

Nuclear threats from terrorist organizations

-Fact or fiction?

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1. Chapter One: Introduction

I wish to declare that if America used chemical or nuclear weapons against us, then we may retort with chemical and nuclear weapons. We have the weapon as deterrent.

Osama Bin Laden, 7th of November 2001

This statement by Osama Bin Laden marks the uncertainty of the world today. At this point, there is no evidence that any terrorist organization has access to nuclear weapons, nor material to make weapons. Yet, with 9/11, it seems fair to assess that terrorist organizations could be seen to be increasingly willing to kill thousands of innocent people in their attacks (Schwartz and Falk, 2003), instead of what was seen as the norm in the past, namely killing in small numbers in order to make a political statement.

This thesis aims to assess the threat of terrorist organizations resorting to nuclear weapons in an attack. Policy makers have in the past played down this threat, while novelists and Hollywood have portrayed the consequences of an attack using nuclear weapons. However, the terrorism picture has changed since the end of the cold war, and as a result it is important to analyze the possible nexus of terrorism and nuclear weapons more thoroughly. President George Bush said in the 2003 U.S National Strategy for Combating Terrorism: “the probability of a terrorist organization using a chemical, biological, radiological or nuclear, or high yield explosives, has increased significantly the last decade” (Bush, 2003).

It was feared by many after the atrocious attacks in New York City and Washington DC, that nuclear weapons would be the next means to achieve terrorist organizations’ ends. Biological and chemical weapons have already been used¹, and it is feared that

¹ An example of biological weapons is the anthrax scare after 9/11 in New York; an example of chemical weapons was the attack by Aum Shinrikyo on the Tokyo subway station using the nerve gas Sarin gas took place on March 20th, 1995, killing twelve people, and injured approximately five thousand. This was the first time a weapon of mass destruction (WMD) was widely publicized, and it has been said that with this attack, a taboo on WMD was broken (Pilat, 2001: 63).

there could be an escalating effect to nuclear weapons, if the threshold on WMD is lowered. Terrorist organizations have already expressed interests in nuclear capabilities, and certainly expressed aims of mass destruction. In the light of this information, it is vital to assess exactly what has prevented attacks in the past.

Why is the threat of a nuclear weapon important? The probability of a nuclear attack taking place is low; however, the consequence of an attack is high if it occurs. The media has in the past couple of years started to focus on this threat, and often reports on the threat of nuclear weapons in a highly unbalanced and distorted manner. The media often focuses on a frightening scenario, without reporting on the actual risk of a nuclear weapon being used, or by which terrorist organization. This thesis attempts to clarify the threat picture, analyze why nuclear weapons have not been used, and attempt to answer whether they could be used in the future. This kind of threat is one that “no state has the civil-defence capabilities that would allow it to claim to be ‘prepared’ in any meaningful sense” (Falkenrath, 1998: 44). There are no defences or countermeasures against the “thermal effects, pressure and radiation near the detonation of a nuclear weapon” (Mærli, 2003). A nuclear bomb is “anywhere from a thousand to a million times more powerful than the most powerful ordinary bomb” (CISAC). Hundreds of thousands of people could be killed in one single attack. In addition to the lives taken and the environmental consequences, there would be consequences such as panic and economic damage in the short term; in the long term people could start questioning the standard of internal security in a country (Falkenrath, 1998: 44).

Thus, while people may not fear this on an individual basis, the society as a whole could fear a nuclear attack, if they have reason to believe that either terrorist have the capabilities, or if they have reason to believe that their government has limited defence mechanism against the threat.

This thesis sets out to analyze the barriers terrorist organizations could have in acquiring nuclear weapons. In addition, the motivation to overcome these barriers will be assessed, as well as the motivation to use a nuclear weapon if the capabilities

are within reach. Lastly, this thesis sets out to analyze how the capabilities and motivation are dependent on the other, in order for the threat to be high or low.

1.1 Definitions

1.1.1 What is terrorism?

There are several interpretations and definitions of terrorism. According to Robert Jervis (2002: 46) terror “seeks to utilize political and psychological leverage in order to produce political effects that are disproportionate to the military force deployed”. Terrorism then contains three elements, and they are the creation of fear, the seemingly random use of violence, and lastly, the attacks are aimed at innocent people (Cronin 2002: 121). Terrorism is different from other forms of violence, in that it is the “deliberate and systematic use of coercive intimidation” (Wilkinson in Barnaby, 2001: 8). According to Freedman (2002: 48), terrorism is a weapon used by weak states against stronger states, which further relies on not attacking its enemy at its strongest point, but rather attack its enemy at a vulnerable point in the social structure. A terrorist group is legitimized by a political clout, and without external empathy for their proclaimed cause, support, as well as sponsorship, a terrorist group cause is destined to fail in the longer run (Kiras, 2003: 211).

This thesis will base its definition on terrorism on the British Terrorism Act 2002 that states that terrorism is:

The use or threat of action where the use or threat is designed to influence the government or to intimidate the public or a section of the public, and the use or threat is made for the purpose of advancing political, religious or ideological cause. Action falls within the Act if it involves serious violence against a person, involves serious damage to property, endangers a person’s life, other than that of the person committing the action, creates a serious risk to the health and safety of the public or a section of the public, or is designed seriously to interfere with or seriously disrupt the electronic system” (Barnaby, 2001: 8).

This definition is chosen because it defines terrorism in broad terms to include not only the act itself, but also the threat of an action. When the possibility of a nuclear attack is discussed, the threat of a nuclear attack could have a large psychological effect, and it is therefore vital to include it in the definition. Also, this definition includes the threat of health and safety, which is important when discussing the long term environmental effects a nuclear attack could have.

1.1.2 Terrorist organizations

Throughout this thesis, the term “terrorist” will be used. This is not an unproblematic term. Many authors refer to terrorist organizations as “non-state actors”, but for this thesis, such a term is too broad. A non-state actor could be anything from a non-profit organization to a terrorist organization. A terrorist could be defined as a non-state actor, but a non-state actor is not necessarily a terrorist. Neither “terrorist organization” (or “terrorists”) or “non-state actor” adequately defines the target group at all times, but in lack of a more specific term, “terrorists” and “terrorist organizations” will be used throughout this thesis.

1.1.3 Threat

According to Hovi (1998: 11), a threat is a “contingent assertion signalling an intention to hurt somebody - physically, economically or otherwise - unless that somebody acts in the way prescribed by the threatener.” International terrorism could not be characterized as “effective”, unless the actor that is threatened changes his behaviour as a result of the threat presented (Kjølborg, 2003: 15).

1.1.4 Nuclear weapons, nuclear explosives and nuclear material

This thesis focuses on intact nuclear weapons, hereby referred to as “nuclear weapons”, and fissile material, hereby referred to as “nuclear material” and “fissile material” interchangeably. Nuclear weapons are weapons currently only known to be possessed by nation-states. Nuclear explosives can “be part of a military weapon,

terrorists may use it, it may be applied for peaceful purposes, or it can be constructed solely as part of a research and development project” (Swahn in Mærli, 2004: 11). Fissile material could “lead to the detonation of a crude nuclear weapon – an improvised nuclear device (IND)” (Ferguson and Potter, 2004: 3). A crude nuclear device is a “technically unsophisticated nuclear explosive of the first generation, possibly within the reach of non-state actors” (Mærli, 2004: 182). Nuclear explosives are not the focus of this thesis.

1.2 Research questions

This thesis will focus on two main research questions. Firstly, why have terrorist groups not used nuclear weapons? Secondly, should we expect terrorist organizations to use nuclear weapons in the future?

These research questions depend on two factors. Firstly, is it possible for terrorist organizations to acquire access to nuclear weapons? Without access, there is no chance of nuclear weapons in the wrong hands. Secondly, given that access to material is possible, is it, and if when, in terrorist organizations’ interest to use nuclear weapons, and what can they gain from it?

1.3 Research design

In order to assess the research questions presented, a qualitative analysis is used. This analysis involves assessing the risk of terrorist organizations acquiring the access and technological capabilities to nuclear weapons or material, as well as the discussion of different motivational aspects of nuclear terrorism, and how motivation may differ from organization to organization.

Databases and journals will be used to illuminate the capabilities and motivations that terrorist organizations may or may not have. In addition, published interviews with terrorist organizations, as well as articles written by experts in the area will provide

the written material that is the basis for this thesis. Using this background material, a simple risk model is used as basis for the risk of terrorist organizations resorting to nuclear weapons. Different theoretical models presented in the next section aids in the analysis of the nuclear threat from terrorists organizations.

1.3.1 Theory

Several theoretical aspects will be assessed throughout this thesis in order to sufficiently analyze nuclear capabilities and motivations of terrorist organizations. Rational theory will be used to assess whether terrorist organizations are seen to make rational choices in considering attacks. Traditional deterrence theory will be challenged to assess whether it can still be applied in the post-cold war structure.

This thesis will differentiate between the terrorist organization's capabilities to acquire weapons, and the motivation an organization has in doing so. This thesis will show that if either is zero or close to zero, then the risk of an attack is also zero. The logic of this assessment is a simple risk model that is presented in section 1.3.1.1. In order to sufficiently apply this model, rational theory and risk analysis is also included in the assessment.

1.3.1.1 A simple Risk model

The simple risk model assesses the risk of nuclear weapons being used by a terrorist organization by measuring motivation and capabilities of terrorist organizations in acquiring weapons, and if successful, also using those weapons (Mærli, 2004). This model will be used throughout this thesis in evaluating the risk itself, and in assessing whether it is the lack of capabilities and/or motivation that is the reason for nuclear weapons not being used by terrorist groups so far. This method of thinking could supplement deterrence theory in understanding and preventing terrorist actions.

Before the risk of a nuclear attack can be adequately assessed, a definition of what constitutes a risk is in order. Risk is the probability that some negative event will occur, multiplied by the consequence if it does occur (Lindell, 1996: 157). Risk

perception, according to Lindell (1996: 157) often relates to the situation that causes the risk, rather than the risk itself. The simple risk model is based on a mathematical model, with risk (R) expressed as a function of probability (P) times possible outcome (Q), which means the consequences of a possible attack:

$$R = P \times Q$$

This means that high probability and severe consequence events represent the highest risk. Conversely, low probability and low consequence effects represent a limited risk. The probability of a terrorist group performing an attack on society is directly proportional with the threat level (Mærli, 2004). The threat probability of nuclear terrorism occurring depends on a combination of the group's motivation to perform the act, and their capability to acquire the weapon, and transport it to the target site. This model illustrates that if the group is highly motivated, and has high technical capabilities, it raises the likelihood of carrying out a nuclear terrorism attack with success. Consistently, a group with low motivation and low capabilities represents a low risk of performing such an attack (Mærli, 2004). The model shows how crucial the motivational factor for an attack is, since it will be shown that weapons could be attainable by terrorist organizations (capabilities could therefore be high).

1.3.2 Method, resources and reliability

There is little empirical data on the subject, as no incidences of nuclear terrorism have occurred. This thesis will firstly attempt to answer why an attack has not taken place so far by terrorist groups. Chapter three will first analyze arguments that terrorist organizations could have the capabilities to acquire nuclear weapons. A section presenting counterarguments is then presented. Chapter four will then present arguments that it could be in terrorist organizations interests to use nuclear weapons given that they are available, and present counterarguments against this as well. Also the goals of terrorist organizations will be analyzed in chapter four. Based on the conclusion from this question, the author will attempt to present predictions for the

future, in what factors will limit or encourage terrorist groups to pursue nuclear capabilities in the future.

The data for this thesis is collected from the International Atomic Energy Agency (IAEA) Illicit Trafficking Database, and the Newly Independent State's Nuclear Trafficking database at the Centre for non-proliferation studies (CNS) at Monterey. Also the 2002 Weapons of Mass Destruction Terrorism chronology from the Centre of non-proliferation studies is used throughout this thesis. Information is also gathered from the IIS Database on Nuclear Smuggling, Theft and Orphan Radiation Sources (DSTO) from Stanford University. The IAEA database is based on incidents confirmed from the states themselves, while the CNS database reveals incidents from the former Soviet Union; the DSTO databases supplements these databases with additional independently obtained information (Trei, 2002).

In addition to the databases, scholarly papers will be used, as well as secondary sources such as newspapers, and journals. In terms of the reliability of material, using newspapers as a source in academic writings should always be done with caution. Journalists work under time pressure, and may not always be completely factual, without political bias or other influences. On the other hand, reporters have many sources to their writings that may not always be available to academics or national leaders. For example, the material available collected by Hegghammer (2002) which includes quotes and extensive interviews with the leader of the terrorist organization Al-Qaeda, Osama Bin Laden, might not have been available, had it not been for journalists, and the media forum they create. Consequently, the material must thus be handled with care and scepticism, as Osama Bin Laden would be aware of the media interest in his interviews, and is likely to plan his statements accordingly (for example for propaganda reasons). Also, journalists are often heavily constrained in their interviews, and typically denied the right to ask follow-up questions or critical questions (Hegghammer, 2002: 30).

When databases are used as the source for information, there are three aspects of the information that must be in mind when analyzing the data. Firstly, overreporting;

secondly, evidence of underreporting; and thirdly, limited information from national governments. Underreporting is evident in that most cases of fissile material theft, attempted theft, and seizure come “to the light through media reports and/or informational releases provided by national governmental agencies and international organizations” (Potter and Sokova, 2002: 116). Problems arise when relevant material is omitted, and journalists and “their news editor have the task of deciding what is newsworthy or not” (Potter and Sokova, 2002: 116). Databases can thus not be viewed as completely up to date or reliable. Secondly, overreporting tends to sensationalize incidents, and can be based on inaccurate information; this could confuse the public perception of a threat” (Potter and Sokova, 2002: 117). Thirdly, national governments will use efforts to “control, conceal and/or distort information” (Potter and Sokova, 2002: 116), and all information may not be released to the public.

1.4 Limitations of the thesis

There are two types of limitations. Firstly, there is a limitation on the scope of the thesis, and secondly, there are analytical limitations.

1.4.1 Limitations on the scope

There is consensus in the field that there are four types of nuclear threats; theft of nuclear weapons, nuclear devices created from stolen nuclear material, radioactive dispersal devices, and radioactive hazards caused by an attack on, or sabotage of a transport or facility of nuclear material² (IAEA, 2004: 1; see also Rødbrø, 2004:5). Due to variations between these four types, this thesis focuses on terrorist organization threatening with the use of an intact nuclear weapon, or attempting to acquire nuclear material in order to construct a nuclear weapon.

² See also Ferguson and Potter (2004), where these four types are described as the “four faces of terrorism: 1) the theft and detonation of a nuclear weapon, 2) theft/purchase of fissile material that could be used to make a crude nuclear weapon 3) attack/sabotage against nuclear facility 4) “dirty bomb”

While international terrorism is often associated with radical Islamic groups (Kjølborg, 2003: 7), this thesis considers no group in particular, and will provide a general discussion with specific examples when appropriate. When the threat of nuclear weapons is discussed, Al-Qaeda is the organization mentioned frequently. However, other terrorist organizations could also be seen to have nuclear ambitions, such as Hezbollah, Jemaah Islamiyah or Chechen separatist groups (Wolfstahl, 2005).

1.4.2 Analytical limitations

In terms of analytical limitations, information regarding threats of nuclear weapons is often classified, and there is a danger of speculation. There could also be ‘background noise’ where news stories could be based on rumours and propaganda, and thus might not always consist of accurate reporting. This must be taken into consideration when analysing the empirical evidence, as in for example section 2.3.2 where nuclear hoaxes are analyzed.

The language barrier must be assessed. Some sources included in this thesis are translated into English from another language, and this could be a hermeneutical problem. A hermeneutical consideration is the interpretation of interview texts, where this process is seen as a dialogue between the researcher and the text, where the researcher focuses on the meaning of the text (Thagaard, 2003: 37). The translations that have been done can have been performed in a hurry, and perhaps interpreted in a different meaning than what was intended in the original language. Likewise, when interviews are interpreted, the text could be interpreted differently than what was intended by the author. This must be taken into consideration throughout this thesis.

Potential suppliers of nuclear weapons and nuclear material will not be discussed in detail in this thesis. While the security of nuclear weapons and material will be discussed, it will only be discussed where it is relevant for the thesis. This thesis will thus not list potential nuclear states, nor discuss so-called “rogue” states potentially having nuclear weapons.

1.5 Plan

The remainder of the thesis is organized as follows:

Chapter two provides background to terrorism post 9/11, and analyzes threats and hoaxes of nuclear weapons. Nuclear threats are also put in context in chapter two, in terms of the ramifications of an attack.

Chapter three defines what constitutes a threat, and outlines the different options terrorist organizations could have in attempting to acquire nuclear capabilities. Section 3.3 discusses whether terrorist organizations could have the capabilities in acquiring nuclear weapons; while section 3.4 discusses how terrorist organizations could be limited in acquiring such capabilities. In addition, a discussion on how international regimes and institutions could prevent the spread of nuclear weapons is included.

Chapter four discusses whether it is in terrorist organizations' interests to use nuclear weapons. This chapter discusses the motivational side of nuclear capabilities, and present views both how it could be, using rational theory, in an organization's best interest to use a nuclear weapon, and to what end. This chapter begins with presenting the conditions for rational behaviour, and discusses the motivation for terrorist groups given that they are rational actors. The chapter then analyzes the goals that an organization may have, and discusses the possibilities for nuclear weapons to fulfil any of those goals. Conclusions under this condition are then presented. The last part of this chapter discusses instances of irrational behaviour by terrorist organizations, and what implications that may have on the motivation for using nuclear weapons.

Chapter five presents the final conclusions of this thesis. Suggestions for future research are also presented.

2. Chapter Two: Background

2.1 Introduction

Within four months, we shall in all probability have completed the most terrible weapon ever known in human history, one bomb of which could destroy a whole city

(Stimson in Mærli, 2004: 31).

This was stated by the US secretary of War, Henry T. Stimson, on the 25th of April 1945, when he notified President Truman that the atomic bomb existed.

This chapter aims to introduce the reader to nuclear threats from terrorist organizations, and give a picture of terrorism after the attack on New York City and Washington DC on 9/11. The examples given in this chapter are examples either confirmed by national governments, or hoaxes that have been unveiled later by different organizations such as the IAEA.

The chapter begins with an evaluation of 9/11. Second, nuclear threats and hoaxes are separately discussed and accounted for. The final part of this chapter sets the nuclear threat picture compared to other threats in context and concludes the chapter.

2.2 Terrorism on 9/11

The terrorist attacks in New York City and the Pentagon on the 11th of September, 2001 claimed more lives than any other terrorist attack before it (Kiras, 2003: 209), and in fact, more people died on that day, than in 35 years of sub-state terrorism in Western Europe (Mærli, 2002: 2). While terrorist attacks prior to 9/11 rarely claimed more than 100 lives simultaneously, the attack on 9/11 claimed around 3000 lives (Kjølborg: 2003: 7). “The masterminds behind the attack provided the impotence of

the mightiest military power to protect its citizens against these kinds of devastating blows (Nacos, 2003: 2).

There seems to be a trend towards more “lethal forms of terrorism” (Lia, 2000: 40). This was highly evident in the 9/11 attack where 19 trained hijackers were willing to sacrifice their own lives, as well as the innocent victims (Bunn and Bunn, 2001). Al-Qaeda trained the hijackers, provided intelligence, planned the attack for more than a year, and carried the mission through (Bunn and Bunn, 2001). In the eyes of the terrorist organizations, three of four planes were a “success”, finding their targets. However, “9/11 showed more determination and ruthlessness, not weapons of mass destruction” (Blix, 2005).

Even before the 9/11 attack took place, there seemed to be a trend towards mass casualty attacks. In 1983, members of Hezbollah drove a truck filled with explosives into the American barracks in Beirut, and killed 243 US soldiers as a result (Nacos, 2003: 2); and in 1988, with the destruction of the Pan Am #103 flight, 270 people died (Ferguson and Potter, 2004: 15). In the 1990s, the world witnessed the World Trade centre bomb, the Tokyo subway attack, and the Murrah Federal Building in Oklahoma city (Parachini, 2001: 389), and while none of these attacks were considered “mass casualty,” it could be seen to be aimed at mass casualty.

Before 9/11, Terrorism was often seen to make a political statement through violence and as a tool to spread fear and insecurity among people (Schwartz and Falk, 2003). It was often dominated by the balance of creating enough attention to itself and the cause in order to get a message across, but also limit the damage in order to avoid alienating the supporters, or trigger crushing response from local authorities. It was believed that terrorist organizations were primarily interested in the publicity that follows a terrorist attack, and not in the need for obliterating a large number of people (Hoffmann, 2001). Brian Jenkins (2001) said “terrorists operate on the principle of the minimum force necessary. They find it unnecessary to kill many, as long as killing a few suffices for their purposes”. However, it seems that terrorist organizations in the 21st century, especially Al-Qaeda, pursue an apocalyptic agenda

(McMillan, 2004: 1). It was said of the so-called “old” terrorist organizations, referring to the right and left wing oriented or separatist groups that was evident in Europe in the 1970s and 1980s, that they “wanted a large audience, but few victims for their attacks” (Dalgaard-Nielsen and Staun, 2004: 3).

Terrorism could be seen to no longer be inspired by the political objectives, but rather be “fuelled by extremist religious ideologies that rationalize destruction, vengeance, and punishment (Ferguson and Potter, 2004: 16). Terrorist organizations could now be seen to have to make more dramatic and lethal attacks in order to have the same effect in terms of attention that a less lethal attack would have had in the past (Hoffmann, 1999: 13). Hoffmann (1999: 13) offers an explanation, claiming that the attention that those terrorist organizations seek is not as “readably obtained as it once was”. An example is the continued hostage takings in Iraq in the “war against terrorism”. In the beginning, it was widely covered in the media, yet already now, the threshold of what is considered news is becoming lower, and the hostage-takings needs to be both more dramatic and exiting in scope in order to be fully covered in the media.

2.3 Threats and Hoaxes

The director of the United Nations' atomic energy watchdog has said that “governments must do more to prevent radioactive materials from falling into the hands of terrorist organizations” (BBC news, 2001a). The consequences of a nuclear attack is tremendously high, and the world cannot afford to let terrorist organizations try repeatedly to get a nuclear bomb, nor allow terrorist access to nuclear material, as the consequences of a single failure in the aim of preventing an attack could be catastrophic. For a state to be hit by a nuclear terrorist attack is low risk, high consequence. Yet, from a terrorist’s perspective, the aim could be to create fear alone, and this is also something national governments seek to avoid.

The idea that terrorist organizations could be motivated to use nuclear weapons lead representatives of the European council, the Commission, NATO, the International Atomic Energy Agency and the member states to conduct an exercise on the 3rd of May 2004, called “Black Dawn”. Black Dawn illustrated how the local law enforces would and should react if an affiliate of the Al-Qaeda network acquired highly enriched uranium (HEU), made a crude nuclear device, and then exploded the device near the NATO headquarters in Brussels (Nunn, 2004: 1). Such a catastrophe makes the aftermath of 9/11 seem like a non-event, with 40 000 dead and at least 300 000 people wounded (Dalgaard-Nielsen and Staun, 2004: 2). In addition, aid services, hospitals, fire departments and police could disappear in the blast. Also, it would create tremendous fear in the public of long terms effects, and spark the never ending question “could this happen again and where”? The question that needs to be asked is: do international terrorist organizations, such as Al-Qaeda, have the will to perform such a devastating attack? Is it in their best interest?

The minimum threat a terrorist organization poses is the capability of using a weapon. In order to present a credible threat of the use of a nuclear weapon, there are at least two criteria that need to be fulfilled; the organization must have both the knowledge and capabilities to acquire a nuclear weapon.

2.3.1 Nuclear Threats

The IAEA documented altogether 182 incidences of illicit trafficking behaviour involving nuclear weapons between 1993 and 2003 (IAEAa). This involves the intention of theft, smuggling or in another way to illegally sell the weapons (IAEAa). As there is no empirical evidence of an actual nuclear weapon being stolen by terrorist organizations, this section focuses primarily on threats of nuclear material in wrong hands.

A total of 39 kilograms of highly enriched uranium (HEU) and plutonium “were intercepted during illicit transit, sale, and diversion attempts since 1992” (Zaitseva and Steinhausler, 2004) and according to the IAEA confirmed illicit trafficking in

nuclear material was at a peak in the period 1993-1995. Since then it has stabilized at a lower level. In the last two years, confirmed nuclear trafficking has been in decline. Only a minority of the confirmed incidents “involved weapons-usable nuclear material and most of them took place in the first half of the 1990s” (IAEAa).

Until 2001, there were 25 highly-credible cases recorded of illicit trafficking in nuclear material (Zaitseva and Steinhausler, 2004: 14).³ However, “the inherent uncertainties in our current knowledge on nuclear smuggling make it difficult to judge whether trafficking in weapons-usable nuclear material is such a relatively rare phenomenon, or whether it was and still is carried out in such a clandestine professional-in criminal terms–manner, that it remains largely undetected” (Zaitseva and Steinhausler, 2004: 14).

There are 17 specifically documented cases by the IAEA of nuclear material⁴ in unauthorized hands since 1992, and this information is confirmed by the states involved (Bunn and Wier, 2004: 5). All 17 cases are described in detail in appendix 1. These cases have been confirmed by the national governments. While this is a frightening scenario, none of these incidences of material had enough quantity to make an intact nuclear weapon (Mærli, 2002: 11).

Figure 1 shows that the period from 1994-95 had the highest number of incidents involving stolen nuclear material. In 1994, there were four incidences in Germany, one in the Czech Republic, and one in Russia. The latter was in St. Petersburg, in which 2.972 kilograms of HEU was discovered on an individual who had previously stolen the material from a nuclear facility for sale (IAEAa).

³ Since the beginning of recordings in 1991.

⁴ Authors refer to 18 cases, but according to the list below, there are 17 documented cases. This is what this thesis bases its information on. Also Dalgaard-Nielsen and Staun refers to 17 cases, not 18. This is since the beginning of recordings in 1991. Complete list can be found on the IAEA website:
http://www.iaea.org/NewsCenter/Features/RadSources/PDF/itdb_31122003.pdf

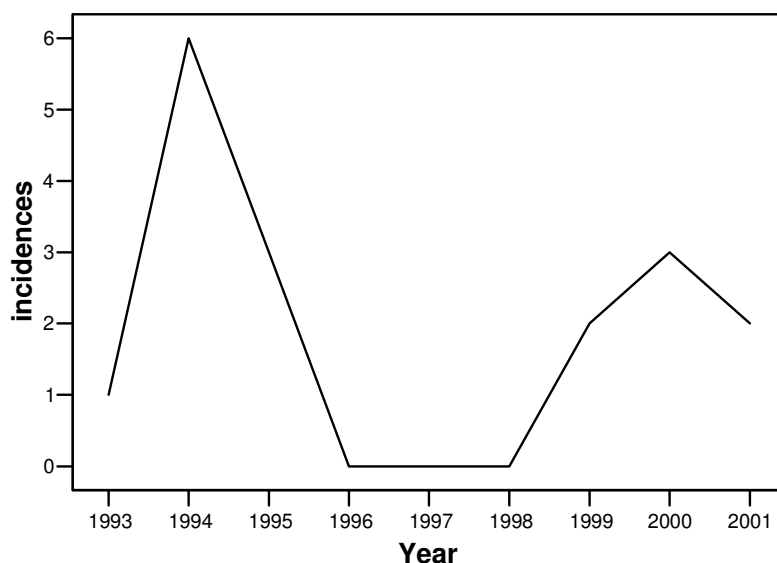


Figure 1: Confirmed incidences of attempted nuclear smuggling from 1993-2001 (Based on IAEA figures of 17 documented cases)

Of the four incidents from Germany; the first one was in Tengen-Wiechs, where 6.2 grams of plutonium were detected during a police search. The second was in Landshut, where a group of individuals was caught in possession with 0.795 grams of HEU. The third and fourth incidences in Germany are related. The first incident was in Munich where a sample of 0.24 grams of plutonium was found in conjunction with a larger airport seizure (IAEAb), and the second time a larger sample of Plutonium (363.4 grams) was seized at Munich airport. The last incident in 1994 took place in Prague, where 2.73 grams of HEU was seized by Czech police.

In 1995, there are three documented incidences of stolen nuclear material. The first took place in Moscow, where an individual was arrested with 1.7 kilograms of HEU, which he had stolen from a nuclear site that had previously been for sale. The second and third incident took place in the Czech Republic, where the police both times seized HEU, 0.415 grams and 16.9 grams respectively (IAEAb).

Osama Bin Laden has in the past attempted to acquire nuclear weapons and material, as well as recruit nuclear expertise in order to construct a nuclear bomb (Bunn and Wier, 2004: 5). Efforts include an attempt to buy uranium in Sudan in the years 1993-1994, as well as in Germany in 1998 (Mærli, 2004: 62). The attempt in Germany resulted in the arrest of Osama Bin Laden's aide, Mamdouh Mahmud Salim (Mærli, 2004: 63). According to a review of documents discovered in Afghanistan, Al-Qaeda was building a serious weapons program with "a serious emphasis on developing a nuclear device" (Boettcher and Arnesen, 2002). However, there are many critics of this information; David Albright, for example said "however, it [Al-Qaeda] could develop only limited technological capabilities in Afghanistan to produce WMD, and few believe Al-Qaeda obtained nuclear weapons while it was entrenched there" (Albright, 2002). Yet, Al-Qaeda showed great determination, which could lead to the conclusion that if Al-Qaeda had remained in Afghanistan, the organization "would have likely acquired nuclear weapons eventually" (Albright, 2002).

In an interview with Ramzi bin al-Shibh and Kalid Shaykh Muhammas, Khalid said that the attacks on 9/11 in the United States "were designed to cause as many deaths as possible and to be a big slap for America on American soil...the initial plan was to crash the hijacked jets into nuclear power plants". They decided against it for fear "it would go out of control" (Hegghammer, 2002: 112). But future nuclear attacks have not been ruled out (Hegghammer, 2002: 112).

In Russia in 1992, approximately 1, 5 kilograms of 90 % highly enriched uranium (HEU) was stolen from Podolsk, Russia (Frost, 2004: 400). Moreover, according to Frost (2004: 400), there were two significant incidents at Russian naval facilities in 1993, where 1.8 kilograms of 36 % of HEU was "diverted from the naval base storage facility in Andreevam, Cuba, and 4.5 kilograms of 20 % HEU⁵ was available for sale

⁵ which is the lowest possible level of Uranium in order to be considered "highly enriched"

by a worker at the Naval Shipyard at Sevmorput. Also, three persons were arrested in Russia in 1994, when they tried to sell approximately 3 kilograms of HEU, apparently “diverted” from the machine Building plant in Elektrosal, Russia (Frost, 2004: 401).

According to Viktor Jerastov, the chief for the Russian ministry of atomic energy and control for nuclear weapons, there was a case in Chelyabinsk, Russia where there was stolen “enough material to produce an atomic bomb” (Dalgaard-Nielsen and Staun, 2004: 5).

The largest documented attempt to steal nuclear material took place in December 1998 in Russia. The Russian Federal Security Services intercepted 18, 5 kilograms of what turned out to be highly enriched uranium (HEU), and this was confirmed by Russian officials in 1999 (Mærli, 2004: 64). According to Calabresi (2005), the HEU was planned for sale on the black market. This is the first confirmed case of an attempt to steal enough material to make a nuclear bomb at one try (Mærli, 2004: 64).

The IAEA revealed in 2004 that the former head of Pakistan’s nuclear weapon’s program, Dr Abdul Qadeer Kahn, has lead a covert nuclear smuggling network, that “provided sensitive uranium enrichment technology and possibly a nuclear weapon design to Iran” (Ferguson and Potter, 2004: 9). In addition, Sultan Bashiruddin Mahmood, a leading Pakistani nuclear engineer made several visits to the Taliban in Afghanistan, between 1998 and 2001 (Helfland, 2001: 357). These activities lead the government of Pakistan to place Mahmood, as well as two other nuclear scientists, under house arrest (Helfland, 2002: 357).

There is debate whether there is a black market for nuclear material, technology and the expertise to use it properly from “new” nuclear states such as Pakistan, India and North Korea (Dalgaard-Nielsen and Staun, 2004: 26). In 2001, three individuals were arrested for trafficking HEU in Paris, France, where these three persons were in fact seeking buyers for the material (IAEAa). According to the director of the IAEA, “the most disturbing lesson to emerge from our work in Iran and Libya is the existence of an extensive illicit market for the supply of nuclear items, which clearly thrived on

demand” (IAEA). Also in Russia, a Russian business man revealed in a criminal case that he had been offered \$750,000 for stolen weapon-grade plutonium that he intended to sell to a “foreign client” (Bunn and Wier, 2004: 5). The relative ease with which a multinational illicit network could be set up and operated demonstrates clearly the inadequacy of the present export control system” (ElBaradei, 2004).

A cache of 90 % HEU reportedly disappeared from a research facility in Abkhazia, Georgia between 1992 and 1997 (Zaitseva and Steinhausler, 2004). “According to different accounts, between 655 g and 2 kg of HEU has been present on site before the conflict broke out and the staff had to leave the facility unguarded” (Zaitseva and Steinhausler, 2004). Inspectors from Minatom, the Russian Ministry of Atomic Energy, regained access to the research facility in 1997 and could not locate the HEU that had been recorded in an inventory from 1992 (Potter and Sokova, 2002: 113), and concerns have been raised whether it “could have fallen into the hands of criminals or terrorist organizations” (Zaitseva and Steinhausler, 2004). In addition, Russian intelligence have admitted that terrorist organizations have “carried out reconnaissance four times in the period 2001 and 2002 on Russian nuclear warhead storage sites and transport trains, “the very locations of which are supposed to be state secrets in Russia” (Bunn and Wier, 2004: 5). In Russia, in July 1993 in Andrejeva Bay, two sailors from the Navy’s radiation protection departments attempted to steal two fuel elements, each of 4, 5 kilos with 36 percent enrichment (HEU) (Mærli, 2002a: 41). In November the same year in Murmansk, the fuel elements with 4, 3 kilos HEU were attempted stolen by three officers; the material was recovered (Mærli, 2002a: 41). Also in 2001, Turkish police arrested two men in October, in possession of 1.16 kilograms of weapons grade uranium (Helfland et al, 2002: 356).

2.3.2 Nuclear Hoaxes

A “hoax” means the threatened use of something specific, but that the threat is not credible, or is an “empty threat” (Cameron, Pate, McCauley and DeFazio, 2000: 158). Compared to biological, chemical and radiological weapons (CBR weapons), nuclear

weapons have few hoaxes. However, considering the ramifications of a nuclear attack anywhere, any threat or hoax of a nuclear attack could create extreme psychological damage. This section will include hoaxes of nuclear weapons, nuclear material, and material that were feared to be nuclear.

According to the 2002 WMD Terrorism chronology from the Centre of non-proliferation studies, there were zero hoaxes of nuclear incidents in 2000, two hoaxes in 2001, and zero hoaxes in 2002 (Turnbull and Abhayaratne, 2003). The first hoax in 2001 was a report that “terrorist organizations conspired to detonate a 10-kiloton nuclear bomb in New York” (Dolnik and Pate, 2002), and the second false alarm was a threat by a “psychologically unstable prison inmate to blow up the White House” using a nuclear bomb (Dolnik and Pate, 2002).

Just weeks after 9/11, there was an intelligence alert out to the FBI and the Nuclear Emergency Search Team (NEST), that terrorist organizations were thought to have an intact nuclear weapon, and intended to smuggle the weapon into New York City (Mærli, 2002: 1). In the unsure days after 9/11, this threat did not seem unreasonable.

In March 1999, Vladimir Mikhaylin and Oleg Tikhonov, from Kaluga, Russia sent letters via the Internet to approximately 20 countries, including the United States, the United Kingdom, and Israel “threatening nuclear strikes against these states” (Gavin, Pate, McCauley, and DeFazio, 1999).

In the 1980s and early 1990s, there were dozens of incidences, termed “outright scams”, such as the “red mercury” explosives (Frost, 204: 404). It was claimed then that red mercury was a “necessary component in a nuclear bomb and/or that it was important in the production of boosted nuclear weapons” (Butler 2004); in reality, red mercury is a non-fissionable substance that have been used by con artists as a substitute for nuclear material (Butler, 2004). “Some experts have suggested, however, that red mercury is in fact another name for lithium-6, a substance that can be used in the production of compact and highly efficient thermonuclear devices” (Butler, 2004

An example of red mercury being masqueraded as nuclear material took place in 1995. According to the New York times (Butler, 2004), the former Bosnian Serb leader Radovan Karadzic “attempted to purchase a nuclear weapon in 1995 from sources in the former Soviet Union, in order to put an end to the Bosnian War”. He allegedly paid \$6 million upfront, with 60 million more to follow. Karadzic was told that the device was made from red mercury, and he received a “brass container filled with jelly-like material. Surprised at the contents, he reportedly sent aides to Moscow to determine whether the device was in fact a nuclear weapon. To his dismay, the word from Moscow was that he had been swindled” (Butler, 2004).

After red mercury disappeared from the media, another so-called “vital substance for the creation of nuclear weapons” emerged called Osmium-187 (Butler, 2004). This material has often been used by con artists claiming to be in supply of nuclear weapons (Butler, 2004). An example of this took place in Moscow 2001, where five people were arrested “attempting to sell 6 grams of osmium-187 to a Moscow banker for \$800,000”⁶ (Butler, 2004). For both red mercury and Osmium-187, it is vital to assess the analytical limitations, as this empirical data could be tainted with journalistic sensationalism and inaccurate reporting.

2.4 Implications of nuclear threats and hoaxes

A terrorist attack using nuclear weapons would cause enduring fear in the population, not only personal security, but also the risks of contamination. This includes “their own exposure to radiation and the long-term effects of radioactive fallout” (Ferguson and Potter, 2004: 27), and this is a fear that terrorist organizations could seek to exploit. The nature of nuclear weapons, if used correctly, possesses the power to destroy an entire city.

⁶ More information is found on "Smuggling of Rare-Earth Metals into Russia Stopped": <http://www.interfax.ru/> or <http://www.nti.org/db/nistraff/2001/20010690.htm>

After 9/11, there was widespread fear that nuclear weapons would be used next by terrorist organizations. Yet, measures in protecting nuclear material and preventing access for terrorist organizations seem to be low on the agenda. In Russia, “hundreds of tons of plutonium and weapons-usable uranium have yet to receive even rudimentary security improvements” (Ferguson and Potter, 2004: 2). There are more than 3000 metric tonnes of highly enriched uranium and plutonium produced since the beginning of nuclear material, and “the bulk of the material is situated in nuclear weapons states, and is thus outside international control. Accordingly, only some 2 % of all highly enriched uranium and plutonium globally is under IAEA safeguards” (Mærli, 2005 [phone interview]).

An ordinary explosive gets its energy from a chemical reaction. A nuclear explosion however, gets its energy from a nuclear process, and as a result is “anywhere from a thousand to a million times more powerful than the most powerful ordinary bomb” (CISAC). A crude nuclear explosive device manufactured with HEU could yield an explosion effect in comparison to that of several hundreds to a few thousand tons of TNT (Arbman et al, 2004: 16). In addition, a nuclear explosion would generate radiation and make large amounts of radioactive materials “that would last from seconds to years” (CISAC). Depending on the population density of a city, a detonation of a nuclear fission could kill as many as one hundred thousand people, and the only way for a location to defend themselves against this form of threat is to find the bomb and disable it; otherwise the only option is a complete evacuation of the area (Falkenrath, 1998: 45).

In order to illustrate a worst-case scenario, the Carnegie Endowment for International peace presents an example (see Baker and Cutler 2001: vi): “a nuclear engineer who graduate with a grapefruit-sized lump of HEU or an orange-sized lump of plutonium, could together with material otherwise readily available in commercial markets, fashion a nuclear device that would fit in a van like the one the terrorist Yosif parked in the World Trade Centre in 1993”. If there had been a nuclear material in that truck, it would have destroyed the buildings of Wall Street of lower Manhattan. Thus, the

largest threat that remains is a nuclear attack in a densely populated area (Helfland et al, 2002: 356).

According to the centre for International security and cooperation at Stanford University, there are four major ways that a nuclear bomb creates damage. A nuclear explosion would result in a blast that stretches for a mile or longer, and create a large source of heat that inflicts lethal burns (CISAC). As a result of a nuclear explosion, there would be radioactivity created, as well as electromagnetic signals that could interfere with communications and radars (CISAC).

In terms of conventional bombings, one of the largest conventional attacks was the Oklahoma City bombing in 1995. That attack involved explosive power “equivalent to less than three tons of TNT, 4000 times weaker than the Hiroshima bomb and 17 million times weaker than the largest nuclear device ever exploded” (Mærli, 2004: 30). This illustrates the severity of a nuclear threat, compared to the more “traditional” terrorist bombings.

2.5 Conclusion

This chapter has highlighted that some terrorist organizations have shown interest in acquiring nuclear capabilities in the past. There is evidence of attempts to smuggle nuclear material, as well as hoaxes presented through the media of untrue attempts, and these examples have been unveiled by national governments.

The terrorist attack on 9/11 showed that terrorist organizations are now capable of mass killings. It is too early to establish whether this is a trend in terrorist attacks, but it highlights that terrorist organizations could have less scruples in the planning and completion of terrorist attacks.

The threats and hoaxes of nuclear weapons and nuclear material serves as background for the two coming chapters on capabilities and motivation to both acquire, and use nuclear weapons if it is available. This will be further assessed in chapters 3 and 4.

3. Chapter Three: Can it be in the interest of terrorist organizations to acquire nuclear weapons?

3.1 Introduction

The danger is so imminent... not only with regard to countries acquiring nuclear weapons but also terrorist organizations getting their hands on some of these nuclear materials, uranium or plutonium.

Mohammed ElBaradei, IAEA director, BBC news

The aim of this chapter is to evaluate whether terrorist organizations have the capabilities of acquiring nuclear weapons. The literature on terrorist organizations is split regarding if terrorist organizations have the capabilities of constructing a simple nuclear bomb or not (Dalgaard-Nielsen and Staun, 2004: 4). The Canberra convention of 1996 states: “The proliferation of nuclear weapons is amongst the most immediate security challenges facing the international community. Despite the impact of the international nuclear non-proliferation regime, the disconcerting reality is that several states have made, and some continue to make, clandestine efforts to develop nuclear arsenals. The possible acquisition by terrorist groups of nuclear weapons or material is a growing threat to the international community” (the Canberra commission, 1995). The remaining question is then whether terrorist organizations have the capabilities of acquiring nuclear weapons or nuclear material.

This chapter evaluates why terrorist organizations have not used nuclear weapons so far. Possible reasons that will be assessed are whether terrorist organizations have been unable to acquire a weapon, unable to acquire material, or have been deterred to

do so. There is an increased level of education in areas such as physics, chemistry and biology, and information on nuclear weapons can be found by a search on the World Wide Web (Lia, 2000: 38). Further, the availability of weapons could be seen to be higher, not only because time has passed and the technology increased, but also because countries have disintegrated, and weapons arsenals could end up in the wrong hands (Lia, 2000: 38). The disintegration of the Soviet Union may have left some nuclear sites with little or no security.

The first part of this chapter discusses the conditions for a threat to be effective, and puts the threat of a nuclear bomb in perspective. Secondly, arguments that terrorist organizations could possess nuclear capabilities are presented, followed by arguments against this. Further, a discussion over international measures that are in place to prevent nuclear terrorism is presented, and analyzes how these measures serve a purpose. This is followed by an assessment of whether terrorist organizations have nuclear capabilities.

3.2 Conditions for a threat to be effective

The analysis of a threat is vital in assessing both capabilities and motivation for a terrorist organization to use nuclear weapons. A threat was defined in 1.1.3 as a “contingent assertion signalling an intention to hurt somebody - physically, economically or otherwise - unless that somebody acts in the way prescribed by the threatener” Hovi (1998: 11). Hovi outlines five conditions for a threat to be effective.

Firstly, the threat must be relevant in that the threat can have “impact on the outcome” (Hovi, 1998: 13). In order for this to be possible, B (the threatened party) must have the freedom to change its behaviour according to the wishes of A (threatener), and it must also be possible for B to give in to the demands of A (Hovi, 2001: 119). If the target does not have a choice to change its behaviour, then it would be pointless to threaten (Hovi, 1998: 13).

Secondly, the threat must be credible. A threat is credible when B has reason to believe that A will implement their threat if B fails to yield (Hovi, 2001: 119). No matter how severe a threat is, the threat will be empty if the target knows with certainty that “the threat will not be put into effect” (Hovi, 1998: 15).

Third, the threat must be complete. A threat is complete to the degree that B does not expect the threat to be carried out if B consents to A’s demands (Hovi, 2001: 120). Should B be punished regardless, then there is no incentive for B to yield. For example, suppose the United States threatens Al-Qaeda with force if they do not give up their top leader. Al-Qaeda would not have the incentive to yield if it believes that the US will use force anyway.

Fourth, the threat must be sufficiently severe. This means that B must prefer to give in to A’s demands, given that refusing will imply that the threat will then be carried out (Hovi, 2001: 121). “Given that the threat is otherwise going to be carried out then the target must prefer to comply” (Hovi, 1998: 14).

The final criterion for a threat to be effective is that the threat must be clear. The message must thus be understood by the target. If the threat is not seen to be clear, it is difficult to assess whether criteria 1-4 are fulfilled (Hovi, 2001: 121).

It is, however, also important to take into consideration that threat assessment is not only the study of past trends; if that were the case, then the world need not fear the threat of a terrorist nuclear attack (Falkenrath, 1998: 50), as it has not to this day occurred. The threat assessments must also consider the changing capabilities, the change in motives and strategies of terrorist groups (Falkenrath, 1998: 50).

3.3 How terrorists organizations could possess nuclear capabilities

This section discusses how a terrorist organization could acquire the skills to develop nuclear capabilities as a group. Some believe that if a sufficient amount of highly enriched uranium (HEU), the same material that was used in the Hiroshima bomb, were available to a terrorist organization, then a small group of terrorist organizations could be able to manufacture a nuclear explosive device “which would have a substantial probability of producing a nuclear explosion comparable to that which destroyed Hiroshima” (Boutwell et al, 2002: 2). Though building a crude⁷ nuclear weapon is “time consuming, the wide availability of raw material and scientific expertise, means that it is plausible for terrorist organizations someday to get their hands on one” (Calabresi, 2005).

3.3.1 Acquire nuclear material

In order for a terrorist organization to acquire the capabilities needed to make an intact nuclear weapon, they need to get hold of nuclear material. Many states have already done the work of creating nuclear material. According to the director of non-proliferation studies at the Monterey Institute of International Studies, 1, 800 tons of HEU is stored at “research facilities, weapons depots and other storage sites in as many as 24 countries” (Calabresi, 2005). The largest challenge for terrorist organizations is the availability of fissile material. Plutonium or highly enriched uranium (HEU) is the ingredients of nuclear weapons, of which “HEU is the most likely choice for potential nuclear terrorist organizations” (Arbman et al, 2004: 13). HEU exists in large quantities, and is the only material that can be fissile material for a crude nuclear weapon (Arbman et al, 2004). In addition, HEU can be smuggled more easily than plutonium, as there is little radiation emitted (Arbman et al, 2004).

⁷ A crude nuclear weapon is “technically unsophisticated nuclear explosive devices of the first generation” (Mærli, 2004: 182), and this is “possibly within reach of non-state actors” such as terrorist groups (Mærli, 2004: 182).

The safety of nuclear material in Russia is a concern. An employee in the nuclear industry that is familiar with safety procedures, and has access to nuclear material, could either steal material for future sales, or aid a terrorist organization in gaining access to the nuclear material (Dalgaard-Nielsen and Staun, 2004: 9).

The rules and regulations that are in place to protect nuclear weapons are, according to Dr. William C. Potter from the Centre for Non-proliferation studies at Monterey, not being followed. “The precise rules and regulation that is meant to be followed are not taking place, and this problem is referred to as the “human factor” (Potter, 2005). “It is more difficult to maintain strict control over fissile materials than over nuclear weapons” (Ferguson and Potter, 2004: 1). The collapse of the Soviet Union has exposed large stockpiles of nuclear material that is not at all times properly secured, and could be at risk of theft by terrorist organizations (Falkenrath, 1998: 45). Director of the CIA Peter Goss, when testifying in front of the Senate regarding missing nuclear material from the former Soviet Union, said “there is sufficient material unaccounted for, so that it would be possible for those with know-how to construct a nuclear weapon” (Goss in Thomas, 2005). Goss continued to say that he could not be sure that these missing nuclear materials were not in the hands of terrorist organizations (Thomas, 2005).

3.3.2 Buy nuclear capabilities

In the 2003 State of the Union address, President Bush said “...the gravest danger facing America and the rest of the world is outlaw regimes that seek and possess nuclear, chemical and biological weapons. These regimes could...give or sell those weapons to terrorist organizations allies, who would use them without the least hesitation” (Quoted in Bunn and Wier, 2004: 1). Agents from the Al-Qaeda network have attempted to buy uranium from South Africa, and have in addition made several trips to central Asian nations in the attempt of buying weapons grade material or an intact weapon (Helfland, 2002: 357).

3.3.3 Buy a weapon

Terrorist organizations could attempt to buy a weapon from a rogue employee tempted to make money. For example in Russia, there are unemployed scientists after the cold war days, with nuclear access who could “accept a good offer” from a terrorist organization (Dalgaard-Nielsen and Staun, 2004: 10). Terrorist organizations could also attempt to buy a nuclear weapon that has already been stolen.

3.3.4 Buy technical knowledge

The terrorist organization would need assurance that the weapon will work. The sudden collapse of the Soviet Union has created a vulnerability of technical knowledge, and there are potentially thousands of unemployed scientists that could be looking for new employers abroad. Also, after president Musharraf in Pakistan survived two assassination attempts in 2003, new investigations revealed unauthorized sales of “sensitive nuclear technology” by Pakistani nuclear scientists, which puts the security of the nuclear arsenal of Pakistan in question (Ferguson and Potter, 2004: 1).

3.3.5 Steal a nuclear weapon or nuclear material

A former top official at the Department of Energy told the ABC News that “there could be enough missing material in the Russian inventory to make hundreds or thousands of nuclear weapons, but no one-neither the Russians nor Western intelligence agencies-knows for sure” (Thomas, 2005). This illustrates the uncertainties of the threat of nuclear weapons. A terrorist organization could attempt to steal either a nuclear weapon or nuclear material.

There are two ways that terrorist organizations could steal material. Firstly, the organization could attempt to get through security of a nuclear site, and attempt to steal nuclear material; or secondly, a terrorist organization could bribe an “insider” at a nuclear facility, and try to convince a person to make it easy for the organization for

some kind of reward. Many of the nuclear sites in Russia are vulnerable to theft by insiders who are “determined to steal enough existing material to make several nuclear weapons” (Baker and Cutler, 2001: vi). These materials could be transported to “Iran, Iraq, or Afghanistan. At some sites, one well-placed insider would be enough” (Baker and Cutler, 2001: vi).

3.3.6 Acquire suitcase nuclear weapons

Suitcase nuclear weapons are portable nuclear devices, light enough to be moved by one, at most two people (Sokov and Potter, 2002). Interception of such weapons could be difficult, and “these devices represent probably the greatest threat if they end up in the hands of terrorist organizations due to the combination of small size and full-scale nuclear explosion effects (Sokov and Potter, 2002).

3.4 Reasons why terrorist organizations do not possess the capabilities

This section discusses the arguments that terrorist organizations do not currently possess the capabilities to make an intact nuclear weapon, steal a weapon, or acquire fissile material.

3.4.1 Lack of nuclear material

The main technical barrier to the acquisition of a nuclear weapon is the attainment of the nuclear material needed, either HEU or plutonium (Falkenrath, 1998: 45). Terrorist organizations will not be able to produce nuclear material on their own, the material must be provided by a source (Blix, 2005, see also Panofsky, 2005). Producing HEU or plutonium is “almost certainly beyond the capability of sub-national terrorist groups (Bunn and Wier, 2004: 2).

Similarly, the senior Russian atomic energy officials deny the possibility “that terrorist organizations have the technical skills to manufacture a nuclear bomb

(Ferguson and Potter, 2004: 8). For a terrorist organization to construct a weapon from scratch without state assistance is “remote” and can be “essentially ruled out” (Milholling in Schwartz: 2003: 16). Especially the production of HEU is highly difficult, and demands tremendous technical capabilities. The material needed to make weapon-plutonium and HEU is difficult to obtain, as plutonium must be made in a nuclear reactor, and uranium must be “highly enriched in the needed isotope in a highly specialized set of facilities” (CISAC). In order to make a bomb using plutonium, the organization would need a reactor in order to test the weapon (Schwartz and Falk, 2003:16). A terrorist organization would not have the technical capabilities to complete such a mission, without the aid of a nation-state with such expertise, or a successful nuclear weapon’s program (Dalgaard Nielsen and Staun, 2004: 28).

In addition, plutonium is difficult to handle as it can only be used in “implosion type bombs which are approximately ten times as hard to make as the uranium bombs made in Hiroshima” (Schwartz and Falk, 2003: 16). In order to make a nuclear weapon of the size of the one used in Hiroshima, a terrorist organization would need between 10 and 50 kilograms of HEU⁸ (Dalgaard-Nielsen and Staun, 2004: 4). Section 2.3.1 highlighted the barriers in acquiring this amount of HEU for terrorist organizations.

3.4.2 Barriers in buying a nuclear weapon or nuclear material

Whether terrorist groups could buy a weapon or nuclear material from a nuclear state is dependent on several factors. Firstly, a state would need to be willing to sell a weapon to an organization, most likely not knowing where the attack would take place, and thus could pose a threat to its own region by expected retaliatory attacks from the attacked state or territory. Secondly, a state could agree to sell a weapon to a

⁸ According to the IAEA, “scientists estimate that 25 kg of highly enriched uranium or 8 kg of plutonium would be needed to make a bomb”, see http://www.iaea.org/NewsCenter/PressReleases/2001/nt_pressrelease.shtml

terrorist organization, knowing where the weapon would be used, and in that sense fulfils that state's own agenda. For a nuclear state to sell a nuclear weapon to a terrorist organization without knowing its intended use could be fatal for the country or region itself; the weapon could be used against that state, and could result in devastating effects.

3.4.3 Limitations for stealing a nuclear weapon

There are approximately 30,000 nuclear weapons in the arsenals of the major nuclear powers, and 28000 of these are in the United States and Russia (Boutwell et al, 2002: 2), and "we believe that it is unlikely that a sub national terrorist group will obtain an actual nuclear warhead" (Boutwell et al, 2002: 2). Stealing a weapon in a nuclear state involves not only having a contact inside the nuclear facility, but also having contacts in the national police and toll inspectors.

The capability to acquire a nuclear weapon, and deliver it to the target position requires tremendous organizational skills, as well as financial resources; it could even demand multinational operational capabilities (Ferguson and Potter, 2004: 34). The transport of an intact weapon could be seen to be dangerous. A moving target is generally seen to be at higher security risk than a stationary target (Steinhäusler, 2005). The movement of a nuclear weapon across borders would be a challenge.

David Albright (in Boettcher and Arnesen, 2002), president of the Institute for Science and International Security said "even a terrorist group that's going to go to the trouble of working on a nuclear weapon wants to have some certainty that it's going to explode as a nuclear explosive and not just explode as a high explosive." The organization may not have the technical expertise to handle the weapon, and could be in risk of injuring themselves and their own people due to ignorance of how to handle a weapon. These are all obstacles that an organization would have to overcome, should they be able to gain access to a nuclear facility.

3.4.4 The security of Suitcase nuclear weapons

Suitcase nuclear weapons are included in this analysis, as they are intact – and portable- nuclear weapons, and could thus be seen to be attractive to terrorist organizations. The probability that suitcase nuclear weapons were lost prior to, as well as after, the break-up of the Soviet Union remains low, and should such weapons fall in the hands of criminals, the effectiveness of such weapons would be “low or even non-existent” (Sokov and Potter, 2002). The weapons would need scheduled maintenance, and without such maintenance, the weapons would provide only “minimal yield” or no yield at all (Sokov and Potter, 2002). Yet, the Russian general, Alexander Lebed once claimed that 40 of these suitcase weapons were unaccounted for. He later retracted the claim in a manner that “failed to reassure many experts” (Helfland et al, 2002: 356). It is unlikely that a terrorist organization could make a suitcase bomb (CISAC).

3.4.5 Final challenges

In order for a terrorist organization to construct a nuclear weapon, the organization would have numerous obstacles to overcome. The organization would have to firstly, either develop a design for a nuclear device, or obtain such a design from a state; secondly, the organization would either need to produce the fissile material needed from scratch, or obtain fissile material from a nuclear holding state, and then “machine the fissile material to fabricate the nuclear parts of the weapon” (Carnegie analysis in Mærli et al, 2003: 731); thirdly, the organization needs to either produce or obtain the non-nuclear parts that are needed for the device, and this includes the high explosive elements that will detonate the core; fourth, the organization needs to verify the reliability of this both at an individual level, and as a system; fifth, the organization would have to assemble all these different elements into a nuclear weapon capable of delivering, referred to as “weaponization” (Carnegie analysis in Mærli et al, 2003: 731). Each of steps one through five represents a challenge in itself.

3.5 What international measures are installed to limit nuclear capabilities?

According to the director of the IAEA, Mohammed ElBaradei, the world is “having a race against time which I don't think we can afford to lose” (BBC news 2004b). In this section, the different institutions and regimes that are in place in order to prevent nuclear weapons in the wrong hands at present time, will be analyzed and discussed.

3.5.1 The NPT

The nuclear non-proliferation treaty is the only formalized agreement between states to hinder nuclear non-proliferation (Windheim, 2001). The NPT was opened for signature on the 1st of July, 1968, and entered into force on the 5th of March, 1970. After the NPT Review Conference in 1995, it was agreed that “the treaty shall continue in force indefinitely” (NPT). It is important to include the NPT in the analysis of nuclear capabilities for terrorist organizations, because as long as there is nuclear material, nuclear material could reach the wrong hands.

The NPT aims at limiting nuclear material, and article III states that non-nuclear weapon states (NNWS) “are to conclude agreements with the International Atomic Energy Agency (IAEA) for safeguards to be applied on all source or special fissionable materials in all peaceful nuclear activities within the territory of states (NPT), and in this way reduce the chances of nuclear weapons arriving in clandestine hands, as the material is put under control” (NPT). This also prevents the “diversion of nuclear energy from peaceful uses to nuclear weapons and other nuclear explosive devices” (Johnston and Mærli, 2003: 3).

There are three different groups of states in terms of the NPT: the first group has a temporary permission to keep nuclear weapons: United States, Russia, France, Great Britain and China. It is legal in three states, namely Israel, India and Pakistan, which never joined the NPT (Mærli, 2004b: 4). Nuclear weapons are forbidden in all other states. Non-nuclear weapon states agreed to not pursue nuclear weapons, and all

nuclear material in non-nuclear weapon states were to be placed under the supervision and safeguards of the IAEA, and all nations had the right to use nuclear energy for peaceful purposes (Simpson, 2004: 4).

Export control is vital in ensuring that nuclear material does not reach clandestine hands. The Zangger committee functions as “the ‘faithful interpreter’ of its Article III, paragraph 2 [of the NPT], to harmonize the interpretation of nuclear export control policies for NPT Parties” (Zangger, 2005). The Zangger committee has been focussing on what is meant in Article III of the Treaty by “especially designed or prepared equipment or material for the processing, use or production of special fissionable material.” (Zangger, 2005). In addition, this committee maintains a “trigger list”, that assists the NPT parties in identifying equipment and material that is subject to export controls (Zangger, 2005)⁹.

3.5.2 The IAEA

The International Atomic Energy Agency (IAEA) was set up within the United Nations in 1958 through the world’s “Atoms for Peace” program. The aim of the IAEA is to work for the “safe, secure and peaceful uses of nuclear science and technology” (IAEA, 2005). The IAEA is responsible for the safeguarding of the agreements of the NPT.

In addition to the safeguard system, the IAEA’s nuclear security plan focuses on three main elements. Firstly, the importance of prevention is highlighted, and this includes

⁹ There are 13 steps in order to manifest their systematic and progressive efforts to implement Article VI of the NPT. See: <http://www.reachingcriticalwill.org/legal/npt/ngorep/Roche13pts.html>. These steps are: 1) Entry-into-force of the CTBT, 2) Moratorium on Nuclear Test Explosions., 3) Negotiations to be concluded in the Conference on Disarmament (C.D.) within 5 years on a fissile ban treaty, 4) Establishment of a subsidiary body in the C.D. to „deal%o with nuclear disarmament., 5) The principle of irreversibility to apply to nuclear disarmament., 6) Unequivocal undertaking by the NWS to accomplish the total elimination of their arsenals., 7) Full implementation of START II, conclusion of START III, preserving and strengthening the ABM Treaty., 8) Implementation of the Trilateral Initiative between the U.S., Russia and the IAEA., 9) Steps by NWS based on the principle of undiminished security for all to promote international stability., 10) NWS to place excess fissile materials under IAEA., 11) Reaffirmation of general and complete disarmament under effective international control., 12) Regular reports on the implementation of Article VI, Paragraph 4 (c) of the 1995 Decision on Principles and Objectives, and a recollection of the 1996 ICJ Advisory Opinion., 13) Development of verification capabilities to assure compliance with disarmament agreements.

preventing any “illicit or non-peaceful use of nuclear or other radioactive materials” (ElBaradei, 2005). This includes physical protection of nuclear material, protection of nuclear facilities, as well as strong state systems for the accounting of material and weapons (ElBaradei, 2005). This involves the dismantling and transporting unused nuclear material to safe locations. So far, “over 20 000 curies of sealed sources from Bolivia, Côte d’Ivoire, Haiti, the Islamic Republic of Iran, Malaysia, Panama, Sudan and Thailand have been conditioned for long term storage or shipped back to the original suppliers” (ElBaradei, 2005).

Secondly, an identifying system identifies illicit material or activity (ElBaradei, 2005). The IAEA has contributed to assist countries in training customs officials, installing tracking equipment at border crossings, “and ensuring that information on trafficking incidents is shared effectively” (ElBaradei, 2005).

Thirdly, a response mechanism that can be prompt and well coordinated is being worked on with national governments (ElBaradei, 2005). This has mostly involved aiding states in tracing stolen or lost nuclear material.

3.5.3 UN Resolution 1540

The UN unanimously adopted resolution 1540 in April 2004 to address threat to international peace and security, and is legally binding on all UN member states (Ferguson and Potter, 2004: 33). The UN Resolution 1540 states the world is “gravely concerned by the threat of illicit trafficking in nuclear, chemical and biological weapons, and their means of delivery, and related materials , which adds a new dimension to the issue of proliferation of such weapons and also poses a threat to international peace and security (UN, 2004).

The UN seeks to intensify international controls “over activities that could contribute to WMD proliferation and terrorism (Ferguson and Potter, 2004: 33). The UN resolution 1540 states that “all states, in accordance with their national procedures, shall adopt and enforce appropriate effective laws which prohibit any terrorist

organization to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery, in particular for terrorist purposes, as well as attempts to engage in any of the foregoing activities, participate in them as an accomplice, assist or finance them” (Ferguson and Potter, 2004: 33). This UN resolution thus aims to prohibit that terrorist organizations acquire weapons or material through clandestine means, by ensuring that all UN nuclear states make the necessary commitment to ensure their safety of nuclear capabilities. Also, this resolution aims to ensure that no terrorist organization is supported financially in their nuclear weapons quest.

3.5.4 Deterrence

During the Cold War, deterrence was seen to be the key to peace in the bipolar world. “To deter” in its direct form means to stop someone from doing a given act by frightening them, and this is achieved through the ability to punish (Sagan and Waltz, 1995: 3). In the case of nuclear weapons, deterrence is secured through second-strike nuclear forces, not through defence forces (Sagan and Waltz, 1995: 4). Deterrence can also be interpreted as making the act of acquiring nuclear weapons difficult. If no terrorist organization is seen to acquire such capabilities, it could as a result be interpreted by other terrorist organizations to be out of their reach (Ferguson and Potter, 2004: 29).

In the post-cold war days, the role of nuclear weapons as deterrents based on mutually assured destruction (MAD) has “lost its dramatic presence” (Kalinowski, 2004: 218). In 2004, there were still more than 30,000 nuclear weapons worldwide, most of which are not controlled by an arms treaty (Kalinowski, 2004: 218).

However, while deterrence theory may still be in effect in deterring nuclear states from using nuclear weapons, the retaliation against terrorist organizations is more difficult (Dean; 2004: 1). Terrorist organizations would be well aware of the risk of retaliation, but, since they operate outside the “traditional” sphere of deterrence, it could make reprisals difficult to accomplish (Mærli et al, 2003: 730). Whereas

retaliation against a traditional state is obvious, a terrorist organization may “operate more freely in a substate context” (Mærli et al, 2003: 730). A suicidal terrorist who in his mind is sure of his afterlife in heaven, and that this life is better than life on earth “cannot be deterred” by nuclear weapons (Panofsky, 2005).

A terrorist organization has no land to physically protect, nor a specific group of people to look after, or a national collective future to offer protection; such a group may not be deterrable (Cirincione, 2004: 3). State sponsorship of terrorist groups could be deterred, as a state could be the object of retaliatory measures, as was seen with the Taliban in Afghanistan.

3.5.5 MPC&A

Material Protection, Control and Accounting (MPC&A) has been in operation since 1994, and is a UN Department of Energy that cooperates with Russia to install a modern nuclear security system in order to secure weapons usable material (Mærli, 2002a: 38). The security enhancements at these sites includes for example entry and exit barriers, and different control measure such as traps, locks and portal monitors (Mærli, 2002a: 38). However, while this is a positive trend, there are still “hundreds of tons of nuclear material that lack improved security systems” (Mærli, 2002a: 38). The United States predicts to have finished upgrading the security for 4000 Russian nuclear warheads by 2007 (Mærli, 2002a: 39).

According to Dr. Stephen Klement from the European Council Secretariat in Brussels, there are three conceptual measures that must be undertaken in order to prevent nuclear proliferation. These measures consist of verification measures of nuclear holdings, physical protection of material, and stock measures (Klement, 2005).

3.5.6 Others

The leaders of the G-8 countries took action at their summit in June 2002 where they adopted a “G-8 Global Partnership against the spread of Weapons and Materials of Mass Destruction” (Einhorn et al, 2003: 2). This includes preventing terrorist organizations from acquiring or developing nuclear weapons, as well as raise up to \$20 billion dollars over the next ten years to support projects to this end. Also the European Union has spent more than 200 million Euros on nuclear reactor safety in the former Soviet Union (Einhorn et al, 2003: 8). The real challenge is putting planned solutions into concrete actions (Einhorn et al, 2003: 2). A real challenge is making sure that this money spent does not reach corrupt hands, and that the nuclear weapons and material are properly secured.

In addition, the Nuclear Suppliers Group (NSG), a set of nuclear supplier countries whose goal is to aid in the non-proliferation of nuclear weapons, also provides a set of guidelines in nuclear exports. In response to the threat of nuclear terrorism, the NSG agreed in December 2002 to strengthen its guideline, in their attempt to “prevent and counter the threat of diversion of nuclear exports to nuclear terrorism”.

The Fissile Material Cut-off Treaty (FMCT) attempted to limit fissile material available for weapons in the 1960s (Simpson, 2004: 3). This treaty was revived in the 1990s, but “have yet to serve fruition” (Simpson, 2004:3). The FMCT could aid in reducing the threat of material being stolen, as with less material, the safeguarding could potentially increase.

3.6 What additional measures could be enforced?

Nuclear material and nuclear weapons needs to be properly secured in order to avoid giving terrorist organizations access to the means of nuclear terrorism. Terrorist organizations “do not live on clouds, and must have their feet on some territory”

(Blix, 2005). Each government must therefore do everything in their power to ensure that their territory is not a safe haven for rogue nuclear behaviour.

However, in order to secure weapons and weapons grade material, more transparency would increase such chances. Still today, the majority of the nuclear weapon states have been disinclined to engage in transparency measures in terms of nuclear capabilities and fissile material stock; this information remains classified in most states (Mærli et al, 2003: 737). In non-nuclear weapon states, safeguards are already being carried out by the IAEA under the NPT treaty obligations (Mærli et al, 2003: 738). An increase in accountability in the inventory of nuclear weapons could ensure transparency between states (Mærli, 2004b: 10). Still today, there is no official figure of the military inventories of fissile material in the nuclear weapon states (Mærli, 2004b: 10).

President George W. Bush and Vladimir Putin met in the 25th of February 2005 in Bratislava to discuss to “reduce potential threat of nuclear terrorism by speeding up much-delayed securing and dismantling of some of Russia's nuclear materials” (Bumiller et al, 2005). The two leaders agreed that “Iran and North Korea should not have nuclear weapons, and to work to keep such arms out of the hands of terrorist organizations” (CNN, 2005).

Since the end of the cold war, the United States and Russia have cooperated in the reduction of nuclear weapons and material. Over 800 strategic launchers, 97 heavy bombers, 24 ballistic missile submarines and 815 ballistic missiles and related silos were destroyed as a result of cooperative efforts between the two powers, especially through a variety of Nunn-Lugar threat reduction programs¹⁰ (Einhorn et al, 2003: 8). Appropriate accounting measures would make it easier to keep thefts under control, and as a result of control, confidence will increase (Blix, 2005).

¹⁰ Senator Sam Nunn (Democrat) and Senator Dick Lugar (Republican) aimed at improving controls over weapons of mass destruction between Russia and the U. S since 1991 as a result of the dissolution of the Soviet Union, and the threat of

According to United Nations secretary general Kofi Annan, the United Nations must stand in the foreground in the fight against terrorism, and in order to prohibit nuclear terrorism, must deny terrorist organizations access to resources and access to nuclear terrorism, as well as hinder countries in supporting terrorist regimes (Annan, 2005). It is vital that at a time when the nuclear threat picture is as unclear as ever, that the gap between the threat and the international response does not widen.

3.7 Are terrorist organizations capable of making a nuclear weapon?

At this point in time, no terrorist organization is known to have nuclear weapons, nor the material or the equipment to make one.

The Al-Qaeda network with Osama Bin Laden as leader has been trying to acquire nuclear capabilities. FBI director Robert Mueller testified before the Senate Select Committee on Intelligence about the international threats against the United States, and said “I am very concerned with the growing body of sensitive reporting that continues to show that Al-Qaeda’s clear intention to obtain and ultimately use some form of chemical, biological, radiological nuclear or high-energy explosives” (Mueller in Thomas, 2005). Throughout 1999, it “was reported that Osama bin Laden and Al-Qaeda were engaged in a comprehensive plan to acquire nuclear weapons” (Gavin et al, 1999). Osama Bin Laden claims to have nuclear weapons as a “deterrent” against the West (Hegghammer: 2002). This is not confirmed. However, it should also be noted that Al-Qaeda as an organization has been considerably weakened since the 9/11 attacks, through military actions and different arrests through

cooperation among the United Nations member states; it is unlikely that this organization has the capacity of an attack of the scale of 9/11 (Dean, 2004: 2).

In practice, a terrorist organization would require extensive space and time in order to attempt to construct nuclear capabilities. This is again dependent on that the terrorist organization has access to nuclear material. According to Dr Frank von Hippel from Princeton University, it would take several years to fulfil these steps when operating in a safe haven, but there must be the assumption that a terrorist organization cannot live in such isolation for numerous years (Von Hippel, 2005).

With the fall of the Soviet Union, there are tons of material left unprotected, and “governments should not rule out that a determined and sophisticated terrorist might one day be able to construct a nuclear weapon” (Zaitseva in Trei, 2002). It seems more plausible for a terrorist organization to acquire fissile material, then to purchase a weapon (Mærli et al, 2003: 730). Developing a weapon as a group with either stolen or bought material is then a risk that the world needs to take seriously.

3.8 Conclusion

Terrorist organizations are not known at this time to possess the capabilities to produce weapons grade material independently. A terrorist organization aiming to acquire nuclear capabilities would have to do so through clandestine means, most likely by stealing material and/or a weapon. This chapter has shown that while the threat of a nuclear weapon or nuclear material being stolen is very real, the chances of terrorist organizations having the capabilities or the means to arrange such an attack is slim. It seems that most terrorist organizations do not have the capability to fulfil all the steps needed to develop a nuclear weapon from scratch.

Yet, this threat must not be played down, and as a guideline, a threat does not only assess the past, but assesses what might be possible in the future. A former secretary of defence, William Perry, judged that “there is at least a 50 percent chance that

before the end of this decade, a nuclear detonation initiated by terrorist organizations will occur in the United States (Panofsky, 2005).

Through the regimes in place, as well as initiatives by the IAEA and the UN through resolution 1540, the risk of terrorist organizations getting their hands on nuclear capabilities is being taken seriously. According to Dr. Christoph Carle, the deputy director for the UN Institute for Disarmament Research in Geneva, legally binding multilateral treaties, in which nations agree to control nuclear material, is the only way to prevent terrorist organizations getting their hands on such material (Carle, 2005).

4. Chapter four: Can it be in the best interest of a terrorist organization to use nuclear weapons?

4.1 Introduction

We are seeking to drive them [the US] out of our Islamic nations and prevent them from dominating us. We believe that this right to defend ourselves is the right of all human beings. At a time when Israel stocks hundreds of nuclear warheads and when the Western crusaders control a large percentage of these weapons, we do not consider this an accusation, but a right and we reject anyone who accuses us of this. We congratulated the Pakistani people when they achieved this nuclear weapon, and we consider it the right of all Muslims to do so.

Osama Bin Laden in Al Jazira, 1999

The aim of this chapter is to assess the motivation of a terrorist organization to acquire or even use a nuclear weapon. A strong norm in contemporary politics is that nuclear weapons should never again be used under any circumstance. 9/11 showed that terrorist organizations have the ability to plan, acquire access to resources, and the dedication to cause destruction. The motivation for terrorist groups to acquire nuclear weapons has been in question since the end of the Cold war. It has become clear now that “groups and individuals do exist who would not hesitate to use a nuclear explosive device in furtherance of their aims, whatever they may be” (Boutwell et al, 2002: 2).

This chapter will firstly discuss rational behaviour, and rational behaviour of terrorist organizations in detail. Goals for terrorist organizations are then assessed, followed by possible arguments that a nuclear attack could in fact promote these goals. A conclusion dependent on rational behaviour of terrorist organizations is then

presented. Further, irrationality of terrorist organizations is analyzed, followed by concluding remarks.

4.2 Rationality

Rational theory is a normative theory that tells people how to act, and “predicts that they will act in the way it tells them to do” (Elster, 1989: 1). Rational action involves three operations; firstly, finding the best action; secondly, forming the best-grounded belief; and thirdly, collecting the right amount of evidence (Elster, 1989: 4). There are numerous entities that are either rational or irrational, such as “beliefs, preferences, choices or decisions, actions, behavioural patterns, persons, even collectivities and institutions” (Elster, 1983: 1). Rationality of an action stands in “certain relations to the agent’s beliefs and desires” (Elster, 1983: 2), and this will be discussed further when the goals of terrorist groups are assessed.

The realist interpretation of terrorism assumes that “values and beliefs play no role in the origin or resolution of conflict, and thus the resort to terror is a predictable strategy of the weak (Mousseau, 2003:7). According to Giacomello (2004: 390), there is “no reason why terrorist organizations should not be characterized as rational choice actors that have to decide between legal and illegal means to achieve their political goals”.

4.2.1 Rationality of terrorist groups

When the rationality of an action is analyzed, we “generally assume that it is based upon conscious calculation by an actor searching for what for him would be the best solution to whatever problem he may have” (Underdal, 1984: 64). Further, an actor “knows precisely, consistently, and definitely what he wants” (Underdal, 1984: 64). Terrorist organizations are in this thesis regarded as rational actors. A terrorist organization would have to make a conscious decision to resort to nuclear weapons. This conscious decision includes an assessment of how this form of terrorism will

appear to the group's supporters, as well as the attacked nation or territory, and how this will promote the strategic goals of the organization (Ferguson and Potter, 2004: 26).

Rational behaviour assumes that the actor is able to identify all options that are relevant to the issue or problem, and that the consequences for the actions are known (Underdal, 1984: 65). In addition, the actor must be able to adequately perform the "calculating operations" in order to produce a decision that maximizes the actors' utilities (Underdal, 1984: 65). According to Elster (1983: 15), a rational act means "acting consistently on beliefs and desires that are not only consistent, but also rational". An organization with a rational idea of using a nuclear weapon would make a calculated decision to buy or steal nuclear material, or buy or steal an intact nuclear device from a state.

4.3 Goals for terrorist organizations

According to Yaron Schwartz and Ophir Falk from the International Policy Institute for Counter-Terrorism, "it is currently no longer a speculation whether terrorist organizations are consciously willing to kill thousands of innocent people in the wake of their attacks" (Schwartz and Falk, 2003). It is generally thought that if a terrorist organization gained access to nuclear capabilities, "they would not scruple to use them with maximum damage" (Dean, 2004: 1). Osama Bin Laden (in Yusufzai, 1999) once said that "acquiring weapons for the defence of Muslims is a religious duty. If I have indeed acquired these weapons, then I thank God for enabling me to do so. It would be a sin for Muslims not to try to possess the weapons that would prevent the infidels from inflicting harm on Muslims". The motivation for acquiring nuclear weapons is thus clear from Al-Qaeda's perspective.

This section discusses five main goals for terrorist organizations in planning and carrying out any attack: (i) the killing of people on a mass scale; (ii) recruiting future members to the organization; (iii) getting media attention; (iv) to pressure the attacked

state to use unreasonable countermeasures; and (v) to undermine a regime. These goals could be goals for any terrorist attack, either with conventional weapons or CBRN¹¹ weapons. Every subsection considers whether using a nuclear weapon would enhance each particular goal or not.

4.3.1 Killing on a mass scale

A motivation in itself for terrorist groups could be to kill random people on a large scale. The motivation for suicide bombers for example, is to kill as many enemy civilians or soldiers as possible (Elster, 2005: 155). With 9/11 it became clear that one of the motives was to kill on a mass scale. The weapons that the terrorists use are aimed at “inflicting as much damage as possible and killing many innocent victims” (Duyesteyn, 2004: 447). An Al-Qaeda spokesperson, Sulaiman Abu Ghaith, stated that the organization has “the right to kill four million Americans, two million of them children” as revenge for deaths that the organization believes that the United States and Israel has caused Muslims (Dalgaard-Nielsen and Staun, 2004: 3).

A nuclear weapon would take the lives on a large scale in a large area, and it would be extremely difficult to discriminate on who is attacked; thus the attack would be for the purpose of taking as many lives as possible. Nuclear terrorism would be most appealing to “groups seeking highly visible and psychologically potent results and having little regard for the possible consequences” (Ferguson and Potter, 2004: 26). Al-Qaeda is the group that seems the most willing to inflict mass casualties (Ferguson and Potter, 2004: 7)

There are at least two arguments that nuclear weapons are not the optimal method for killing on a mass scale. Firstly, an unsuccessful attack could “waste resources, kill members of the terrorist groups” and “embarrass the organization” (Mærli, 2004: 58). Also, the organization’s members could be killed while transporting the device, or in

¹¹ CBRN weapons are chemical, biological, radiological or nuclear weapons.

attempting to acquire the device. For organizations that use suicide bombers, the value of life for their members might not be of the highest concern. Yet, the situation could get out of hand, and take important core members of the organization at the same time, and thus even lose important leadership. Secondly, the nuclear weapon may not function as planned; the weapon could perhaps have some form of security lock, or the terrorists may not have the technical skills to handle the weapon properly. This could be a costly error for the terrorist organization both in terms of money spent as well as human resources; the organization could then lose all their investments in one attempt.

4.3.2 Recruiting future members

A motivational reason for preferring a terrorist attack could be the prospect of acquiring future members to the cause of the terrorist group. A terrorist attack using nuclear weapons would be highly visible, and in many cases crucial in recruiting more members (Rasch, 2005: 1), as it would be unprecedented. By performing a nuclear attack on a territory, it could be viewed to be so extraordinary, that more members are recruited to support the organization, both by providing mass support, but also economically in terms of funds, and physically in terms of being motivated for suicide attacks. Equipped with nuclear weapons, terrorist organizations would possess a power so great, that it could not only threaten countries, but possess more power than many states (Mærli, 2004: 31). By seeing that a terrorist organization is able to acquire such high technology capabilities, people could be convinced that the cause must also be valid.

Future members could be convinced to join as the justification for an attack is the belief system itself. This could be because religious terrorist groups tend to be more deadly than secular terrorism, due to the radically different interpretation of values, legitimacy and justification (Hoffmann, 1999: 20). Radical Islamist groups such as Al-Qaeda, and affiliated groups of Al-Qaeda, represent the greatest danger at this time because of “the nature of their motivation and the cultural, social and economic

conditions from which they come” (Dean, 2004: 1). Abu Ghaith, Al-Qaeda’s chief spokesman once said that “those youth that destroyed Americans with their planes, they did a good deed. There are thousands more young followers who look forward to death, like Americans look forward to living” (quoted in Hoffmann, 2003: 10). Osama Bin Laden himself stated “I am not afraid of death. Rather, martyrdom is my passion because martyrdom would lead to the birth of 1000s of Osamas” (quoted in Hoffmann, 2003: 13).

There are at least four arguments why using nuclear weapons might not encourage new recruits. Firstly, using a nuclear weapon could deter potential followers from joining the organization, as they might view it as too gruesome to be part of. They could fear public revulsion, and the alienation of potential followers (Jenkins, 2001). Secondly, people could fear for their own security by not knowing what the organization is actually capable of. Thirdly, terrorist organizations could fear government crackdown on the terrorist organization strong enough that the group might not survive, “the rules that now limit police authorities in most democracies would change” (Jenkins, 2001). Lastly, if a terrorist organization attempts a nuclear terrorist attack, and fails in doing so, this would harm the group; lower the morale of the organization, and even the proclaimed cause itself (Andvig et al, 1999).

4.3.3 Media exposure

To terrorists, a goal in itself could be the media exposure a nuclear attack would provide. Terrorist organizations are dependent on their actions being covered in the media in order to have an effect (Rasch, 2005: 11). “Terrorists can no longer obtain the same amount of publicity using the same tactics they used 10 years ago, and they may feel compelled to escalate their violence in order to keep public attention, or to recover coercive power lost, as governments have become more resistant to their demands” (Jenkins, 2001). However, it would not necessarily need to be a nuclear terrorist attack, in order to serve the goal of reaching the media; a conventional attack of mass scale, such as 9/11 would also serve that goal. Yet, a nuclear attack would be

so deadly and dramatic, that it would be covered in the media for months. The media often has a tendency to focus on the stories with the most colourful and spectacular events, and in order for terrorist organizations to achieve this, and to get the wanted amount of attention, they could want “showy attacks that produce a great deal of noise” (Mærli et al, 2003: 729).

By choosing to use the most deadly weapon of all, the group would ensure that their cause and information about their beliefs would be widely spread in the media picture. Their message to their followers would be portrayed in the news at all hours, and they would be known all over the world by name. Al-Qaeda for example, has a core belief that is well known by most people today. Through media exposure after 9/11; they wish to “renew and rescue Islam from the corrupt secularized governments of the Muslim countries, and to establish a unified Islamic realm based on what they define as original values and principles” (Dean, 2004: 4). If a terrorist organization were to possess and/or use nuclear capabilities, the media coverage would be total.

If the goal of a terrorist organization is to be portrayed more in the media, then a nuclear attack would undoubtedly serve that end. A nuclear attack is unprecedented, and therefore the ramifications in the media are difficult to predict. After 9/11, the media did also discuss whether Al-Qaeda had some strength to their anger against the United States, and also this was debated in the media.

The goal of media coverage must be interpreted as well, and this coverage may not necessarily be beneficial for the organization. Brian Jenkins from the RAND corporation said, “terrorist organizations want a lot of people watching, not a lot of people dead” (Jenkins in Freedman, 2002: 11). Though, after 9/11, this statement could need a review (Mærli, 2004: 59). Terrorism “cannot be defeated solely in the military sense, for all it takes is one surviving charismatic terrorist leader to the appropriate political circumstances to strike back with ruthless abandon against the citizens of the state (Cronin, 2002: 131). Even media houses in the region, in which the organization has its main base or “home territory,” may not approve of such an attack, and this could reflect negatively on the other goals for the organization.

Without positive media coverage, it might be difficult to recruit members (for example). Thus some of these goals could be seen to be dependent on each other.

4.3.4 Unreasonable countermeasure

A nuclear attack could be used to provoke what could be seen as unreasonable countermeasures. Extremist terrorist organizations, “seek to use terror to provoke the target into a disproportionate response that radicalizes, moderates, and drives them into the arms of the terrorists, expanding their supporters and allies (Lake, 2002: 16).

Countermeasures from the attacked state could be expected. Firstly, retaliation against an organization that resorts to the drastic step and use nuclear weapons could be seen to be justified by the attacked state, and any form of retaliation in principle could be used, seeing that the most deadly weapon of all has already been used by the organization. However, one of the main arguments for why it is difficult to retaliate against a terrorist organization is the lack of own territory (Blix, 2005). The terrorist organization could in a sense end up as “victims”, by being severely punished after a nuclear attack. Secondly, unreasonable countermeasures could serve a long-term goal of a terrorist organization, not only by spreading nuclear insecurity around the world, but also looking like the injured party in the end, after receiving such harsh countermeasures. Lastly, the people of the attacked territory and area/continent could turn out to support the terrorist organization, since they could be feeling mistreated by the retaliatory state.

There are at least three reasons for why unreasonable countermeasures might not benefit the organization. Firstly, the legitimacy of a terrorist group could be in jeopardy facing a nuclear attack. Members of the organization, or people that would otherwise support the goals of the terrorist organization, could judge that the group has gone too far, and moved away from the given goals of the group. Secondly, the location of the group could put supporters in direct danger, as they would be vulnerable to direct counterattacks, or even harm their own people due to attacking a place that is too close to the homeland areas of the organization (Ferguson and Potter,

2004: 6-7). Lastly, the radiation consequence may not always be clear, and could hurt thousands of their own people. Traditional separatist or nationalist terrorist groups, such as the Tamil Tigers, the Kurds in Turkey, and the IRA in Ireland, are less likely to be motivated to use nuclear weapons, as they are constrained “by the values of their base constituencies” (Ferguson and Potter, 2004: 6). In addition, the political wing of IRA, Sinn Fein, has also not been seen to be willing to jeopardize the peace process by using unconventional weapons (Parachini, 2003: 46). The ETA in Spain would also lack social support to use extreme violence (Mousseau, 2003: 5). These groups have specific territories, and could have a clear retaliatory point.

4.3.5 Undermine a regime

Another motivation for a terrorist organization to use nuclear weapons could be to undermine a regime. A terrorist organization under the impression that the regimes under which they live do not fulfil the needs of the people, could choose to attempt to undermine this regime in order for a change to take place. This dates back to the anarchists of the late nineteenth century, where “violence was designed to gain publicity, provoke repression, and, as a consequence, undermine the government” (Freedman, 2002: 12). Samuel Huntington said: “governments that fail to meet the basic welfare and economic needs of their peoples and suppress their liberties, generate violent opposition to themselves and to Western governments that support them” (Huntington in Mousseau, 2003: 7), and this could be a motivation for a terrorist organization to attempt to undermine it, in order to cause a change.

By using a nuclear weapon, the government of the residing country could lose control over the masses. As a result, the people under the regime could lose faith in the system, and “it could spark the downfall of the administration in power” (Ferguson and Potter, 2004a: 3). For example, the Islamic Movement of Uzbekistan could consider using fissile material acquired from states in Central Asia, and use this power to threaten the regime in order to pursue their own goals of political power/autonomy (Ferguson and Potter, 2004: 7).

There are at least two reasons for why undermining a regime could have negative consequences for a terrorist organization. Firstly, by such a nuclear retaliation threat against the regime, people could also choose to openly support the regime, and strengthen it in a time of need. Secondly, the people under the regime could choose to turn against the terrorist organization, and at the same time gain international sympathy and perhaps even aid.

4.3.6 Discussion of goals

It is shown that even if it is possible for a terrorist organization to acquire nuclear capabilities, it is far from always in their best interest to use them. Nuclear weapons could be the perfect weapon to cause mass destruction, mass killings and wide reporting in the media, but on the other hand, there are numerous arguments that go against the use of nuclear weapons for terrorist groups. Arguments supporting this are the tremendous ramifications a nuclear attack would cause, not just tremendous consequences for the organization itself in terms of potential countermeasures, but innocent people in the area surrounding the terrorist organization could get injured as well. The group could lose legitimacy as an organization, and the aspirations of the group could be put in question. Without legitimacy, it could be difficult for a terrorist organization to continue deadly attacks, as the group of supporters could decrease or become scarce. Also, a nuclear attack could cause environmental damage that would last for decades. As long as terrorist organizations are rational actors, it seems logical that a terrorist organization would come to the conclusion that even if the organization has access to nuclear weapons, it may not always be in their best interest to use them.

The terrorist organization that could be seen to be the most motivated to use a nuclear weapon, is an Al-Qaeda type organization.¹² This type of organization could have the

¹² By Al-Qaeda-type organization, the author refers to a world-wide terrorist organization with several cells, supporters all over the world, financial support through different channels, as well as a clear leadership structure.

willingness to kill on a mass level, and has been seen to attempt to acquire capabilities in the past. However, not all terrorist groups are seen to have a nuclear agenda; many terrorist organizations have other agendas such as political goals. An organization could thus be seen to not have the motivation to use nuclear weapons, in that the goals of the organization would not be fulfilled through mass killings. An organization that could be seen to lack motivation to use nuclear weapons is for example the ETA in Spain, as killing on a mass scale is not the goal of the organization. For this kind of terrorist organization, goals of an attack are more symbolic and aim for media attention, not people dead. Such an organization would not gain sympathy for their cause by killing on a mass scale; rather they could risk losing support by creating a feeling of repulsion from their supporters for such a gruesome act. Al-Qaeda on the other hand, could be seen to have motivation, in that, as 9/11 illustrated, the barrier for taking lives indiscriminately in a relatively large scale is already broken, and have an agenda that is larger than what can be seen to be attainable. Al-Qaeda could choose to use nuclear weapons, given that they have the capabilities, in order to show the West, and perhaps the United States in particular, that also the Arabic world has destructive power that should never be underestimated. The goal of Al-Qaeda could be to put the world economy in turmoil, though this would also affect the organization itself financially as well.

4.4 What if sub-state actors are not rational?

Elster (1989: 2) argues that the failure to recognize the indeterminacy of rational choice theory can lead to irrational behaviour. Rational choice is normative, in what to do in order to achieve given aims; however, it does not state what those aims should be (Elster, 1989: 3). It could be argued that it is irrational behaviour to commit oneself to an action without having complete or consistent preferences, or if they know very little about either option (Elster, 1983: 8). There may not always exist a “uniquely optimal action, belief or amount of evidence” (Elster, 1989: 5).

The 9/11 attack in the United States could make rational theory mute, in that civilian targets apparently were killed “out of the blue” (Lake, 2002: 15). This section divides between two levels; the suicide bomber, and the organization. On the first level, with the suicide bombers who are willing to give their lives for a cause, the question is “what if the single suicide bomber acts irrationally”? The second level is the organization that makes the actions possible and that recruits the suicide bombers (Elster, 2005: 145). We have so far operated under the auspices that a terrorist organization would apply rational choice whether to use nuclear weapons, and thus has clear reasoning behind their action. This section will discuss irrationality on both these levels.

On the group level, decision-makers could become victims under an extreme form of group polarization, which Janis calls “groupthink” (Avermaet, 2001: 432). Groupthink can occur when “the decision process of a highly cohesive group of like-minded people becomes so overwhelmed by consensus seeking that their apprehension of reality is undermined (Avermaet, 2001: 432). Conditions for groupthink to apply consist of the decision group being highly cohesive; when the group is isolated from alternative information; and when the leader of the group clearly favours a particular option (Avermaet, 2001: 432). If an Al-Qaeda-type group is used as an example, it is clear that such a leadership could be victims of groupthink, as they are often highly cohesive through their strong religious beliefs; and information could be seen to be censored. Al-Qaeda’s leadership for example, has clearly stated their intentions of acquiring nuclear capabilities (Hegghammer; 2002). Thus, at the group level, “disagreements in the decision processes are suppressed in order to sustain harmony in the group” (Janis, 1972).

At the individual level, even if some members of such groups should have a private reservation of the agenda, they are “not likely to express them overtly” (Avermaet, 2001: 432). For a suicide bomber to sacrifice his life for a given cause, and take innocent people with him or her in the act, is not necessarily irrational (Elster, 2005: 149). Yet, terrorists may have irrational interpretations, and these irrational

interpretations may further add in explaining their actions (Elster, 2005: 149). “Religion and fanaticism are said to be the main motivators for the new terrorists” (Duyvesteyn, 2004: 439).

Perhaps the group would perform an irrational act, even though the members might not be irrational. However, this does not mean that the acts themselves are irrational. For example, Al-Qaeda may have an irrational idea that the United States is to blame for all that is negative in the Middle-East, yet carrying out a nuclear attack against America may still be rational through a careful plan. “The reason is that the causal-effect of these irrational interpretations is to shape or enhance a motivation, not to affect the choice of means in how a given motivation is to be handled in a practical manner” (Elster, 2005: 149). If all the conditions of rational behaviour is falsified by a terrorist organization, then what? Especially radical Islamic terrorist organizations operate from different motivations than what they did 20 or 30 years ago (McMillan, 2004: 1).

Alternatively, instead of acting under rational thinking, it is argued that the terrorist organization could operate from a cultural perspective. For example, it has been argued that the nineteen hijackers on 9/11 were “motivated by something deeper-something that fundamentally distinguished them from their victims” (Mousseau, 2003: 8). From a cultural perspective, the terrorist organizations were not only acting from a rational strategy of the weak, but rather, they were acting under a perspective that “renders terrorism a socially acceptable method for addressing grievances in some societies (Mousseau, 2003: 7). These terrorist organizations were according to this view thus inspired by arguments and beliefs, and not necessarily rational choice. However, a cultural perspective may not necessarily be irrational. It could rather be a cultural goal of the act, and still be rational thinking.

If the terrorist organization does not assess the consequences of an attack in a rational manner, then the motivation of a possible attack is in question. The thought then remains, if there are no positive consequences for the terrorist organization to use a nuclear weapon, then it would be out of spite, or to kill random people only.

4.5 Conclusion

This chapter has attempted to assess the motivation of terrorist organizations to use nuclear weapons. It has been shown that a terrorist organization could be both rational, and motivated to use nuclear weapons. An organization could make the assessment that through the use of a nuclear weapon, a given goal is attainable, or through the use of the threat of a nuclear weapon, more credit can be given to the terrorist organization.

This chapter presented five goals that a terrorist organization might have in pursuing an attack using either conventional weapons, or a nuclear weapon. Using a nuclear weapon correctly could serve the first goal of mass-killings. However, it is clear that some of the other goals for a terrorist act may not be completely fulfilled through nuclear weapons. The four other possible goals for a nuclear attack presented were the recruitment of more members to the organization; media exposure; unreasonable countermeasures; and the goal of undermining a regime.

The possibility that a terrorist organization is not rational has been assessed. The motivation itself could be the randomness of such a decision, and that no one is safe from such a threat. Groupthink could result in that otherwise rational members of an organization could choose to keep silent; even if that means that the organization makes an irrational decision. If it is the case that terrorist organizations are not necessarily rational, then it is vital that the world community assesses the terrorist organizations' values and beliefs, and which values justifies actions that may cause death of mass numbers. The social approval of terror in Islamic countries could also be assessed.

5. Chapter 5: Conclusion

5.1 Introduction

Not since the early days of the Cold War have proliferation experts and the general public been so attuned to the threat of nuclear weapons--and with good reason.

Jon B. Wolfsthal, Deputy Director for
Non-Proliferation at the Carnegie Endowment for International Peace

Terrorism has changed since 9/1, and the world is facing a range of nuclear threats and challenges for the future. This form of terrorism seems more deadly, and aims at mass destruction. Terrorist leaders have stated in interviews that they are willing to use nuclear weapons, if necessary. This thesis has attempted to clarify the actual threat of terrorist organizations using nuclear weapons, and whether they actually have the motivation and capability to carry out a nuclear attack.

5.2 Answers to research questions

This thesis has discussed the following questions: firstly, why have terrorist groups not used nuclear weapons? Secondly, should we expect terrorist organizations to use nuclear weapons in the future? In attempting to answer these questions, this thesis has provided three answers.

1) Nuclear weapons and nuclear material is difficult - almost impossible - to develop by terrorist organizations alone.

2) It might be possible to acquire nuclear weapons or nuclear material through clandestine means.

3) If a terrorist organization is able to acquire nuclear weapons, it might not serve their goals to use them.

5.2.1 Why have terrorist groups not used nuclear weapons?

It is unlikely that a terrorist organization would have the capabilities and the expertise to construct a nuclear weapon from scratch. The capabilities for terrorist organizations to acquire nuclear weapons, or material to construct such weapons are limited, but not completely absent. With large organizations such as Al-Qaeda with cells in numerous countries, the risk of a nuclear weapon in the future cannot be ruled out in terms of capabilities.

While the motivation for a nuclear attack may seem high according to statements from terrorist organizations, the goals of an attack may not necessarily be fulfilled through an attack. If the goal is mass killings alone, then a nuclear weapon could be preferred, but for most terrorist organizations today, a nuclear weapon could in fact limit a terrorist organization whose main goal is not mass killings.

5.2.2 Could we expect terrorist organizations to use nuclear weapons in the future?

There must be a change in capabilities in order for terrorist organizations to use nuclear weapons in the future. If the capabilities changes from low to high (according to the risk model presented in section 1.3.1.1), a nuclear attack could be possible in the future, as motivation could already be high, in a group such as Al-Qaeda.

However, it seems that the weapon of choice in the future for terrorist organizations will most likely be conventional weapons. There are practical, technical, strategic, moral and emotional constraints against using nuclear weapons. Yet, terrorism has surprised the world in the past with attacks attempted to be of mass destruction, and

therefore one could not reach the conclusion that a nuclear terrorist attack could never take place.

5.3 Main Findings

This thesis has reached the following conclusions:

- 1) Terrorist organizations have difficulty in developing, stealing, or buying nuclear weapons.
- 2) Even if the use of nuclear weapons has the potential to fulfil the goals of mass killings, wide press cover and the spectacular of the event, there are many reasons for why it would not be in the best interest for terrorist groups to use nuclear weapons, even if they should possess the capabilities.
 - Mass killings: something could go wrong in carrying out the attack, it could get out of hand, and the weapon might not work as planned.
 - Recruit more members: a nuclear attack could deter potential followers; potential members could fear for their own security, as well as fear a government crackdown. The morale of the group could also be in jeopardy.
 - The terrorist organization itself could be wiped out by a counterattack; and the support of followers could be lost, as it might be perceived that the organization has gone too far.
 - The media exposure could be negative, and recruitment could then be difficult. The media base itself could be taken.
 - People could choose to support the regime. The regime could turn against the terrorist organization.

5.4 Further research

This thesis chose to assess the risk of terrorist organizations acquiring an intact nuclear weapon. However, much of the literature stated that should an organization be able to acquire nuclear capabilities, it would be a crude weapon, a gun-type weapon, or a “dirty bomb”. Either way, the consequences of a weapon that is nuclear in any way, would break a tremendous barrier in international terrorism today. More research could be done on the motivation to use a smaller nuclear weapon. Research could also be done on assessing whether it is the symbolic use of radiological material, or the mass destruction itself that is the motive.

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Appendix

http://www.iaea.org/NewsCenter/Features/RadSources/PDF/itdb_31122003.pdf

List of confirmed incidents involving HEU or Pu

24th of May, 1993 in Vilnius, Lithuania: HEU/ 150 g

4.4 t of beryllium including 140 kg contaminated with HEU were discovered in the storage area of a bank. Beryllium was imported legally.

March, 1994 in St. Petersburg, Russian Federation: HEU/ 2.972 kg. An individual was arrested in possession of HEU, which he had previously stolen from a nuclear facility for sale.

10th of May, 1994 in Tengen-Wiechs, Germany Pu/ 6.2 g. The material was detected in a building during a police search.

13th of June, 1994 in Landshut, Germany HEU/ 0.795 g. A group of individuals was arrested in illegal possession of HEU.

25th of July, 1994 in Munich, Germany Pu/ 0.24 g. A small sample of PuO₂-UO₂ mixture was confiscated in an incident related to a larger seizure at Munich Airport on the 10th of August, 1994.

10th of August, 1994 at Munich Airport, Germany Pu/ 363.4 g PuO₂-UO₂ mixture was seized at Munich airport.

14th of December, 1994 in the Czech Republic. HEU/ 2.73 kg HEU was seized by police in Prague.

June, 1995 in Moscow, Russian Federation HEU/ 1.7 kg. An individual was arrested in possession of HEU, which he had previously stolen from a nuclear facility for sale.

6th of June, 1995 in Prague, Czech Republic HEU/ 0.415 g. An HEU sample was seized by police in Prague.

8th of June, 1995 in Ceske Budejovice, Czech Republic

HEU/ 16.9 g. An HEU sample was seized by police in Ceske Budejovice.

29th of May, 1999 in Rousse, Bulgaria HEU/ 10 g. Customs officials arrested a man trying to smuggle HEU at the Rousse customs border check point.

2nd of October, 1999 in Kara-Balta, Kyrgyzstan Pu/ 1.49 g. Two individuals were arrested trying to sell Pu.

19th of April, 2000 in Batumi, Georgia HEU/ 770 g. Four individuals were arrested in possession of HEU.

16th of September, 2000 at Tbilisi Airport, Georgia Pu/ 0.4 g Nuclear material including Pu was seized by police in Tbilisi Airport.

December, 2000 in Karlsruhe, Germany Pu/ 0.001 g Mixed radioactive materials including a minute quantity of plutonium were stolen from the former pilot reprocessing plant.

28th of January, 2001 in Asvestochori, Greece Pu/ ~3 g 245 small metal plates containing Pu were found in a buried cache in the Kouri forest near the Asvestochori village.

16th of July, 2001 in Paris, France HEU/ 0.5 g Three individuals trafficking in HEU were arrested in Paris. The perpetrators were seeking buyers for the material.