One of the DOD's policies for technology security that DTSA labors to implement is to serve the exporter by making the export control system more efficient.

A way DTSA attempts to make the system more efficient is to streamline the export licensing procedures. Through continual improvements, DTSA and the DOD have "consistently reduced the length of time it takes to process an export license to an average of twenty days for all munitions and for West-to-East dual-use applications" (42:v). Notwithstanding, West-to-West applications are completed in just a few days.

To understand the complexities of managing export licenses, a review of just how an export license application flows through the

system is in order. The types of licenses that this thesis is concerned with are for munitions and dual-use technologies.

Munitions Technology. As mentioned earlier in this literature review, the Department of State, under the authority of the AECA, is charged with the statutory responsibility for managing all munitions export licenses. The DOD entry point in the process, is the Munitions Control Directorate of DTSA--and it is only required to review approximately twenty percent of the requests under national security mandate. Through a very complex process, the Munitions Control Directorate must ensure that a wide range of defense organizations review the request expeditiously so a recommendation and a DOD position can be sent back to the State Department in a timely manner.

However, "to save time, the State Department delivers these cases concurrently to the military departments and DOD agencies and components it believes would have an interest in the case" (42:31). This, according to DTSA officials is a major detriment to system effectiveness when attempting to combat terrorism.

Ms. Janet Michel, Deputy Director of the Munitions Control Directorate, and Mr James Stofferahn, also of the Munitions Control Directorate, said that the current export system, with its myriad of actors, does not emphasize terrorism in practice. Terrorism only becomes a player "if something rings a bell" (129). There is a method of checking export shipments once items are shipped overseas called port shipment checks. This entails nothing more than U.S. embassy inspectors inspecting past shipments occasionally. It is used as a spot check to accurately track the shipment once it has been received by foreign

governments. This hopefully ensures that all of the U.S. goods and technologies can be accounted for in the future. U.S. embassies within the country that received the shipment are responsible for those checks--only after a request from the State Department or the Customs Department. Unfortunately, this is not done often according to Mr. Stofferahn. He also said the export system will never really stop terrorists from obtaining the weapons or the technologies they desire because the export control system is really only concerned with East Bloc transfers for the most part.

When analyzing exports, State and Commerce Departments appear to be the real drivers in regulating exports, and DOD tends to take a back seat. For example, a country that receives U.S. weapons directly is obligated by the AECA to file a report once a year to the State Department. "Unfortunately, the State Department never really reviews them for terrorism, if at all, in any great length," and the Commerce Department is really only concerned with the Eastern Bloc and national security transfers (95).

West-West Versus West-East Dual-Use Technology Transfers.

In transferring dual-use technologies, there are both West-to-East (Western countries selling to Eastern Bloc countries) and West-to-West (Western countries selling amongst themselves) applications. With respect to terrorists obtaining dual-use technologies, the "current export control system only considers Eastern Bloc countries as a threat (and even that today is falling by the wayside). Libya, for example, is considered just like any other non-Eastern Bloc country" (129). Libya recently attempted to purchase sophisticated communications dual-use

technology from the U.S. (after the 1986 U.S. raid ironically) that the DOD knew nothing about. Fortunately, DOD got wind of the attempted sale and cancelled the license. That same scenario took place in 1986 when the Commerce Department approved a sale of computers to Iraq and that supposedly had no military value. However, the literature promoting the sale bragged about the potential for military applications.

Fortunately, DOD also worked hard to stop the sale. Apparently, according to DTSA officials, DOD is not as much a player in dual-use technology transfers as it could be.

The procedures for transferring dual-use technologies is also complex, but not as stringent as in transferring munitions. "West-to-West applications are submitted to the Department of Commerce by the U.S. companies who want to export controlled commodities to proscribed destinations" (42:34). After Commerce Department review, other government agencies, including the DOD review the case, as required by the Commerce Department. When the DOD has the opportunity to review a case, DTSA assigns a technical expert to assess the case's impact on national security. This is where the Technology Security Operations Directorate fits in to the export control puzzle. Mr. Michael Maloof and Lieutenant Colonel Robert Freeman (USA), director and deputy director respectively of the directorate, are two of those experts making assessments.

Believing that terrorists will pursue unwitting traders to attempt to bypass the licensing and control arrangements, Mr. Maloof reemphasizes that the current export control system is not meant to stop terrorists. "It is not geared for detecting terrorist activities, and

licensing officials are not trained in terrorism" (86). Therefore, unless DOD becomes more active in the export control process, according to DTSA officials, terrorist acquisition of dual-use Western technologies may certainly give rise to their ability to embody those technologies into weapon systems.

Allowing DOD to become more of a "team player" in the export control process appears to be a bit untenable politically. For unless a monumental terrorist threat emerges, as drugs and drug trafficking has developed into today, DOD involvement will remain the same (86).

West-to-West dual-use applications are quite different than West-to-East. In 1985, President Reagan attempted to limit the illegal acquisition of U.S. technology through western countries by directing DOD (and therefore DTSA), through the National Security Council (NSC), to stringently review exports to certain Western countries that had been targeted by the Eastern Bloc for illegal acquisition. Some of those Eastern Bloc countries targeting the West, openly sponsored international terrorism at the time (East Germany, Poland, Czechoslovakia). DTSA promptly developed a computerized system to meet the short suspenses established by the NSC for reviewing export license applications. The objective of the system was to screen out those cases where there was a suspected potential diversion of the exported technology. The system is called the Defense Automated Case Review System and through its historical searches, it allows DTSA to determine trends and buying patterns in certain countries in order to come up with importers suspected of heavy Eastern Bloc infiltration.

To reduce the processing time of license applications, with a focus on meeting the objective of "interfacing as little as possible with legitimate, non-strategic trade," DTSA added the ability to electronically convey results to the Commerce Department (42:35).

International Technology Security Program--CoCom. The weapon systems of today depend on so many sophisticated dual-use technologies, it therefore is necessary to identify and control those critical technologies that could potentially jeopardize U.S. national security. Many countries are still determined to obtain those controlled technologies through any means possible--legal or illegal. Consequently, the U.S. cannot possibly prevent such diversions unilaterally. That fact was identified early after the end of World War II, for in 1949, the Coordinating Committee for Multilateral Export Controls (CoCom) was established.

Though not maintaining a formal treaty relationship with NATO, CoCom consists of seventeen nations, including all of NATO except Iceland, as well as Japan and Australia (146:70). Acting as a decision-making body, CoCom groups its controlled technologies into three areas, those for direct military use, dual-use technologies, and those that relate to atomic energy. Once CoCom makes an exporting decision, the "publication of the agreed control carries the force of law or of export control regulation, so that the definitions may be administered and enforced effectively" (146:70).

The cornerstone of CoCom is a dual-use or international list of controlled goods, munitions, and technologies. The list essentially blankets three areas:

1. items designed specially or used principally for development, production, or utilization of arms, ammunition, or military systems;
2. items incorporating unique technological know-how, the acquisition of which might give significant direct assistance to the development and production of arms, ammunition, or military systems;
3. items in which proscribed nations have a deficiency that hinders development and production of arms ammunition, or military systems, a deficiency they are not likely to overcome within a reasonable period. (102:97)

The control list is reviewed annually and it takes a unanimous decision to make any changes to the list. As is evidenced by the number of countries in CoCom, there is a concern for protecting and controlling technology. In fact, a multilateral export control system is essential to effectively deny technology to countries that try to obtain it by "beating" the system--including Western countries, diverters and terrorists. Unfortunately, the restriction of West-West trade severely hampers U.S. economic conditions as well as Western security interests. The U.S. then must take the lead in CoCom in coming up with common controls among CoCom nations in dual-use technologies to build strong technological fences around small, nebulous areas.

The DOD Critical Technologies Plan was developed in 1989 as a result of the National Defense Authorization Act for Fiscal Year 1989, to protect those sensitive dual-use technologies. To build strong fences, the plan is designed to

provide a uniform rationale for selecting 'critical technologies in consonance with the description in P.L. 100-456, namely as 'the technologies most essential to develop in order to ensure the long-term qualitative superiority of United States weapon systems (39:1)

The technologies selected to control were selected from performance and quality design criteria, similar to the CoCom list. For performance, those technologies that improve the performance of conventional weapons and those that create new capabilities were identified. Qualitatively, those that enhance "weapon system availability and dependability plus those that improve weapon system affordability" were selected (39:5). The developers of the plan were quick to point out that "a Sputnik-like surprise, or an unexpected surge in terrorist activity, could affect the technologies selected" (39:5). Could that terrorist surge be waiting for the dust to clear in Eastern Europe? In analyzing the actions taken by U.S. leaders, as well as CoCom recently, it appears that the potential "surge" is considered obsolete or improbable.

For example, CoCom nations differ, in some cases substantially, in their interpretation of what is important technology to protect and what is not. "Some CoCom nations are more assiduous than others in their adherence to CoCom restrictions against direct sales of military useful goods and technologies [to adversaries]" (102:137). Also, the NSC, after some prodding by the Commerce Department, "is expected to allow for a relaxation of export controls on military applicable equipment shipped to Eastern Europe" (126:45). Recently, even President Bush has outlined that he

is working to streamline the export licensing procedures for U.S. firms [even more than now] and expects an agreement later this month [April 1990] to eliminate virtually all licensing requirements on trade among members of CoCom. (101:21)

Eighty-five to ninety percent of licensing requirements on inter-CoCom trade would be removed, "to ensure that U.S. firms and other non-

European members of CoCom would not be impeded by export and licensing controls once Western Europe moves to a unified market in 1992" (101:21). This corroborates what Lieutenant Colonel Freeman of DTSA said concerning the U.S. not wanting to be a "burden on democracy" for the newly formed East European governments as CoCom countries attempt to sell their technologies to the former Bloc countries with barriers falling to the wayside.

As a result of the president's proposal, the State and Commerce Departments "are working to eliminate unnecessary items from the U.S. munitions list and bring it more in line with CoCom's international munitions list" (101:21). Apparently, the U.S. is calling for a gradual and dramatic restructuring of how CoCom deals with the East Bloc and exporting in general.

In its efforts to assist governments, especially in Eastern Europe, in their transformation to democracies, the U.S. is striving to relax export controls via CoCom and request the metamorphosing countries to establish their own export control mechanisms and regimes. This is a time of "peace" as well as a time of tension as Western nations drop their guard with the political reform progression spreading in Eastern Europe.

Unless there is some sort of focus on terrorism repercussions, terrorists like the ANO and the PFLP-GC, who desire advanced weapons, may see golden opportunities in the export control system as Eastern European nations struggle to establish control mechanisms like providing "inspection of shipments leaving the USA, on-site inspection in receiving countries and end-user certification" (126:45).

Export Control System's Impact on U.S. Industry. The spread of technology over the last ten years has created formidable competitors and challenges to U.S. global dominance in high technology. "As a result, U.S. defense firms are increasingly drawn into international markets under competitive conditions not of their own choosing" (88:8). "International technology transfer agreements are becoming an increasingly important part" of conducting business and meeting the competitor head-on (118:14). U.S. industry officials say there is still a reluctance by some companies to enter the export market due to frustrating export barriers initiated by the U.S. Government. Therein lies a complex dilemma of balancing national security and economic vitality when controlling U.S. exports.

National Security. The fundamental premise of national security export controls is to deny, or at least delay, the acquisition or access of current state-of-the-art Western technologies to adversarial countries. Technologies that, if received by those countries, would significantly increase their military potential. Though the terrorism threat is not considered as potent as the Soviet threat once was, terrorists do pose a very real peril to national security. In fact, because the export control system is based on controls to various countries, terrorists who have various sponsors can "drift with the wind" to the countries willing to sponsor them that do not have as stringent export controls. Front companies can be set up under various guises and terrorist operatives can infiltrate various less-controlled countries.

A prime way to reduce the adverse effect exports may have on U.S. national security, many argue, is to maintain a technological lead. The maintenance of America's shrinking technological lead over to potential adversaries can be achieved and sustained only "through a dual policy of promoting a vigorous domestic technology base and impeding the outward flow of technologies useful [to adversaries] in military systems" (102:15).

DODD 2040.2, International Transfers of Technology, Goods, Services, and Munitions, says the following about managing technologies,

It shall be DOD policy to treat defense-related technology as a valuable, limited national security resource, to be husbanded and invested in pursuit of national security objectives. Consistent with this policy and in recognition of the importance of international trade to a strong U.S. defense industrial base, the Department of Defense shall apply export controls in a way that minimally interferes with the conduct of legitimate trade and scientific endeavor. (41:2)

Efforts to set priorities in vital defense technologies, spawned by the impetus of the European Community of 1992 and the desire of allies and other rising powers to enter into the military hardware market, has led Congress to advocate a more aggressive role "in spurring the development of technologies that are critical to the superiority of American weapon systems and the competitiveness of American industry in the international marketplace" (127:80). That aggressive role then prompted the DOD to establish the Critical Technologies Plan in 1989 (which has since been updated in 1990). Quite similar to the MCTL, the plan highlights twenty technologies that show great potential for long-term U.S. weapon system superiority. Though the Critical Technologies Plan emphasizes research and development, those same technologies must undoubtedly be controlled to achieve the mentioned superiority.

U.S. Industry Economic Vitality. Even though U.S. industry officials were consulted after the Critical Technologies Plan was developed, they were not in on the planning stages. Therefore, in general, industry does not perceive current export control policies are rational or credible. In fact, probably U.S. industry's largest obstacle to overcome with respect to high technology exports, "is the elaborate system of controls applied by the Defense Department to technologies that are deemed critical to national security" (8:22). As the Bush administration acts to lessen export controls, industry breathes a sigh of relief--as do international terrorists.

U.S. firms strive to remain competitive in world markets. Many times firms feel stifled by the national security export controls. As U.S. manufacturers continue to operate in "the global village," the ability to operate on the international level is crucial. For instance, in 1982, less than five percent of U.S. manufacturers tallied foreign firms as one of their top five competitors; today, that figure is up to thirty percent (85:238). Accordingly, from 1982 to 1987, "almost one-hundred thousand companies ceased doing business with the DOD" as foreign competition and export controls drove those businesses into bankruptcy (88:13). As new markets open worldwide, firms have reduced dependence on the U.S. domestic market. Therefore, when the U.S. enforces strict controls on technology through a variety of previously noted methods, U.S. customers naturally look to other countries with similar technologies, leaving U.S. firms in an almost untenable position.

To stay consistent with U.S. goals of a strong defense and a sound economy, export competitiveness is essential to the health and effectiveness of the U.S. economy. Unfortunately, the National Academy of Science discovered that "the scope of current U.S. national security export controls undermines their effectiveness" (102:152).

Consequently, industry feels that the scope of the controls encompass too many products and technologies, and that the controls actually impede exports.

Apparently, industry as well as governmental leaders are calling for a relaxation of export controls. Likewise, the recent Presidential Commission appointed to investigate the bombing of Pan Am Flight 103 called for more retaliatory military strikes to respond to terrorists. As U.S. technology transfers around the globe in the future, and diverters become more involved, responding to terrorism militarily becomes more difficult. For example, with respect to terrorist-sponsoring Iran,

U.S. pilots flying missions in the Persian Gulf were hampered because Iran's air defense capability had become a function of illegally obtained spare parts from the U.S. and therefore, in many cases, was simply unknown. (77:232)

Unfortunately, very few industry and governmental leaders call for an awareness throughout the country to understand that the U.S. export control system does not effectively address terrorism. The Presidential Commission is attacking a "symptom" of terrorism not a "cause."

There are a number of expected benefits, besides financially, industry officials feel would be reaped through transferring technology and relaxing export control. Two of those benefits include enhanced competitiveness, and increasing market access.

Due to the proliferation of technology, and a "decline in the international market position of U.S. high technology industries," a President's Commission in Industrial Competitiveness stated that "in industry after industry, U.S. firms are losing world market share--in high technology--in seven out of ten sectors" (114:Vol 2,308,13). With the onslaught of foreign competition, these competitors have successfully dislodged American firms--harming the U.S. industry.

As the U.S. faces more global competitors, a global market becomes the norm. Industry feels that

Only through a competitive America can we sustain economic growth, assure our national security, maintain our leadership position in world affairs and our technological preeminence, and provide greater opportunities for the generations to follow. (114:45)

To achieve that competitiveness, U.S. industry, and in particular, the defense industry, feels export controls must change with the times. Allowing industry to export dual-use technologies and other goods, provides business with increased finances to increase research and development for advanced technologies. It also jeopardizes what is left of the U.S.'s qualitative technological advantage and leaves the door open for terrorist organizations to obtain dual-use technologies such as computers, optics and communications systems. Some of which can be embodied into conventional weapons like the cruise missile.

By restricting exports, industry officials argue that national security, the aim of the export controls, will actually dwindle due to the defense industry not being able to keep up with the technological advances in the world.

The U.S. Government has carefully orchestrated arms export policy to advance U.S. political and defense interests abroad. If U.S. defense contractors lose a substantial share of exports to other arms [and technology] makers and if they are shut out--politically

or on the basis of cost--from participation in foreign defense markets, the U.S. could correspondingly lose influence. It may not be able to generate the sales to Third World nations that have contributed to its ties with many of these strategic countries. (82:67)

The National Academy of Science in its study entitled Balancing the National Interest, arrived at some key conclusions U.S. industry executives feel are crucial to U.S. competitiveness. The study found that collectively there really is not a well-defined, established criteria to judge whether a given technology actually enhances the capability of U.S. adversaries. Therefore, the Academy suggests the following to regain competitiveness.

1. Pragmatic control lists must be technically sound, narrowly focused, and coordinated multilaterally. The preparation of control lists must be a dynamic process that is both informed by advice from technical advisory groups and constrained by the need to be clear, to focus control efforts more narrowly on fewer items, and to coordinate U.S. action more closely with that of our CoCom allies.
2. Wide global diffusion of advanced technology necessitates a fully multilateral approach to controls...National security export control cannot succeed without...an effective CoCom process by which other major CoCom countries accept responsibility for regulating exports and reexports from their territory of CoCom-controlled technology to non-CoCom free world countries and...the adoption by the more advanced newly industrialized countries of CoCom--like standards for their own indigenous technology.
3. There is a need for high-level industry input in the formulation of national security export control policy. There is a need for an effective mechanism within the government to provide meaningful input from the private sector on the formulation of a coordinated national security export control policy. Such a group must be constituted at sufficiently high corporate levels to reflect major industry concerns, and it must be able to have an impact on the actual policy process.
4. Eliminate reexport authorization requirements in countries participating in a community of common export controls on dual-use technology. To further the objective of developing a community of common export controls on dual-use technology among cooperating countries of the free world and to encourage international cooperation and trust, the United States should eliminate any requirement that a buyer must seek authorization for a reexport

that is subject to CoCom or 'CoCom-like' controls by the country initially exporting the product or technology.

5. Maintain a clear separation between national security and foreign policy export controls. Existing statutory authority describes separate systems and procedures for the control of exports for foreign policy versus national security reasons. Therefore, because many of our CoCom allies continue to disagree profoundly with some unilateral U.S. foreign policy sanctions, the U.S. government should maintain the clearest possible distinction between the administration of national security and foreign policy controls. (102:15-17, 21, 25)

Clearly, there is a wide area of perceived improvement in the U.S. Government in achieving and maintaining U.S. competitiveness--an issue that has reached epidemic proportions of concern in recent times. In fact, Commerce Secretary Robert Mosbacher recently stated that he is willing to "take that risk" of the Soviets obtaining U.S. high technology as export controls for dual-use technologies are relaxed to enhance competitiveness (27). As DOD budgets continue to decline, technology transfers to Eastern Europe and the Soviets will increase. It is therefore imperative that U.S. leaders take note of the dynamic threats emerging in the Third World--where terrorism thrives. The military capabilities of countries receiving U.S. technology (both dual-use and military) will dramatically improve, ironically creating a need for stronger U.S. controls of technology.

The second area industry feels can be improved through the lessening of export controls is in enhancing market access. Right now, U.S. industry officials do not believe the government has a well-defined trade policy. As a result, that perceived (or actual) absence of a trade policy disadvantages U.S. exporters. "Foreign suppliers have had absolutely open access to our markets, while our manufacturers have had about a 10,000 to 1 chance of making a sale" (8:23).

As foreign competitors increasingly enter U.S. markets, with the U.S. Government increasingly opening itself up to foreign competition, and resultingly American firms becoming replaced or being driven out, markets tend to dry up for American defense firms. Because of the stringent export controls, "the defense industrial base, for a variety of reasons, is losing the ability to respond to challenges from foreign industry and is rapidly losing its ability to respond to defense needs" (144:12-13).

Unfortunately, as market access is enlarged, there is a tendency for diverters to "reallocate" those exported technologies to countries which cannot receive them directly from the manufacturer--like terrorist-sponsoring countries and thus provide terrorists with technologies that are useful. "This is done by using false end-user certificates (naming a country which is on the 'approved' customer list) to procure the weapons from the manufacturer and then diverting them to the real but unauthorized user" (33:397).

In a prepared statement before Congress, Mr. Dan Dahlo-Johnson, president of the Export Managers Association, emphasized the reason U.S. exporters are struggling to access markets is that they lack strong government support--support that the competition is receiving.

In the development of infrastructure, the key capital projects which are determining market share for the next generation of economic growth and technical development, U.S. exporters are unable to match market development and export financing support received by their competition from their national governments. (143:105)

An important point Mr. Dahlo-Johnson makes is that thriving national economies have market share, capital, and the ability to expand. The present export policy does not allow for increases in any

of those three key elements. One area of improvement would be to open markets that were previously restricted due to export controls. Unfortunately, industry would inevitably find a majority of those markets already saturated.

Striving to exert pressure on the government to provide strong support to the exporters of America, emphasizing increasing market share, Mr. Dahlo-Johnson recommends a number of policy improvements.

1. Reduce funding for policing export controls and give it to Trade Development Program [a program to promote exports]...we are spending more money right now, policing exports [\$41 million] than we are promoting exports [\$25 million]. Essentially, [policing] is an export disincentive, as it often detains shipments over non-material errors in paperwork.

2. Historically, U.S. industrial policy has been shaped by incentives. These incentives have been in the form of tax credits, low interest loans, and subsidies. The same policy tools are needed now. Tax credits for trade show participation and for modification and design of products for export would give the U.S. exporter and manufacturer a big incentive they need to jump start the U.S. export economy.

3. An export industry advisory group should be established for commerce and Congress. This advisory group should make recommendations and they should be acted on in a timely manner. We know what is going on there in the markets and we should have this ongoing advisory group that has mandated their decisions be acted on. (143:108,113-115,116,120)

With full knowledge of the political and economic ramifications of stringent export controls, U.S. export controllers need not curtail exports. They must act responsibly by expending more energies in preventing the transfer of weapons to countries that sponsor terrorism and to allies that have less stringent controls. DTSA and the Departments of State and Commerce must work in harmony, not against each other, if technology transfer to terrorists is to be curtailed.

Chapter Summary

The purpose of this chapter was to analyze the fundamental nature of international terrorism and its conventional weapons, as well as the intricacies and complexities of the U.S. export control system. A relationship clearly exists, though not expressly studied in any great detail until now, in the kinds of conventional weapons terrorists obtain either directly or indirectly as a result of the deficiencies in the U.S. and Western export control systems.

Only really chipping away at the tip of the iceberg, this research has discovered a subtle, yet potent link between technology transfer and the terrorists that employ U.S. and Western technology weapons. The next chapter analyzes if the Abu Nidal Organization in fact possesses Western technologies, and also it reviews the potential for the terrorist organization to obtain those technologies in the future.

IV. Case Analysis of the Abu Nidal Organization

Chapter Overview

The ANO is a terrorist organization shrouded with secrecy. Consequently, the availability of sources shedding new light on the organization is limited. In fact, the only serious study done so far on the ANO and its founder, Sabri al-Banna, is Yossi Melman's The Master Terrorist: The True Story of Abu Nidal. In this book, Melman has pieced together somewhat of an interim report providing a substantial sketch of the organization--more than any unclassified version to-date (75:359). Therefore, this case analysis, through the interweaving of information found in the literature review as well as in this chapter, will build a sizable contribution to the ANO data base, as it relates to international technology transfer.

The purpose of this chapter is to discern the direction at least one international terrorist organization is moving with respect to obtaining U.S. and Western high-technology conventional weapons through dual-use and munitions technology transfers. The chapter analyzes the link that ANO weapons acquisition has to Western technology transfer, as well as to the U.S. export control system. Since this thesis is unclassified, it is important to remember that this analysis will be restricted.

Because the ANO is so deceptive, compartmentalized, and secretive, "fact and gross speculation, truth and untruth, have been woven together into a crazy patchwork in which actual facts blur into legend and myth" (93:4). Therefore, the difficulties in writing this analysis are increased geometrically. Compounded by the fact that whatever truthful

information does exist on the ANO is held secure by secret service organizations around the world, this analysis will not be a complete one. This chapter hopes to offer as much detailed information as possible on the ANO and its weapons of choice. The section on the organization's tactics looks in-depth at the organization through its prior attacks to demonstrate the types of weapons the group actually possesses.

The organization of the case analysis is as follows. A background of the organization is presented first to better understand the philosophy of the organization and its leader. Then, the tactics of the terrorist group are analyzed to display just what kinds of conventional weapons the group possesses, as evidenced by past attacks. The third aspect of the chapter is the ANO's organizational structure. In that evaluation, four of the five channels of terrorist technology transfer, as discussed in the beginning of the literature review, will be connected to how the group is organized by looking at the potential weapons the ANO may possess with emphasis on what Western weapons are available through those channels. The final section of this chapter will discuss the current status of the ANO and its leader, Sabri al-Banna, who is thought to be quite ill, if not dead.

Background of the Abu Nidal Organization

Many Middle Eastern terrorist organizations have deep-seated roots in their leaders' beliefs and causes. The ANO is no different. The name ANO is actually derived from the *nom de guerre* of its leader, Sabri al-Banna, who calls himself Abu Nidal (147:3). Because the organization revolves around one person, Abu Nidal, its entire existence is credited

to Nidal's beliefs. Therefore, in an effort to understand more about the organization--its tactics, structure, and desire to obtain advanced Western weapons--the background of Abu Nidal, himself, is necessary to make the ideological connection with the organization, ANO.

Born in Jaffa, Palestine in 1937 of a rich Palestinian father and Syrian mother, Sabri al-Banna was the youngest of eight children. After his father died in 1945, al-Banna transferred to a variety of different schools, due to family money problems, until finally settling in a school in Jerusalem for his fourth grade year. During that year (late 1947), the United Nations General Assembly divided Palestine into Jewish and Arab states. Battles soon erupted over the territories which eventually forced the al-Banna family to move from Jaffa and become refugees living in tents. For the next two years, the al-Banna family moved many times fleeing from Israeli forces and in the process went from unlimited wealth as a family to abject poverty. "It is possible that these experiences as part of a refugee family...sowed the seeds of Sabri al-Banna's terrorism" (93:56).

After the Israeli takeover of Palestine in 1948, a resultant family move to Nabulus in the West Bank, and Sabri al-Banna's high school graduation in the ensuing years, al-Banna decided to study engineering at Cairo University in Egypt. Not considered an exceptionally bright student, al-Banna never graduated from the university and then eventually went to work in Saudi Arabia as an electrician. He was considered both an introvert and stubborn--two traits that are trademarks of ANO members.

After marrying in 1962, al-Banna became involved in Palestinian politics in Saudi Arabia. He initially joined the Ba'ath party and Fatah, an organization led by Yasser Arafat. His affiliation with the Ba'ath party would later allow him to operate on fine terms with Iraq. Fatah was a Palestinian organization charged with freeing Palestinians from "Zionist occupation." As a repercussion of al-Banna's connection to the Palestinian cause, his Saudi employers fired him. Then the Saudi secret services imprisoned, tortured, and finally expelled him from the country (93:59). Therefore, as a terrorist, Abu Nidal displays a personal hatred for Saudi Arabia--a country which the U.S. has developed a relationship with over the years.

As a result of the 1967 Six Day War, when Israeli forces captured the Sinai peninsula, the Golan Heights, the Gaza Strip, and the West Bank--where al-Banna's home was--his involvement in Fatah, which was now directly under the PLO, became intense. In fact, the war was the turning point in al-Banna deciding to become a professional terrorist. His hatred towards Israel was, and still is, fervent.

Assuming some important posts in Amman, Jordan, as a member of Fatah and the PLO, al-Banna was known for his ambition and his stubbornness. As was customary for members of the PLO, Sabri al-Banna was asked to select a *nom de guerre*. He chose Abu Nidal, which translates as "father of the struggle" (93:60). After a short stint in Khartoum, Sudan, Abu Nidal became the PLO representative in Iraq in 1970.

The move to Baghdad, the turning point in Abu Nidal's life, began the eventual rift Nidal experienced with Fatah, the PLO, and Yasser

Arafat. Because of Nidal's Ba'athist ideology, Iraq welcomed him with open arms. Basically, the Ba'athist party platform envisions the Arabs as "a single eternal nation" (93:67).

In the Ba'athist ideology...the unity of the Arab world can have meaning only through a social and spiritual revolution. Such a revolution, which will eliminate the imperialistic and feudal forces threatening it, will eventually bring about a free and just society. (93:67)

Both Syria and Iraq adhere to Ba'athist tenets. However, Syria accepted an Israeli ceasefire in the 1967 war which prompted Iraqi leaders, furious at Syria, to consolidate their Palestinian position by forming terrorist organizations mainly targeting Syrian targets. Abu Nidal was a prime "terrorist for hire." After setting up infrastructure for an autonomous organization during the early 1970s, Abu Nidal was prepared to operate without the help of the PLO. When Yasser Arafat then decided to restrict terrorism only against Israeli targets in Israel and the occupied territories after the 1973 Arab-Israeli War, Abu Nidal rejected the PLO. The ANO then evolved.

By choosing Fatah-The Revolutionary Council as the official name of the ANO, Nidal professes that his organization is the true Fatah. Because Arafat's views were "too moderate" for Nidal and the Ba'athist ideology, Nidal's opposition to Arafat fit in perfectly with Iraq's rejectionist ideology.

With goals such as a "total destruction of the Zionist entity," which includes the U.S., and "building a democratic people's regime in which Palestine is a homeland," the ANO set out on a fifteen year course of absolute terror and annihilation. Stressing his hatred towards Americans in an interview with the West German magazine, Der Spiegel,

Abu Nidal said, "I can assure you one thing, if we have the chance to inflict the slightest harm to Americans, we will not hesitate to do it. In the next months and years the Americans will think of us" (97:309). What better way to inflict harm than with the U.S.'s own weapons. By opposing all efforts toward political reconciliation of the Arab-Israeli conflict, the ANO contends that both inter-Arab and intra-Palestinian terrorism are needed to precipitate an all-embracing Arab revolution that alone can lead to the liberation of occupied Palestine (145:5).

Labeled by the U.S. State Department as "the most dangerous terrorist organization in existence," and its area of operations as one of the most extensive, the ANO has staged attacks in over twenty countries on three continents, killing more than three-hundred people, and injuring another six-hundred and fifty (145:5; 147:1). Abu Nidal is considered a brutal, merciless murderer because his attacks are "ruthless and indiscriminant" (35). With ANO attacks bold and daring, a "comfort zone" does not exist for its targets.

Tactics of the Abu Nidal Organization

To ascertain the types of conventional weapons the ANO employs, it is necessary to analyze the organization's tactics. By investigating the operational characteristics of the group, this section strives to link the ANO's methods of operation with its ability to obtain and use U.S. and Western high technology weaponry.

ANO tactics frequently involve indiscriminant attacks inflicting maximum casualties to men, women, and children of the "Zionist enemy." The organization's intent is to kill or maim as many people as possible (147:10). In fact, Abu Nidal describes himself as an "evil spirit which

moves only at night...causing constant nightmares" (109:23). With that in mind, the following general tactics found during this research characterize the ANO:

1. the use of many different names;
2. the group operates compartmentalized, in a cloak of secrecy to limit hostile infiltration;
3. the group also uses a wide range of attack tactics that are useful in analyzing the weapons the group uses. These tactics include, but are not limited to: aircraft hijackings, midair aircraft explosions, assassinations, random shootings and bombings, and more importantly in the context of this thesis, surface-to-air rocket attacks on civilian aircraft.

Before analyzing the weapons the group uses, the initial two tactics should also be investigated to reveal the high degree of professionalism, dedication, boldness, and cruelty that the ANO adheres to.

The Use of Many Different Names. To confuse and frustrate Israeli, Arab, and Western secret services, the ANO uses numerous covernames for its different targets. Fatah-The Revolutionary Council is by far the most popular name and its use is primarily intended for Israel and U.S. targets. Other names and their targets are as follows.

TABLE 4

ABU NIDAL ORGANIZATION COVERNAMES

<u>Name</u>	<u>Target</u>
-Black September	Jordanian and Palestinian
-Arab Revolutionary Army	Persian Gulf
-Revolutionary Organization of Socialist Muslims	British
-Arab Revolutionary Brigade	Persian Gulf and Jordanian
-Egyptian Revolution	Israeli Targets
	(93; 96; 110)

Other names such as Al-Asifa and Black June have also been used but have since been abandoned in 1982 and 1983 respectively.

Not only do various names aid in pinpointing the specific person involved in a terrorist action, they also allow the ANO to associate with various other terrorist organizations in the targeted parts of the world. As such, weapons then become available through the multifaceted terrorist distribution system.

Compartmentalized, Secret Operations. Stating in one of his rare interviews that "my success depends on total secrecy," Abu Nidal's organization is compartmentalized into underground cells composed of approximately three to seven Palestinian members in each (93:82-83). This type of compartmentalization is accomplished for two reasons. First, it has proved almost impossible to track the exact whereabouts of the organization and its headquarters. Second, Abu Nidal desires that the operatives of the various cells do not know one another. Therefore, the cells are entirely isolated from each other. Trained to maintain a

high degree of secrecy, all ANO operatives are known only by aliases. In fact, when carrying out a terrorist attack, ANO perpetrators meet only one or two of their own members without even knowing their names (93:84). This type of secrecy prevents ANO intelligence from filtering out of the organization if operatives are caught.

Unfortunately, this tactic also makes it difficult to study the arsenal that the ANO possesses. With that in mind, the chapter now turns to focus on the various attack tactics that the ANO lives by to glean all information possible on the magnitude of U.S. and Western technologies that the ANO actually used in the past.

Attack Tactics.

Aircraft Hijackings. According to various sources, the ANO has been involved in four aircraft hijackings or attempted hijackings since November 1973, with the latest in Karachi, Pakistan in September 1986 (93:260-268; 147:2; 145:6-7). Though considered only a small number of hijackings, the group has killed eighty-two people in the process--almost one-third of all its victims. Therefore, this tactic has been a "success" for the group.

The first two skyjacks, on 25 November 1973 and 22 November 1974, involved only one death. The type of weapons used during those terrorist assaults are not clear. The literature does not specify the exact kind or amount of weapons used. Also, in both instances, the ANO hijackers were permitted to fly to the destination of their choice (Syria and Libya respectively).

The later hijackings, only shed partial light on the actual weapons that the group uses. On 23 November 1985, the ANO hijacked an EgyptAir

plane en route from Athens, Greece to Cairo, Egypt. The hijackers forced the plane to land in Valleta, Malta. On the ground, Egyptian commandos stormed the plane only to have sixty passengers murdered and ten others wounded by ANO terrorists in the attack. The final hijacking (actually an attempted hijacking) occurred on 5 September 1986. The ANO operatives held a Pan Am 747 jumbo jet at-bay for sixteen hours in Karachi, Pakistan, with three-hundred and eighty-nine passengers on board on their way to New York.

When the aircraft's electric generator failed and the cabin darkened, the hijackers began "shooting and detonating grenades" (93:226). In all, twenty-two passengers were dead and over one-hundred injured in the assault. Though not specified in the literature, there is a high probability that the weapons used were Polish WZ 63 submachine guns, small but efficient weapons that are extremely popular with the group. The type of hand grenades used was also not conclusive. However, based on the groups Eastern-Bloc connections to East Germany, Poland and Czechoslovakia, the grenades are assumed to be of Soviet manufacture.

Midair Explosions. After careful analysis, it appears that the group only participated in four midair, or attempted midair, explosions. Again, however, the death toll associated with the four attacks was substantial. One-hundred and twenty-six people (most from one incident) lost their lives due to the ANO's ruthless tactics.

The first attack occurred on 29 September 1983 when a United Arab Emirates Gulf Air aircraft blew up in midair. None of the one-hundred and twenty-two people on board survived the attack. Unfortunately, the

literature does not indicate what kind of bomb or explosives were used in the attack.

Next, an attempted midair explosion took place on 9 March 1985 when a booby-trapped, bomb-laden suitcase was smuggled onto an Alia Jordanian Airlines aircraft (93:264). Because the aircraft was ahead of schedule, the bomb actually detonated on the ground at its stopover at the Abu Dhabi airport . Therefore, there were no injuries and damage was only to the aircraft itself. Once again, the type of explosive used was not indicated in the sources that described the attack.

The third midair explosion, not only took the lives of four people, it also involved a U.S. commercial carrier--Trans World Airlines (TWA). As the Boeing 727 began its decent into its destination, Athens, Greece on 2 April 1986, an ANO bomb ripped a nine-foot hole in the fuselage near the right wing. Though the bomb took only four lives, one a four month-old baby, it was "one of the most chilling episodes in the almost two decades of airborne terrorism" (93:187). American intelligence sources made it quite clear that the bombing was in retaliation for the March 1986 U.S. raid on Libyan SAM-5 missile bases.

The world was not surprised that the ANO could perpetrate such a crime. What was astonishing, however, was the technology and methods used by the group for the first time. The world had now discovered that Arab terrorists, like Abu Nidal, had moved to high technology (122). The bomb was a time-delayed devise using the plastic explosive, Semtex. Linking up with another Palestinian terrorist group, the Arab Organization of 15 May, and its leader, Abu Ibryhim, Abu Nidal was now interested in sophisticated weaponry. Recall that Ibryhim, a bomb

expert, is the master-mind behind the bomb that destroyed Pan Am Flight 103 in Lockerbie--then linking up to Ahmed Jibril and the PFLP-GC.

Though the explosives themselves were not sophisticated, the use of Semtex by the ANO signals a sudden change in the operations of the group, and also a potential desire to obtain higher technologies in the future--possible from the U.S. (130:A1). Czechoslovakia was the supplier of the Semtex that allowed a bomb to rip through the hull of TWA Flight 840. The U.S.'s relationship to Czechoslovakia today continues to improve daily. Unwitting traders inside the Eastern Bloc country could still be supplying the Semtex technology to the ANO, as well as newer U.S. technologies, through countries willing to carry out the transfer, like Libya and Lebanon. "Abu Nidal has evidently decided to adopt the methods of Abu Ibrayhim and the TWA explosion was just the beginning" (93:188).

The fourth midair incident involved a foiled attempt to blow up an El Al 747 with three-hundred and eighty-five passengers, enroute from New York to Tel Aviv via London. This incident was just fifteen days after the TWA Flight 840 explosion and two days after the U.S. raid on Libya on 15 April 1986. The same type of sophisticated bomb and technology was used, but this time, El Al security guards detected a carry-on bag with a false bottom. The secret compartment contained four-pounds of the Czech-made Semtex. "High technology weapons have created a terrifying dilemma for...officials in their war against terrorists" like Abu Nidal (93:204).

Assassinations. Though difficult to accurately verify the exact number of assassinations and assassination attempts conducted by

the ANO, there have been at least nineteen documented cases (93:260-268). Of the nineteen attacks, all took place between 1974 and 1985. Since there have been no assassination attempts in almost five years by the ANO the probability of a new attack escalates with each passing day.

Attempts to analyze the trail of the types of weapons used during the tactic of assassination, has again found the path covered with many obstructions. There is, however, one assassination attempt that has been investigated at length by author Yossi Melman, because it is believed by many to have precipitated the 1982 Israeli invasion of Lebanon, which began less than twenty-four hours after the attack.

3 June 1982 is the date that the ANO attempted to assassinate Shlomo Argov, the Israeli ambassador to Britain, in London, England. Adhering to the "entanglement theory," which in essence allows the organization to act as a "primer" touching off a general war with Israel, the ANO, as many theorists believe, set out to destroy Israel as a result of one assassination hoping to trigger a major war (93:138). Since the attack occurred in a NATO country, it is important to investigate the kinds of weapons used as well as how the group obtained them in a Western nation.

Once again, the Polish-manufactured WZ 63 submachine gun was the weapon of choice. The actual ANO attacker actually jumped out in front of the ambassador in the midst of a crowd, critically wounding the Israeli with a spray of submachine gun fire. The assassin was later also wounded and abducted by London authorities.

Because the WZ 63 is a standard issue in the Iraqi Army, there is a direct link to Iraq providing the Eastern weapons because the ANO was

sponsored by Iraq at the time of the assassination attempt. Because the Iraqi embassy in London is known to have a sizable cache of arms and technologies in its cellars and safes, one theory of how the ANO obtained the weapons is that an Iraqi embassy staffer supplied them. Today, as Iraq builds up its arsenal to rival most nations', still adhering to the Ba'athist ideology and receiving technologies from a wealth of Western countries, there is room for wide speculation and uncertainty that the country's leader, Saddam Hussein, will covertly supply the ANO with new weapons of terror (44). The relaxing of export controls may actually encourage those types of activities. In essence, the ANO may look to new, high technologies, like heat-seeking surface-to-air missiles, to blow up the car that their future assassination victims ride in (36). "The technology and the know how are around" (93:249).

Random Shootings and Bombings. Probably the most documented area of all of the ANO attack tactics, random shootings and bomb attacks shed the most light on the types of weapons the group actually employs. In all, there are at least eighty confirmed shootings and bombings credited to the ANO (93:260-268; 147:11-18; 145:6-8). Though all of the incidents have had brutal consequences for the victims, four in particular under this investigation have not only proved the ruthlessness of the group, but also have unveiled the weapons used during the attacks.

The first, occurring on 29 July 1981, moved the organization to the forefront of the international scene. During the celebration of a Bar Mitzvah in a Vienna, Austria synagogue, ANO attackers stormed the

congregation killing two civilians and wounding nineteen with machine guns and grenades (147:16). A change in tactics from attacking PLO members and other Palestinians, the group now started years of rampage by indiscriminantly killing innocent civilian targets.

The machine guns used were again identified as the Polish WZ 63. After authorities seized a sizable arms cache in Salzburg, additional weapons were also discovered. The weapons and technologies included 9mm Spanish revolvers, additional WZ 63s, as well as Soviet hand grenades, explosives and detonators (93:112). The information gathered from that attack showed that the ANO was a "completely professional terrorist organization, whose members were well-trained and familiar with all the rules of conspiracy" (93:113).

The second most revealing attack in the context of this thesis involved carefully planned dual-attacks on 27 December 1985 on the Israeli El Al ticket counters in the Rome, Italy and Vienna airports. In those simultaneous attacks, sixteen civilians, including a child, were killed and over one-hundred were wounded. Besides the WZ 63 machine gun, other weapons used in the attacks included Soviet-made AK-47 assault rifles and grenades (147:13).

Because the passports the two surviving terrorists carried were supplied by Libya, the direct link to Colonel Gadhafi was no longer a speculation. Now, officials could pinpoint the ANO and Libya with ultimate responsibility for the attacks.

One of the clear messages the terrorists left from these two attacks is one of vengeance toward the West. An ANO terrorist from the attack was quoted in the 5 January 1986 Los Angeles Times as saying,

As you have violated our land, our honor, our people, we will hit you everywhere, even your children, so that you should feel the sorrow of our children. The tears that we have shed will be washed away by your blood. (106:117)

Though the weapons used in the attacks were not sophisticated, the message revealed may give rise to the organization opting for the use of greater implements of destruction especially as U.S. export controls further relax in the future.

The third attack discussed is one that took twenty-two lives on 6 September 1986 in an Istanbul, Turkey synagogue. The ANO, the only Palestinian terrorist group that has never refrained from attacking holy sites, sprayed the synagogue with WZ 63 submachine gun fire and grenades for three to five minutes. Later, Turkish officials also found seven unexploded Soviet-made hand grenades and over one-hundred spent machine gun cartridges inside the synagogue (93:224).

For the ANO, the attack was considered successful. The terrorists that carried out the act not only committed cold-blooded, stupefyingly cruel murders, the trademark of the ANO, but also they killed themselves (blew themselves up with the grenades) leaving almost no clues as to their identities. In fact, hinting towards higher technology desires, intelligence sources believe the suicide grenades used by the terrorists were "specially rigged with short fuses for immediate detonation" (98:18).

The fourth and final of the most revealing attacks occurred on 11 July 1988 on The City of Poros, a Greek cruise ship. In that attack, nine people were killed and ninety-eight others were wounded. Three ANO terrorists on board the ship opened fire with no notice with "automatic

weapons" and hurled hand grenades as well. In the confusion, the gunmen then escaped in a waiting speed boat.

Samir Muhammad Khadar, Abu Nidal's "most notorious terrorist organizer," is believed responsible for the attack (148:1). After Khadar's involvement in the attack was known, Swedish officials (Khadar had an apartment in Stockholm) then discovered a hidden weapons cache maintained by Khadar. Four AK-47 assault rifles, two automatic pistols with silencers and East European-made grenades were found. Those weapons and explosives were found to be "identical" to those used on board The City of Poros (5:A11).

Rocket Attacks. Surface-to-air rocket attacks, though not used extensively by the ANO, impart that the group does have access to these higher technology weapons and is not apprehensive to use them. There have been only three rocket attacks levied by the ANO, two in April 1985 and one in August 1986. In each of the attacks no one was killed and only three people were injured. The reason no one was killed, apparently, was that the perpetrators were inexperienced in using those weapons. However, because of the boldness of the 1985 attacks, they did make second page news in the New York Times (67:A2). Thus, the importance of terrorists using such weapons does indeed increase their media exposure.

On 3 April 1985, one Soviet-built RPG rocket was fired at the Jordanian embassy in Rome. The next day, two RPG rockets were fired from behind a bush at a Jordanian Alia airplane as the aircraft was about to take off, with seventy-five passengers and crew on board. (93:265; 67:A2). The rocket, which fortunately did not explode, hit the

aircraft leaving a gaping hole in the fuselage (145:7). The last rocket attack occurred on 3 August 1986 against a British air base in Akrotiri, Cyprus (in response to the British assisting the U.S. in the April 1986 Libya raid). Three civilians were injured as the terrorists used "an 80 millimeter mortar gun and Soviet-built Katyusha rockets" to hit their targets of the base infrastructure.

TABLE 5 compiles all of the weapons and technologies the ANO has been known to use or possess as a result of the investigation of this chapter.

TABLE 5
WEAPONS AND TECHNOLOGIES IN THE ANO INVENTORY

<u>Weapon (by category)</u>	<u>Manufacturing Country</u>	<u>Tactic Used</u>
<u>Assault Weapons</u>		
WZ 63 Submachine Guns	Poland	Hijackings, Assassinations, Random shootings
AK 47 Assault Rifle	USSR	Random shootings
<u>Hand Guns</u>		
Revolvers	Spain	Random shootings
7.65mm Automatic Pistols	Czechoslovakia	Random shootings
<u>Explosives and Accompanying Technologies</u>		
Hand Grenades	E. European, USSR	Hijackings, Random shootings
Semtex	Czechoslovakia	Midair Explosions
Detonators, Fuses	USSR	Random shootings
<u>Rockets</u>		
RPG Rockets	USSR	Rocket attacks
Katyusha Rockets	USSR	Rocket attacks

Thus far in this unclassified analysis, it is apparent that no U.S. technology is in the ANO inventory. In fact, the Spanish revolvers (low-tech) are the only Western source weapons found to exist in the ANO. The U.S. export control system, on the surface, appears to be preventing at least one notorious terrorist organization from obtaining and using U.S. technologies against the West.

However, two fundamental truths must be remembered before arriving at any satisfying conclusions. First, in many instances ANO terrorists escaped after the attacks and the weapons used were not identified. Second, and most important, as U.S. export controls start to relax, U.S. technologies will ultimately export to all of the countries listed on TABLE 5. Therefore, before one can assume that the ANO does not possess U.S. or Western technology, the channels through which the ANO receives weapons and technologies must be analyzed. Appropriately then, the chapter now focuses on the ANO organizational structure, connecting how technology transfers to the organization via four of the five channels of terrorist technology transfer as discussed in Chapter Three, looking at the Western weapons the ANO may potentially possess.

The Structure of the Abu Nidal Organization

The link between the group's organizational structure and four of the five channels of technology transfer to terrorists from chapter three is an essential part of this analysis. In the research, no link could be drawn to the fifth channel of transfer, involuntary government sources. The channel connection will demonstrate that the structure of the organization was actually built with emphasis placed on obtaining as

much weaponry, technology, logistical assistance and monetary aid as it possibly could.

The ANO organizational structure is actually quite similar to Fatah's, headed by Abu Nidal's archenemy, Yasser Arafat. Abu Nidal himself directs and controls the organization with the assistance of three separate bodies, the Politburo, the Central Committee, and the Revolutionary Council.

The Politburo, created in 1985, consists of ten Palestinians that supervise daily operations and ensure that Abu Nidal's policies are carried out (147:5). Reporting directly to the Politburo members are six functional departments, and a separate military wing, which is responsible for recruiting, training, and carrying out terrorist acts. The departments, as shown later in the chapter, are the direct connection to the channels of transfer. The six departments are separated by functional areas, and are titled the Organization, Finance and Economic, Information, Political, Lebanon Affairs, and Administration Departments (147:5-6). The military wing, al-Asifa (the Storm), is where the actual terrorist attacks originate.

The second administrative body of the ANO, and the one considered as "the principal decision-making organ," is the Central Committee (147:4). The members of the Central Committee are either elected by the ANO general membership or are appointed by the ten-member Politburo. The importance of this body is that it selects the functional department leaders, assigning responsibilities to each. Therefore, the more radical the Central Committee, the more radical will be the functional department heads.

The third and final principal governing body of the ANO is the Revolutionary Council. As an advisory group of approximately forty members, this organ of the ANO "provides ideological guidance, indoctrination, and discipline" (147:4). The Revolutionary Council places a heavy emphasis on loyalty and obedience and will therefore, mercilessly kill any and all defectors who have been known to have contacts with the enemy.

The Link Between Channels of Transfer and Functional Departments.

Recalling four of the five channels of technology transfer to terrorists as voluntary supplier states, other terrorists, arms merchants, and the criminal underworld, the six functional departments within the ANO appear to be organized to maximize the benefits of those four channels. In fact, this section will elaborate on the potential danger of the ANO to use more sophisticated weaponry.

If Abu Nidal were to be supplied with weapons of mass destruction [conventional and unconventional], there is no question that this tightly disciplined, well-organized mercenary/terrorist organization would be capable of delivering the weapons on target. (73:45)

To better visualize how the ANO searches for those higher technologies, each channel will be reviewed with respect to which functional department drives the acquisition of technology under that channel tying in any connection to loopholes in the U.S. export control system.

State-Support. "If any established group should be expected to innovate and escalate its violence, it is [the] ANO" (73:45). There appears to be no better way to receive the implements with which to escalate violence than through state-sponsorship. Throughout the ANO's seventeen year existence, it has received state-

sponsorship from three countries--Iraq, Syria, and Libya. The functional department that ties in nicely with the intricacies of state-support is the Organization Department. This department not only "handles all relations with foreign governments, unions, and other mass organizations," but also it coordinates ANO activities with operational factions abroad through six regional committees in Europe and in the Middle East (147:5).

As already seen in the tactics section, Iraq, the ANO's sponsor in the group's earlier years (1973-1983), provided Abu Nidal and his men with caches of weapons (WZ 63s) and other support. Because the ANO's views, transmitted through the Organization Department, found favor with the Iraqi regime, a close relationship was developed proving essential to the powerful development of the ANO. With Iraqi President Saddam Hussein's quest to become the "sword of the Arabs" and Abu Nidal calling himself "the answer to all Arab suffering and misfortunes," the door of opportunity for a relationship in the future opens wider (44:36; 93:4). This is especially true since Iraq continues to develop its arsenal and also continues its hatred toward Israel (as Abu Nidal does). Iraq, in fact, did not expel Abu Nidal from the country in 1983. "Sabri al-Banna left Iraq without any hard feelings" (93:122). Unfortunately, Abu Nidal's brutality is second only to Saddam Hussein's.

As the U.S. export control system and CoCom loosen their grips on controlling exports, the Organization Department, through its regional committees may obtain for the ANO both dual-use and munitions Western technologies. For example, should Iraq sponsor the ANO again (though without a doubt, publicly denying it), it could provide the terrorist

organization with surface-to-air missiles it built due to the transferred dual-use electronics technology used for missile guidance systems it received from France (44:40-44).

Iraq is also known to possess such munitions technology as the U.S.-procured, French-built Roland surface-to-air missile, and multiple rocket launchers from Egypt (44:36). There is no question that Iraq, which "pursues and pays [exorbitant prices] for sensitive Western technology" (both munitions and dual-use), would supply the ANO with at least some of those new technologies if it sponsored the organization again (44:45).

From 1983 until 1987, the ANO positioned its headquarters in Syria. Once again, through the Organization Department ties, Damascus provided the ANO with crucial logistics support and weaponry. Though not supplying an abundance of weapons, Syria did assist the ANO with training in the notorious Bekaa Valley, forged travel documents, provided monetary assistance and safehavens, and also essential intelligence reports. The weapons most notably supplied to the ANO have been rather unsophisticated but timely in their delivery. For instance, as two key Fatah leaders defected from Yasser Arafat in 1983 and sided with Abu Nidal, Syria provided Nidal's new men with four truckloads of supplies. "Each truck carried fifteen tons of weapons and explosives" (93:163).

The potential Western weapons the ANO could receive from Syria, if it sponsored the ANO again, would be, recalling from TABLE 1, Steyr SSG sniper rifles from Austria, the same Roland missiles Iraq could provide from France, and MILAN missiles from West Germany.

Though not officially aligning with its third and current sponsor, Libya, until 1987, a mutual relationship can be dated back as far as 1985 (the Rome and Vienna attacks are proof). In fact, "according to Libyan press reports, Abu Nidal met with Colonel Gadhafi in Libya at least twice in 1985" (80:339). Libya provides the ANO with "safehaven, finances, weapons, false travel documents [extensively used in the Rome and Vienna massacres as well in The City of Poros attack], and training facilities" as the country uses ANO terrorism as an instrument of its own foreign policy (147:9; 148:1).

The Pentagon, in fact, feels that "Gadhafi maintains thirty-four training bases for terrorists. Abu Nidal is thought to use either a complex of camps at the Sebha oasis or at the Mahad camp (close to Tripoli)" (108:27). There is a distinct possibility that the camps Abu Nidal's organization have used in the past (and currently) have allowed the group to use and obtain U.S. and Western technology, such as "night-vision scopes, and low-light television cameras," as well as "C-4 explosives made to Pentagon specifications" as a result of Edwin Wilson's patronage to Gadhafi in the late 1970s and early 1980s (92:132; 100:212).

Quite vividly, the ANO's Organization Department has connected favorably with Libya in transferring technologies. Because many times Western and "U.S. arms disappear into what is called the 'gray' market," weapons go to a legitimate purchaser and then disappear to be resold to a nation "that is banned from receiving U.S. [and Western] weapons" (100:210). This is an example of where the Organization Department then

has the opportunity to clamp down on those weapons. With export controls relaxed, the Organization Department's job becomes much easier.

Libya, is still considered the sponsor of the ANO by most experts, and has known Western weapons in its arsenal (from TABLE 1). The weapons include Austrian Glock plastic pistols for which "Abu Nidal is engaged in a major effort to arm his organization with," French surface-to-air missiles and anti-tank guided missiles, Italian missile corvettes, Swedish RB-70 anti-aircraft missiles, and U.S. TOW missiles. Therefore, Libya has the most lethal potential of any sponsoring nation to provide high-tech technologies to the ANO (115; 93:234). In some instances, those weapons were obtained legally by Libya, and in others, the Organization Department "picked up the slack."

Because the ANO trademarks include small compartmentalized hit teams and "rapid and well-planned getaways,...prevention of attacks [against the perpetrators] or the subsequent capture of the terrorists [has been] extremely difficult" (94:64). Therefore, the use of shoulder-fire, surface-to-air missiles or even the Advanced Combat Rifle would be quite beneficial to ANO objectives. Thus, the ANO looks to its sponsors, through its Organization Department, as the U.S. and Western export control systems weaken.

Other Terrorist Groups. U.S. and Western leaders must not disregard the fact that the support international terrorist organizations, like the ANO, receive from other terrorist groups around Europe, Asia and the Middle East will only intensify as controls on exports are lessened. Because the ANO limits its membership to Palestinians and does not recruit foreigners, to maintain secrecy, its

links to other terrorist groups are indirect (i.e., no direct meetings between leaders). Although, Abu Nidal has learned to appreciate the "profits" and the importance of international contacts with sympathetic movements and organizations (93:114). Therefore, through the ANO's Lebanon Affairs and Information Departments, those contacts are strengthened.

The Lebanon Affairs Department, which handles ANO activities in Lebanon as well as establishes and maintains relations with various organizations and movements in Lebanon, is a potential cornerstone for ANO connections to Iran. "It is...possible that there have been links between the radical Iranian Shi'ite organization, acting under...Hizbollah, and Abu Nidal's men grouped in the Lebanese Bekaa Valley" (93:127). In fact, few who have examined the evidence of the Istanbul Massacre believe that any single terrorist group such as the ANO could have carried out the attack (98:16). There is strong evidence that Iranian terrorists also cooperated in the carnage. Through the Lebanon Affairs Department, "the Fatah-Revolutionary Council and Hizbollah have recently been cooperating...and carrying out contracts for each other in their respective zones of influence" (111:1060).

The ANO has other terrorist contacts as well to assist in the transfer of Western technologies, including the PFLP-GC. Headed by Ahmed Jibril, who has also "been courting Iran and its terrorists, the Hizbollah, for some time," the PFLP-GC is a formidable ally for the ANO to align with through the Information Department. Because its main responsibilities include planning and implementing ANO terror

operations, and handling security and intelligence functions, the ANO's Information Department appears to connect with the PFLP-GC in the transfer of technology.

The PFLP-GC receives high-tech Soviet weaponry such as SA-7 anti-aircraft missiles and motorized hang gliders from its sponsors Syria and Libya--the past and present sponsor of the ANO. Therefore, the ANO's Information Department has the opportunity to receive the same Western weapons and technologies as already mentioned from Libya and Syria.

In 1988, in connection with the Pan Am 103 bombing, before talk of relaxing export controls, the PFLP-GC freely moved about Western Europe, Czechoslovakia, Yugoslavia, Bulgaria and Beirut smuggling their weapons. For some of those countries, the U.S. proposes relaxing export controls. If the terror organizations can move freely, obtaining and transporting Western weapons when stringent controls existed, the concerns about terrorist cooperating amongst each other with much less restrictive controls are quite valid. Therefore, the probability of the PFLP-GC, a higher-tech terror organization developing air and naval infiltration capabilities, providing Western higher technologies to the ANO with the crumbling of the U.S. and Western export control systems, is rising astronomically higher (145:26).

Arms Merchants and the Criminal Underworld. Operating through the secretive, and mostly criminal activities of arms merchants, the ANO's Finance and Economic Department links Western technologies to the organization through "business deals." This ANO functional department generally does not interact with actual terrorist operatives. It essentially manages the income and "investments" from the ANO

commercial activities, such as front companies (147:5). To avoid embarrassment and possible criminal penalties, the Finance and Economic Department, through these ANO "businessmen," ensure that other businessmen and governments are not aware that the front companies are actually controlled by the ANO. Most of the money-making ANO companies are import-export firms dealing in consumer products and even travel agencies, where profits are funneled back to the terrorists, for one reason of improving armaments. One ANO company in particular deals heavily in the arms brokering business--SAS Foreign Trade and Investment Company.

SAS, with its headquarters in Warsaw, Poland, provides a steady source of East and West weapons into the organization. The company obtains most of its weapons through independent arms merchants and diverters. According to the former principal anti-terrorism advisor to the director of the CIA, Mr. Charles Allen, who now is the CIA's National Intelligence Officer for Worldwide Functional Warning, the problem of arms smuggling and diversion is "very serious" because "export controls of individual [Western] states have been very weak" (3). As export controls continue to weaken, the problem of arms and technology diversion will not get any better, as the ANO moves freely through Eastern Europe establishing new fronts.

An example from 1986 cites how SAS, through arms merchants and diverters illegally obtained some sophisticated British weaponry. By illegally designating an African country on the shipment's end user certificate, the company obtained one hundred and fifteen Enfield antiriot weapons as the shipment diverted to an East German front

company. Weapons caches are critical to the ANO and they will continue to flourish as export controls continue to diminish.

Because the "State Department calls Iraq's human-rights record 'abysmal' and says the country continues to harbor several of the world's most notorious terrorists," possibly including Abu Nidal, arms merchants working for Saddam Hussein could indeed also advance some weaponry or technology to the ANO (44:39). Some dual-use technology from Western countries is already known to exist in Iraq according to the International Institute of Strategic Studies, the Stockholm International Peace Research Institute and the Wisconsin Project on Nuclear Arms Control (44:37). Some of the technologies that are resultantly being embodied in Iraqi produced weapons include, computer-controlled machinery from Britain, missile navigation systems from France, nuclear technology from Italy, computers and also McDonnell Douglas-Hughes helicopters from the U.S. (44:36,40).

The arms merchant responsible for such transactions for Iraq is Sarkis Soghanalian, a Miamian who is native to Lebanon. Soghanalian has actually even worked with such prominent Americans as former president Richard Nixon and former Attorney General John Mitchell (2:40). The possibility for Soghanalian to import U.S. relaxed exports of high technology and then supply companies like ANO's SAS with the goods does not appear to be a tall order. This is especially true since "the ANO has [already] established infrastructure in the U.S." that could assist in attacks in America or in smuggling weapons and technologies (73:45). The names of former CIA agents Edwin Wilson and Frank Terpil also resurface to illustrate that an American connection has existed in the

past, with stringent export controls, and may or will certainly exist in the future with lesser controls.

TABLE 6 is a compilation of the various potential Western weapons that the ANO may realistically use in the future as a direct result of dual-use and munitions technology transfer. The capabilities of many of the weapons listed is staggering when considering the brutality of an organization like the ANO. By using advanced weaponry, the ANO also "conserves its expertise" by not allowing its terrorists to commit their acts from close range avoiding retaliation (36).

TABLE 6

POTENTIAL HIGH-TECH WESTERN WEAPONS THE ANO MAY USE

<u>Weapon</u>	<u>How Obtained</u>	<u>Channel of Transfer</u>
Surface-to-air missiles	Iraq from France (dual-use application)	State-support
Multiple rocket launchers	Iraq from Egypt	State-support
Surface-to-air missiles	Syria and Libya from France	State-support
Steyr SSG sniper rifles	Syria from Austria PFLP-GC from Syria	State-support Other terrorists
MILAN missile	Syria from W. Germany PFLP-GC from Syria	State-support Other terrorists
C-4 explosives	Libya from U.S. PFLP-GC from Libya	State-support Other terrorists
Glock pistols	Libya from Austria PFLP-GC from Libya	State-support Other terrorists
Anti-tank guided missiles	Libya from France PFLP-GC from Libya	State-support Other terrorists
Missile corvettes	Libya from Italy PFLP-GC from Libya	State-support Other terrorists
RB-70 Anti-aircraft missile	Libya from Sweden PFLP-GC from Libya	State-support Other terrorists
TOW missiles	Libya from U.S. PFLP-GC from Libya	State-support Other terrorists
Enfield antiriot weapons	SAS front company from Britain	Arms merchants/ criminal
Surface-to-air missiles (embodied technology)	Iraq from various W. European countries (dual-use transfers)	Arms merchants/ criminal

Though in the past, terrorists have been predisposed to search for "softer targets," with the availability of advanced Western weapons soon

to reach unprecedented heights as export controls relax, terrorists may be capable of attacking "hardened" targets with sophisticated, high technology weaponry. In the words of CIA terrorist expert Mr. Charles Allen, "one would think that as we approach the twenty-first century, they [terrorists like Abu Nidal] will look for advanced weaponry [to use]" (3).

The Current Status of the Abu Nidal Organization

According to various press reports, the ANO and its leader, Abu Nidal, are experiencing difficult times. Abu Nidal is reportedly in very poor health and has also murdered some of his top aides because of disloyalty to the group. The murdered advisors were with the organization since its inception. Those killings appear to be the result of a potential rift in the organization as Nidal attempted to swerve from some original organizational goals to become more of a "terrorist for hire" in efforts to raise more money and to establish a stronger power base.

"The master terrorist's" physical condition has varied. Some reports say he is dead, some state he is terminally ill with cancer or suffering from heart disease, and others claim he is under house arrest in Libya (14:69; 23:242). The recent activities in Eastern Europe have actually halted some of the ANO's logistical aid from countries such as East Germany and Poland. In fact, the Warsaw-based front company SAS was recently shut down by Polish authorities because of alleged links to terrorist activities (23:242).

Intelligence officials have also reported a further rift in the organization as recently as 13 May 1990 (105:12). "The latest breakdown

followed an attempt in Algeria to kill Abdulrahman Issa, one of the group's senior commanders" who is leading a faction opposing Abu Nidal (105:12). The most recent split is considered to be a serious "breach" in the ANO by Tunisian intelligence official.

However, Israeli and Western intelligence agencies are reluctant and hesitant to not consider Abu Nidal a threat. In fact, "they consider he poses a serious threat, particularly to the current Middle East peace initiative" (23:242). Because accurate data on Abu Nidal and his organization are elusive and difficult to separate from "wishful thinking" and the mythology that surrounds the ANO, the threat cannot be discarded. All throughout the 1980s, Abu Nidal was considered dead or terminally ill, only to resurface launching a horde of terrorist attacks. With the recent release from Libyan leader Mohammad Gadhafi's house arrest, not only does this analysis illustrate that the ANO leader is alive and well, but also that there appears to be the "start of a new wave of support by Gadhafi for international terrorist operations" (80:1).

The demise of the notorious Abu Nidal and his fierce brand of terrorism is only wishful thinking in the minds of Western leaders. In fact, "Western intelligence sources believe that this hard core of seasoned terrorists will...remain intact, their expertise up to hire to any government or organization that may need them" (23:243). The belief that ANO terrorism tentacles are actually spreading, with less members, is alive. "Alliances are said to be forming in Lebanon between followers of the Fatah-Revolutionary Council and members of the pro-Iranian Shi'ite Hizbollah" (14:69). Because smaller groups are hard to

find, the time to breath a sigh of relief concerning the potential for ANO attacks is not in the near future.

Chapter Summary

Though it appears, through this analysis, that the ANO does not in fact use advanced Western weapons (or even have them in its inventory), there is no room for the West to drop its guard. As export controls weaken, the potential for the ANO to obtain and use Western weaponry increases dramatically. In most cases, advanced Western weapons already exist in the ANO sponsors' inventories. Therefore, more weapons and technologies can be expected to arrive with lesser U.S. and Western export controls. Not conducting a terrorist attack against the West in over two years, the time is ripe for the ANO to hold the West hostage with its own high-tech conventional weapons. "The lessons drawn from studying Abu Nidal and his world are not heartening ones. His brand of terrorism is likely to remain a permanent feature of the Middle East political landscape" (97:315).

V. Findings and Recommendations

Chapter Overview

This thesis studied the fundamental nature of international terrorism and its conventional weapons, as well as the intricacies of the U.S. export control system. In this final chapter, as a result of the discoveries in chapters three and four, the findings and recommendations of the research are presented. Once again, remembering that only unclassified sources were used, this research effort is not intended to arrive at any bottom-line conclusions in this chapter. Rather, it intends to offer the reader a fresh look at a topic not researched in any great detail as of yet, hoping it will spur additional research in this potentially explosive topic area.

Findings

A relationship clearly exists in the kinds of conventional weapons terrorists obtain, either directly or indirectly, as a result of deficiencies in the legalities of the U.S. and Western export control systems. In recalling the five investigative questions from chapter one that essentially guided this research, there is no doubt that terrorists' arsenals have the ability to improve drastically in the future. One of the causes is as a result of inconsistent Western export laws as well as terror organization connections to Third World countries through the five channels of terrorist technology transfer.

From the evidence gathered, through a multitude of sources, ostensibly the U.S. export control system does in fact have the language it needs in the laws that govern it, to prevent the transfer of U.S.

technology to terrorist sponsoring countries and to terrorist organizations themselves. Both the EAA and the AECA have recently been amended, as a result of the Antiterrorism and Arms Export Amendments Act of 1989, with emphasis on stopping the transfer of U.S. high technologies and weapons to terrorist sponsoring countries. That represents an encouraging and positive step in suppressing terrorism.

In this unclassified investigation, no high technology U.S. weaponry (only Soviet and East European) was discovered in any terrorist attacks analyzed--including those in the attack tactics used by the Abu Nidal Organization. This represents a reinforcing signal to U.S. leaders that the export control system is in fact working to prevent the flow of product and process technologies to terrorist organizations and terrorist sponsoring countries.

However, that signal may be a false dawn. The research also discovered that there are more than a handful of high technology U.S. and Western weapons in countries that sponsor terrorism--as a result of munitions and dual-use technology transfers, either legally or illegally. This quandary is compounded by the fact that terrorist groups like the Abu Nidal Organization and the Popular Front for the Liberation of Palestine-General Command have used sophisticated timing devices and expressed strong desires to "move technology up." U.S. Government and industry leaders must understand the importance of controlling technology, with the current relaxation of export controls, due to the ramifications technology transfer has on international terrorists ability to obtain U.S. and Western weapons and dual-use technologies.

The illegal transfer of arms and technologies appears to be the dominant method by which terrorists obtain U.S. and Western technology. Though unfortunate that illegal means are used prevalently, those types of technology transfers must be addressed and a concentrated focus in U.S. policy must be placed on stopping them in the future.

A global network of aggressive, profit-motivated private arms suppliers make weapons much easier to obtain for terrorist groups. The technology and know-how are available to terrorists and, as shown in this thesis, certain groups do have access to the technologies. As discovered in this thesis, much of that illegal transfer comes from Western private arms suppliers and diverters. The research found that these terrorist suppliers do not adhere to the law.

Essentially, loopholes are discovered in the U.S. and Western export control systems allowing terrorists to obtain U.S. and Western technologies. Portentously, as the U.S. and other West European nations currently attempt to relax export controls, thus the increase in technology transfer, the effects could unfortunately encourage an increase in terrorist activities. Terrorists and terrorist sponsoring countries that obtain their technologies from private arms suppliers and diverters, who search for "profits at any expense," receive them through measures that are quite contrary to U.S. laws. Moreover, the current laws that do exist to control exports, though sufficient, are not adequately enforced.

Recommendations

Enhancements in Soviet and U.S. relations have unfortunately had a paradoxical effect of increasing the desire for newer missiles and

weaponry from terror countries like Syria, Libya, Iraq, and Iran. Therefore, three recommendations are offered to help counter the technology transfer quagmire. The recommendations include terrorism education for high-level officials that make policy decisions, beefing up efforts to enforce the current laws--not create new laws, and finally, to limit the number of private arms suppliers in the U.S.

Education. Education in terrorism is critical for governmental and industry leaders. The devastating effects that technology transfer can impart with respect to terrorists obtaining U.S. and Western technologies, must be passed on to those in policy-making and exporting decisions. More emphasis must be placed on understanding that international terrorism will not go away and that terrorists do in fact desire high technology Western weapons. They also have the capability to use such weaponry as man-portable surface-to-air missiles.

U.S. leaders, as indicated by the results of the recent Presidential Commission charged with investigating the Pan Am Flight 103 disaster, react to terrorism by attacking symptoms of the threat (i.e., military retaliation). That type of reactionary attitude plays right into the terrorists script--more attention and fear. U.S. leaders need to ask themselves if revenge is in order or in fact should the halting of U.S. and Western weapons and technologies that terrorists crave and sometimes already possess be a means to combating terrorism? The U.S. must refocus on a new higher technological terrorist threat for the future. One of the best ways to do that is to call for an awareness throughout U.S. leadership to understand that the U.S.'s export control system does not effectively address terrorism.

Enforce Current Laws. As evidenced by the significance of illegal transfers, much more emphasis must be placed on enforcing the current export control laws in attempting to stop terrorists from obtaining U.S. technologies. With a full understanding of the potential political and economic ramifications of more stringent export controls, U.S. exporters need not stop exporting. In fact, U.S. exporters should not suffer from laws that are not enforced adequately. U.S. policymakers need to expeditiously take a concerted look at which technologies actually are transferring to Eastern Bloc countries, because some of the countries supported terrorism in the recent past. Thus, policymakers would then reemphasize controlling technology.

Control does not necessarily mean less exports; it infers devoting more time and energies into aggressively thwarting the terrorist acquisition of U.S. and Western technology. In other words, the U.S. should forge ahead on a comprehensive policy, involving DTSA, Commerce and State Departments, to effectively stymie terrorists--not react to them.

Agencies such as DTSA, and the Commerce and State Departments must work together to enforce the U.S. licensing system by placing a larger emphasis on preventing such atrocities as terrorist attacks. These organizations must work smarter (as a result of terrorist education) and not necessarily harder or longer. More frequent post-shipment checks are also in order as well as better communication between the three agencies.

The U.S. should not wait for another Lockerbie incident to consider international terrorism important once again. Resolutions to stop

terrorists, like those in the past, must not come under pressure as a result of brazen terrorist murders. More effective controls are needed by enforcing the current laws.

Limit Private Arms Suppliers. A direct result of enforcing the law more effectively will consequently reduce the number of unethical private small arms suppliers by essentially forcing them out of business. Those that engage in selling U.S. high technology arms and technologies to terrorists and terrorist sponsoring countries will, in essence, fall like dominos as the laws are properly enforced. As the number of suppliers dwindles, those that remain must behave responsibly and ethically. Each new sale must be weighed appropriately to discern its potential impact on international terrorism. If necessary, some self-restraint may be necessary when huge profits are available from terrorist sponsoring organizations and countries.

Suggestions for Further Study

This thesis is severely limited because it is unclassified. Though the first suggestion for further study is understandably discouraged by the Air Force Institute of Technology, a similar classified study will undoubtedly chip away even larger chunks of the international technology transfer/international terrorism iceberg, disclosing additional sources and discoveries.

A second related thesis would involve doing case analyses on three or four international terrorist organizations to look for additional Western technology transfer connections or specifically U.S. connections.

An additional thesis topic could involve the study of any one of the five channels of technology transfer to terrorists in excruciating detail. This topic will allow the researcher to discern what the transfer sources are from within. The three channels that probably harbor the most information are voluntary supplier states, cooperation among other terrorist groups, and arms merchants.

Though the communist world appears to be declining, which is a very encouraging sign to the West, the evidence that shows a decline in terrorism is nonexistent. Terrorism still remains a menace to the U.S. and the threat remains very strong today. Terrorists, whose weapons likely will reflect an increased degree of sophistication, including U.S. and Western weapons, may in fact use those technologies against Western targets, including the U.S., in essence holding the West and the U.S. hostage by their own implements of destruction.

Appendix A: Interview List

Mr. Charles Allen National Intelligence Officer for
Worldwide Functional Warning.
Central Intelligence Agency, McLean VA

Why Important to Interview: Before his promotion, Mr. Allen was the former principal advisor to the Director of the CIA on all antiterrorism matters for the agency. His over thirty years of CIA experience, much of it working terrorism issues, was invaluable to the research.

Defense Intelligence Agency Analysts
Defense Intelligence Analysts.
Defense Intelligence Agency (at
the Pentagon), Washington D.C.

Why Important to Interview: Both analysts (names were withheld for security reasons) were specialists on Abu Nidal and Middle Eastern terrorists. Because there is not a lot written on Abu Nidal, firsthand information was critical to the thesis.

Lieutenant Colonel Robert L. Freeman, U.S. Army
Deputy Director for Technology Security
Operations. Defense Technology Security
Administration, Arlington VA

Why Important to Interview: As second in-charge of a main directorate of DTSA, Lt Col Freeman shed new light on the implications of technology transferring to terrorists in light of the changing world. He also was a main source of diverter information.

Mr. Michael Maloof Director for Technology Security
Operations. Defense Technology Security
Administration, Arlington VA

Why Important to Interview: As head of the directorate that works with the intelligence community and enforcement agencies in monitoring exports for attempted diversions of key technologies, Mr. Maloof's insights were key to understanding the complexities of the U.S. Government export control system. He especially was instrumental with regard to realizing the importance of enforcing export laws due to illegal transfers.

Ms. Janet Michel

Deputy Director for Munitions Control.
Defense Technology Security
Administration, Arlington VA

Why Important to Interview: Because the thesis attempted to investigate the U.S. weapons connection to terrorists, Ms. Michel's expertise in the Munitions Directorate helped shape the thesis with respect to the idea of terrorists potentially obtaining weapons due to the lack of a strong working relationship between the State and Commerce Departments and the DOD.

Mr. Peter Probst

Assistant for Concept Development. Office
of the Assistant Secretary of Defense for
Special Operations and Low Intensity
Conflict, Washington D.C.

Why Important to Interview: Working in the Combatting Terrorism Directorate, Mr. Probst is a historian on terrorism and has published terrorism literature. He specializes in the Abu Nidal Organization and provided firsthand unclassified information that was not available elsewhere. Plus, some of the written material he supplied was crucial to the research.

Mr. James Stofferahn

Munitions Control Directorate. Defense
Technology Security Administration,
Arlington VA

Why Important to Interview: As a former State Department worker, Mr. Stofferahn has essential insights into the bureaucracy and how it could work more efficiently if exports were properly controlled.

Appendix B: ANO Interview Questions

1. Why is the Abu Nidal Organization (ANO) regarded as one of the most brutal of all terrorists organizations?
2. Is the ANO capable (i.e., willing and possessing the needed equipment) of using weapons, that when fired, are capable of finding intended targets without human intervention? How?
3. Where does ANO receive its weapons? Does the organization also receive U.S. weapons regularly? What kinds?
4. Who is the ANO's current sponsor, if any?
5. Does the ANO receive any weapons from Newly Industrialized Countries (NIC) such as Brazil, who has received U.S. aid in the past?
6. Some terrorist scholars, like author Yossi Melman, consider Abu Nidal to be a "master terrorist." Is Abu Nidal a master terrorist, with high technology at his disposal, or merely a "hired gun" at the disposal of many terrorist nations? Why?
7. With our world becoming more of a smaller "global village," and the U.S. consistently selling arms and technology abroad, can the U.S. effectively prevent international terrorists from obtaining critical U.S. weapons and technologies?

Appendix C: Technology Transfer Interview Questions

1. Will international terrorists use sophisticated conventional weaponry in the near future due to their targets becoming more and more hardened?
2. Will the U.S. Export Control System prevent terrorists from obtaining high-tech U.S. conventional weapons and technologies?
3. With the recent developments in Eastern Europe and in the Soviet Union, will terrorist incidents against Western targets decline or increase? Will the carnage increase whether attacks do or not?
4. Does high technology really have an influence on the types of weapons terrorists use?
5. Is it becoming apparent that Palestinian students, being educated in the U.S. with scientific and technical degrees, are taking their American education and using it against the U.S. as a member of a terrorist organization? If so, what should the U.S. attempt to do to stop this type of technology transfer from occurring?
6. Is there a technology transfer issue at hand with respect to international terrorists receiving high-tech U.S. conventional weapons?
7. Now that terrorist attacks have declined in the last year, is the American public being lulled into a false sense of security (especially when looking at the events in Eastern Europe and the USSR) that terrorism is not a concern anymore? If so, what can Washington do to keep awareness up?
8. What benefit would international terrorists derive from using U.S. sophisticated conventional weapons in attacks? What repercussions would they face?

Bibliography

1. Alexander, Yonah. "Terrorism and High Technology Weapons," Perspectives on Terrorism, edited by Lawrence Freedman and Yonah Alexander. Wilmington DE: Scholarly Resources Inc., 1983, 225-240.
2. "All the Ex-President's Men," U.S. News and World Report, 108: 40 (4 June 1990).
3. Allen, Charles, National Intelligence Officer for Worldwide Functional Warning. Personal Interview. Central Intelligence Agency, McLean VA, 21 March 1990.
4. Amouyal, Barbara. "U.S. to Slash Controls on Exports to E. Europe, Protect Some Items," Defense News, 5: 9 (2 April 1990).
5. Anastasi, Paul. "Greece Issues Photos of Suspects in Ship Seige," The New York Times, 87: A11 (13 July 1988).
6. Asa, M. "Forms of State Support to Terrorism and the Possibility of Combatting Terrorism by Retaliating Against Supporting States," On Terrorism and Combatting Terrorism, edited by Ariel Merari. Frederick MD: University Publications of America, Inc., 1985, 119-133.
7. Avery, William P. "Terrorism, Violence, and the International Transfer of Conventional Arms," Behavioral and Quantitative Perspectives on Terrorism. Edited by Yonah Alexander and John M. Gleason. New York: Pergamon Press, 1981, 329-339.
8. Bairstow, Jeffrey. "Wide World of Exports," High Technology, 6: 20-27 (January 1986).
9. Baranson, Jack. Technology and the Multinationals. Lexington MA: Lexington Books, 1978).
10. Barnaby, Frank. The Automated Battlefield. New York: The Free Press, 1986.
11. -----. "How the next war will be fought," Technology Review, 89: 27-36 (October 1986).
12. Benson, Sumner. "How National Security Considerations Affect Technology Transfer," The Journal of Technology Transfer, 13: 34-41 (Fall 1988).
13. Borg, Walter R. and Meredith D. Gall. Educational Research: An Introduction (Second Edition). New York: David McKay Company, Inc., 1971.

14. Brand, David. "Finis for the Master Terrorist?," Time, 134: 69 (11 December 1989).
15. Brandt, Craig M., Editor. Military Assistance and Foreign Policy. Wright-Patterson Air Force Base OH: Air Force Institute of Technology, 1990.
16. Bremer, L. Paul III. "Countering Terrorism in the 1980s and 1990s," Department of State Bulletin, 89: 61-64 (February 1989).
17. ----- . "Counterterrorism: U.S. Policy and Proposed Legislation," Department of State Bulletin, 88: 44-47 (January 1988).
18. ----- . "High Technology Terrorism," Department of State Bulletin, 88: 65-67 (July 1988).
19. ----- . "Terrorism: Its Evolving Nature," Department of State Bulletin, 89: 74-78 (May 1989).
20. ----- . "Terrorism: Myths and Reality," Department of State Bulletin, 88: 61-63 (May 1988).
21. "Britons seize Iraq-bound bomb parts," Dayton Daily News, 113: 1A, 9A (29 March 1990).
22. Brokaw, Tom. Comments broadcast on The NBC Nightly News, NBC News, 22 March 1990.
23. Bruce, James. "Thorn in the Side of Middle Eastern Peace," Jane's Defence Weekly, 13: 242-243 (10 February 1990).
24. Bryen, Dr. Stephen D. "How Technology Security Supports Security Assistance," The DISAM Journal of International Security Assistance Management, 10: 77-84 (Summer 1988).
25. "Bush considers exports to China," Dayton Daily News, 113: 12A (13 December 1989).
26. Clark, Richard Charles. Technological Terrorism. Old Greenwich CT: The Devin-Adair Company, 1980.
27. Comments broadcast on National Public Radio, WYSO, Yellow Springs OH, 13 June 1990.
28. "Congress Slow to Alter Laws Over Iran Contra Abuses," Congressional Quarterly Weekly Report, 47: 3317-3320 (2 December 1989).
29. Congressional Index 101st Congress 1989-1990, Vol 1. Chicago: Commerce Clearing House, Inc., 1989.
30. Cook, William J. "The Technology of Terror," U.S. News and World Report, 106: 24 (6 March 1989).

31. David, B. "The Capability and Motivation of Terrorist Organizations to use Mass-Destruction Weapons," On Terrorism and Combatting Terrorism. Edited by Ariel Merari. Frederick MD: University Publications of America, Inc, 1985.
32. Deen, Thalif. "Iran--Meeting Its Arms Requirements," Jane's Defence Weekly, 8: 1276 (28 November 1987).
33. "Defacto De-Regulation of the Arms Trade," International Defense Review, 19: 397 (1 April 1986).
34. Defense Institute of Security Assistance Management and the Department of State. United States Munitions List Exports: A Guide for Manufacturers and Exporters. Washington DC: Office of Munitions Control, Department of State, April 1986.
35. Defense Intelligence Analyst #1. Personal Interview. Defense Intelligence Agency (at the Pentagon), Washington DC, 19 March 1990 (Name withheld for security reasons).
36. Defense Intelligence Analyst #2. Personal Interview. Defense Intelligence Agency (at the Pentagon), Washinton DC, 19 March 1990 (Name withheld for security reasons).
37. Defense Systems Management College. Guide for the Management of Multinational Programs. Fort Belvoir VA, 1987.
38. Department of Defense, Office of the Director of Defense Research and Engineering. A Report of the Defense Science Board Task Force on Export of U.S. Technology, An Analysis of Export Control of U.S. Technology--A DOD Perspective. Washington DC: Government Printing Office, 1976.
39. Department of Defense. Critical Technologies Plan. Washington DC: Government Printing Office, March 15, 1989.
40. -----. Defense Technology Security Administration. DOD Directive 5105.51. Washington DC: Government Printing Office, 10 May 1985.
41. -----. International Transfers of Technology, Goods, Services, and Munitions. DOD Directive 2040.2. Washington DC: Government Printing Office, 17 January 1984.
42. -----. The Technology Security Program (A Report to the 99th Congress). Washington DC: Government Printing Office, 1986.
43. Dobson, Christopher and Ronald Payne. The Terrorists: Their Weapons, Leaders and Tactics. New York: Facts on File, Inc., 1982.
44. Duffy, Brian et al. "The World's Most Dangerous Man," U.S. News and World Report, 108: 36-51 (4 June 1990).

45. "A dying twitch of terrorists?," U.S. News and World Report, 107: 44 (11 December 1989).
46. Elad, Shlomi and Ariel Merari. The Soviet Bloc and World Terrorism. Tel Aviv: Jaffee Center for Strategic Studies, 1984.
47. Emerson, Ryan Quade, editor. Who's Who in Terrorism-1986 Vol 2. Purcellville VA: The International Intelligence Center, 1986.
48. Emory, William C. Business Research Methods (Third Edition). Homewood IL: Richard D. Irwin, Inc., 1985.
49. Erickson, Lt Col (USAF) Richard J. Legitimate Use of Military Force Against State-Sponsored International Terrorism. Maxwell AFB AL: Air University Press, 1989.
50. "The Export of Conventional Arms," The DISAM Journal of International Security Assistance Management, 9: 71-80 (Spring 1987).
51. Ezell, Edward C. Small Arms Today (Second Edition). Harrisburg PA: Stackpole Books, 1988.
52. Fagin, James A. "The Impact of Technology and Communications Upon International and Transnational Terrorism," International Journal of Comparative and Applied Criminal Justice, 6: 85-98 (Spring 1982).
53. Ferrari, Paul L. et al. U.S. Arms Exports: Policies and Contractors. Cambridge MA: Ballinger Publishing Company, 1988.
54. Frame, J. Davidson. "Political Risk in Technology Transfer," The Journal of Technology Transfer, 10: 1-14 (Spring 1986).
55. Freeman, Robert, Lt Col USA, Deputy Director for Technology Security Operations. Personal Interview. Defense Technology Security Administration, Arlington VA, 20 March 1990.
56. Gad, Z. "International Cooperation Among Terrorist Groups," On Terrorism and Combatting Terrorism. Edited by Ariel Merari. Frederick MD: University Publications of America, Inc., 1985, 135-144.
57. "Gadhafi Wants Bomb, Says He'd Have Nuked New York," Dayton Daily News, 113: 16A (22 April 1990).
58. Gliksmann, Alex. "Trends in Conventional Arms Technology: Revolutions in the Making?," Technology, Security, and Arms Control for the 1990's. Edited by Elizabeth J. Kirk. Washington DC: American Association for the Advancement of Science, 1988.
59. Government Source. Untitled, uncredited review of diverters and their tactics. No date, publisher, or author.

60. Grizzett, Richard F. "Trends in Conventional Arms Transfers to the Third World by Major Suppliers, 1980-1987," DISAM Journal of International Security Assistance Management 10: 114-125 (Summer 1988).
61. Hawkins, Robert G. and Thomas N. Gladwin. "Conflicts in International Transfer of Technology: A U.S. Home Country View," Controlling International Technology Transfer: Issues, Perspectives, and Policy Implications. Edited by Tagi Sagafinejad, Richard W. Moxon and Howard V. Perlmutter. New York: Pergamon Press, 1981.
62. Hyde, James C. and Benjamin F. Schemmer. "US Army Unveils Candidates for New Advanced Combat Rifle," Armed Forces Journal International: 48-52 (May 1989).
63. Jenkins, Brian M. "High Technology Terrorism and Surrogate War: The Impact of New Technology on Low-Level Violence," Contemporary Terrorism. Edited by John D. Elliot and Leslie K. Gibson. Gaithersburg MD: International Association of Chiefs of Police, 1978, 99-116.
64. ----- . "Should Our Arsenal Against Terrorism Include Assassination?," Rand Report P-7303. Santa Monica CA: Rand Corporation, January 1987.
65. ----- . "The Study of Terrorism: Definitional Problems," Behavioral and Quantitative Perspectives on Terrorism. Edited by Yonah Alexander and John M. Gleason. New York: Pergamon Press, 1981, 3-11.
66. ----- . "Will Terrorists Go Nuclear?," The Terrorism Reader (Revised Edition). Edited by Walter Laqueur and Yonah Alexander. New York: NAL Penguin, Inc., 1987.
67. "Jordan Jet in Athens Damaged by Bazooka," The New York Times, 85: A2 (5 April 1986).
68. Kitfield, James. "Putting a Lock on Technology," Military Forum, 5: 45-51 (June 1989).
69. Klare, Michael T. American Arms Supermarket. Austin TX: University of Texas Press, 1984.
70. Koch, Noel. "United States' 'no negotiations' policy may not have helped," Dayton Daily News, 113: 11A (22 March 1990).
71. Kupperman, Robert H. "Countering High Technology Terrorism," Scandinavian Journal of Development Alternatives, 3: 73-83 (September 1984).

72. -----, "Security and Countermeasure Technology: An Assessment," Who's Who in Terrorism-1986. Edited by Ryan Quade Emerson. Purcellville VA: The International Intelligence Center, 1986, 83-91.
73. Kupperman, Robert H. and Jeff Kamen. Final Warning: Averting Disaster in the New Age of Terrorism. New York: Doubleday, 1989.
74. Lang, Gerhard and George D. Heiss. A Practical Guide to Research Methods (Third Edition). Lanham MD: University Press of America, 1984.
75. Laqueur, Walter. The Age of Terrorism. Boston: Little, Brown and Company, 1987.
76. "Latest Worry: Terrorists Using High Technology," U.S. News and World Report, 82: 69 (14 March 1977).
77. Laurance, Edward J. "New Gunrunning," ORBIS, 33: 226-237 (Spring 1989).
78. Leopold, George. "DOD's Critical Technologies List Stresses Computers, Electronics," Defense News, 5: 28 (26 March 1990).
79. Levran, Aharon and Zeev Eytan. The Middle East Military Balance 1987-1988: A Comprehensive Data Base and In-Depth Analysis of Regional Strategic Issues. Jerusalem and Boulder CO: The Jerusalem Post and Westview Press, 1988.
80. "Libya, On Defensive Releases Abu Nidal," Defense and Foreign Affairs Weekly, 1 (21 March 1990).
81. Lief, Louise. "Will Baghdad get the bomb?," U.S. News and World Report, 108: 34 (9 April 1990).
82. Lopez, Virginia C. and Loren Yager. The U.S. Aerospace Industry and the Trend Toward Internationalization. Washington DC: The Aerospace Research Center, March 1988.
83. Louscher, David J. and Michael D. Salomone. Technology Transfer and U.S. Security Assistance. Boulder CO: Westview Press, Inc., 1987.
84. Luchaire, Fabienne. "Subnational Proliferation, Technology Transfers and Terrorism," Global Perspectives on Arms Control. Edited by Adam M. Garfinkle. New York: Praeger Publishers, 1984, 113-132.
85. Madia, William J. "Technology and the European Market of 1992: How and Where Firms Will Compete," Vital Speeches of the Day, 56: 238-241 (1 February 1990).

86. Maloof, Michael, Director for Technology Security Operations. Personal Interview. Defense Technology Security Administration, Arlington VA, 20 March 1990.
87. Manning, Robert A. and Melisa Healy. "New Sellers in Arms Bazaar," U.S. News and World Report, 100: 37-39 (3 February 1986).
88. Marvel, K. Barry. "Foreign Military Sales: Industry in Peril," Contract Management, 29: 8-17+ (December 1989).
89. Matthews, William. "SDI backers see Third World missile threat," Air Force Times, 35: 25 (9 April 1990).
90. ----- . "The world according to the top commanders," Air Force Times, 79: 10-12 (26 February 1990).
91. McCormick, James M. American Foreign Policy and American Values. Itasca IL: F.E. Peacock Publishers, Inc., 1985.
92. McForan, Desmond. The World Held Hostage: The War Waged by International Terrorism. New York: St. Martin's Press. 1986.
93. Melman, Yossi. The Master Terrorist: The True Story of Abu Nidal. New York: Avon Books, 1987.
94. Merrari, Ariel and Shlomi Elad. The International Dimension of Palestinian Terrorism. Boulder CO: Westview Press, 1986.
95. Michel, Janet, Deputy Director for Munitions Control. Personal Interview. Defense Technology Security Administration, Arlington VA, 20 March 1990.
96. Mickolus, Edward F. and et al. International Terrorism in the 1980s: A Chronology of Events, Volume 1, 1980-1983. Ames IA: Iowa State University Press, 1989.
97. Miller, Aaron D. "Portrait of Abu Nidal," The Terrorism Reader (Revised Edition). Edited by Walter Laqueur and Yonah Alexander. New York: NAL Penguin. Inc., 1987, 309-315.
98. Miller, Judith. "The Istanbul Massacre: An Investigation," The New York Times Magazine, 14-47+ (4 January 1987).
99. Miller, Morton S. "Arms Trade in the Developing World, 1976-1986: Reflections on a Decade," The DISAM Journal of International Security Assistance Management, 11: 79-87 (Winter 1988-89).
100. Miller, Reuben. "Supplier Autonomy A L'outrance: Retransfer of Military Arms and Technology to Terrorist Groups," The Dilemma of Third World Defense Industries: Supplier Control or Recipient Autonomy?. Edited by Kwang-il Baek, Ronald D. McLaurin, and Chung-in Moon. Boulder CO: Westview Press, 1989.

101. Morrocco, John D. "U.S. Expects Elimination of Export Licensing Controls within CoCom," Aviation Week and Space Technology, 132: 21 (2 April 1990).
102. National Academy of Science and et al. Balancing The National Interest: U.S. National Security Export Controls and Global Competition. Washington DC: National Academy Press, 1987.
103. ----- . Scientific Communication and National Security. Washington DC: National Academy Press, 1982.
104. "The need for anti-tactical ballistic missiles is growing," Defense Budget Intelligence, 10: 17 (24 April 1989).
105. "New Unraveling Is Seen For Abu Nidal Group," The New York Times, 89: A12-17+ (17 May 1990).
106. Nidal, Abu. "The Palestinian Goal Justifies Terrorism," Opposing Viewpoints-Terrorism. Edited by Bonnie Szumski. Saint Paul MN: Greenhaven Press, 1986, (113-118).
107. Nolan, Jane E. "Ballistic Missiles in the Third World--The limits of Non-Proliferation," Arms Control Today 19: 9-14 (November 1989).
108. Nordland, Rod and Ray Wilkinson. "Inside Terror, Inc.," Newsweek, 57: 25-33 (April 7, 1986).
109. Nordland, Rod and et al. "The Evil Spirit," Newsweek, 57: 23-25 (13 January 1986).
110. Nundell, Mayer. "Abu Nidal," Who's Who in Terrorism-1986 Volume 3. Edited by Ryan Quade Emerson. Purcellville VA: The International Intelligence Center, 1986, 49-51.
111. "Palestinian Army: Arafat's New Power Base," Jane's Defence Weekly International Edition, 11: 1060 (3 June 1989).
112. Pilgrim, M.K. "Financing International Terrorism," International Security Review, 7: 47-68 (Spring 1982).
113. Pirages, Dennis. Global Technopolitics: The International Politics of Technology and Resources. Pacific Grove CA: Brooks/Cole Publishing Company, 1989.
114. President's Commission on Industrial Competitiveness. Global Competition: The New Reality. Washington DC: Government Printing Office, 1985.
115. Probst, Peter, Assistant for Concept Development. Personal Interview. Office of the Assistant Secretary of Defense for Special Operations and Low Intensity Conflict, Washington DC, 19 March 1990.

116. Rawles, James W. "High-Technology Terrorism," Defense Electronics, 22: 74-78 (January 1990).
117. Reed, Fred. "Technology turned to terrorist ends," Air Force Times, 8: 70 (2 October 1989).
118. Reichert, William and Harry Sello. "Whole-Earth Technology," High Technology Business, 9: 14-18, 46 (July-August 1989).
119. Rich, Michael and et al. Multinational Coproduction of Military Aerospace Systems. Contract F496208C0018. Santa Monica CA: Rand Corporation, October 1981.
120. Robinson, Richard D. The International Transfer of Technology: Theory, Issues and Practice. Cambridge MA: Ballinger Publishing Company, 1988.
121. Rubenstein, Richard E. Alchemists of Revolution: Terrorism in The Modern World. New York: Basic Books, Inc., 1987.
122. Salinger, Pierre. Comments broadcast on Primetime Live ABC News, 30 November 1989.
123. Segaller, Stephen. Invisible Armies. Terrorism into The 1990's. San Diego: Harcourt Brace Jovanovich, Publishers, 1987.
124. Schultz, George P. "When We Need to Keep Foreign Aid Flowing," The DISAM Journal of International Security Assistance Management, 9: 44-45 (Spring 1988).
125. Starr, Barbara. "MTCR is 'largely ineffective'," Jane's Defence Weekly, 13: 583 (31 March 1990).
126. ----- "NSC reviews export bar," Jane's Defence Weekly, 13: 45 (13 January 1990).
127. Stoddard, Rob. "Senator Bingaman on 'Critical Technologies'," Defense Electronics, 22: 80-81 (January 1990).
128. Stoehr, Delia E. Technology Transfer in 1984: U.S. Export Control on Dual-Use High Technology. Newport RI: The Naval War College Center for Advanced Research, June 1984 (AD-B089078).
129. Stofferahn, James, Directorate of Munitions Control. Personal Interview. Defense Technology Security Administration, Arlington VA, 20 March 1990.
130. Suro, Roberto. "4 Killed As Bomb Rips T.W.A. Plane On Way To Athens," The New York Times, 85: A1-8+ (3 April 1986).

131. Tentman, Captain Devonnia M. Technology Transfer: A Department of Defense and Air Force Perspective. MS Thesis, AFIT/GLM/LSM/86S-84. School of Systems and Logistics, Air Force Institute of Technology (AU), Wright-Patterson AFB OH, August 1986 (AD-B106813).
132. "Terrorist days are over, Gadhafi tells magazine," Dayton Daily News, 113: 5 (26 October 1989).
133. "Terrorists may increase carnage in '90," The Press of Atlantic City, A-14 (19 December 1989).
134. "Third Try to Close Iran Loophole," Congressional Quarterly Weekly Report, 47: 2730 (14 October 1989).
135. Truby, J. David. How Terrorist Kill: The Complete Terrorist Arsenal. Boulder CO: Paladin Press, 1978.
136. Ulsamer, Edgar. "Moscow's Technology Parasites," Air Force Magazine, 67: 52-56+ (December 1984).
137. U.S. Arms Control and Disarmament Agency. World Military Expenditures and Arms Transfers 1988. Washington DC: Government Printing Office, 1989.
138. U.S. Congress, House of Representatives, Committee on Armed Services. Report of the Technology Transfer Panel. 98th Congress, 1st Session. Washington DC: Government Printing Office, 13 June 1984.
139. U.S. Congress, House of Representatives, Committee on Foreign Affairs. The Export Administration Act of 1979 (As amended through September 30, 1985). 99th Congress, 1st Session. Washington DC: Government Printing Office, 1985.
140. ----- Anti-Terrorism and Arms Export Amendments Act of 1989. Report, 101st Congress, 1st Session. Washington DC: Government Printing Office, 1989.
141. U.S. Congress, House of Representatives, Committee on Foreign Affairs, Subcommittee on Arms Control, International Security and Science. Proposal to Reform the Arms Export Control Act. Hearing, 100th Congress, 1st Session. Washington DC: Government Printing Office, 1987.
142. U.S. Congress, House of Representatives, Committee on Foreign Affairs, Subcommittee of Arms Control, International Security and Science, Subcommittee on International Economic Policy and Trade, Subcommittee on International Operations. Antiterrorism Policy and Arms Export Controls. Hearing and Markup, 100th Congress, 2nd Session, 17 March 1988 and 19 April 1988. Washington DC: Government Printing Office, 1988.

143. U.S. Congress, House of Representatives, Committee on Foreign Affairs, Subcommittee on International Economic Policy and Trade. Fiscal Year 1989 U.S. Export Issues: U.S. Export Promotion Programs. Hearing, 101st Congress, 1st Session. Washington DC: Government Printing Office, 1989.
144. U.S. Congress. Senate, Committee on Armed Services. Report 100-57. 100th Congress, 2nd Session. Washington, DC: Government Printing Office, 1987.
145. U.S. Government. Terrorist Group Profiles. Washington DC: Government Printing Office, 1988.
146. U.S. State Department, Bureau of Public Affairs. "Controlling the Transfer of Strategic Technology," The DISAM Journal of International Security Assistance Management, 8: 70-71 (Summer 1986).
147. U.S. State Department, Office of the Secretary of State, Ambassador-at-Large for Counter-Terrorism. Fact Sheet-Abu Nidal Organization. Washington DC: Government Printing Office, February 1989.
148. U.S. State Department, Office of the Secretary of State, Coordinator for Counter-Terrorism. Fact Sheet-Samir Muhammed Khadar: Abu Nidal's Most Notorious Terrorist Organizer. Washington DC: Government Printing Office, 15 May 1989.
149. Van Cook, Arthur F. "Checks on Technology Transfer: The Defense Stakes are High," Defense Management Journal, 21: 9-15 (First Quarter 1985).
150. "Weapons Charges Detain 4," Dayton Daily News, 113: 5A, 13 January 1990.
151. Whitehead, John C. "Terrorism: The Challenge and the Response," The DISAM Journal of International Security Assistance Management, 9: 59-64 (Spring 1987).
152. Zikmund, William G. Business Research Methods (Second Edition). Chicago: The Dryden Press, 1988.

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13. ABSTRACT (Maximum 200 words) This thesis reveals a disturbing transformation. International terrorists' present unsophisticated arsenals are slowly evolving into high-technology conventional weaponry. Alarming, an increasing portion results from U.S. and Western technology because of technology transfer. With the abating trend of terrorist attacks predicted to continue, the thesis discerns this does not suggest a decline in terrorism. On the contrary, through product and process technology transfers, the number of organizations that possess the technological capabilities to produce advanced Western weapons has skyrocketed in the last decade. Therefore, though attacks continue to decrease, terrorists' carnage will likely increase due to the technologies they acquire. With the global diffusion of technologies, countries are relying less on U.S. markets. This thesis acknowledges it is virtually impossible to restrict U.S. exports to industrial countries without severely restricting American competition. However, "strong fences" must be built around "small areas" to thwart the terrorist acquisition of U.S. and Western technology. This thesis posits to educate U.S. leaders on terrorism, place a stronger emphasis on working export controls, and to limit the number of U.S. and Western private arms suppliers.				
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