

## The Changing Face of Terrorism

**T**errorism can be defined as »the substate application of violence or threatened violence intended to sow panic in a society, to weaken or even overthrow the incumbents, and to bring about political change«. <sup>1</sup> It is a strategy of »the weak against the apparently strong«, <sup>2</sup> relying heavily on press coverage and modern communication channels. With a few notable exceptions, the weapons and tactics of terrorists have not changed, but the perceptions of threat and the vulnerability of modern societies <sup>3</sup> have. New types of terrorists have emerged, some of the old ones remain or periodically return, operating with higher financial resources than in the past. <sup>4</sup>

One of the most important aims of terrorism is to create public attention or even sympathy for their overall demands. So the main reason for terrorist attacks is not the destruction or killing itself, but some kind of public information as a communication strategy. <sup>5</sup> Or as Bruce Hoffman puts it: »Terrorists are interested in publicity, not killing«. <sup>6</sup>

Five motives for terrorist action can be identified: <sup>7</sup>

- ▶ Ideological Terrorism: A desire for (revolutionary) changes in political or social structures.
- ▶ Ethno-Political Terrorism: The longing of ethnic or political minorities in existing states for their own state or at least a certain political and cultural autonomy.
- ▶ Religious Terrorism: A desire to impose religion-based norms of conduct, but also »apocalyptic fanaticism« as is characterized the Aum Shinrikyo cult in Japan. <sup>8</sup>
- ▶ Single Issue Terrorism, defined as »extremist militancy of groups or individuals protesting a perceived grievance or wrong usually attributed to governmental action or inaction«. <sup>9</sup> Salient issues under this definition are: the »fight« for animal rights, environmentalism and the »fight« against abortion. <sup>10</sup>

- ▶ The »Chosen Ones«: Mentally disturbed/deranged single persons with a certain mission or social philosophy whose planning of terrorist attacks is fundamentally rational but who work without network or group support.

Ideological, ethno-political and religious terrorism is different from guerilla warfare. Both terms, terrorism and guerilla warfare, denote irregular fighting methods that can be combined. Nevertheless they describe different insurgent actions. Guerilla warfare is a military strategy including annoyance, surrounding and finally defeat of the opponent (enemy). Terrorism primarily represents a communication strategy. It is not used primarily for destruction, but as a »signal« to achieve widespread psychological impact. Or as Franz Wördemann puts it: »Guerilla fighters want to occupy the territory, terrorists want to occupy the thinking«. <sup>11</sup> In contrast to guerilla fighters, terrorists do not operate as military units in public, they do not try to conquer or defend territories, they avoid fights with regular armed forces and do not

1. *Laqueur* (1996), p. 24.

2. A detailed definition of »Terrorism« that stresses this aspect is provided by *Hoffman* (1999a).

3. For the United States see *Sloan* (1995) and *Crenshaw* (2000).

4. For information on the financing of terrorists see *Adams* (1986).

5. This view is shared by most scientists. Cf. *Waldmann* (1999), p. 10 f. as an example.

6. *Hoffmann* (1999).

7. For the first three, see *Waldmann* (2000), more detailed *Waldmann* (1999).

8. A deeper inside into religious terrorism is provided by *Ranstorp* (1996), *Hoffman* (1998), and, with a historical perspective, *Heine* (2000).

9. *Smith* (1998b).

10. Cf. *Smith* (1998b), p. 1.

11. *Wördemann* (1977). See also *Waldmann* (2000), pp. 14 ff., *Hoffman* (1999a), pp. 52 ff. and *Wördemann* (1977).

execute direct control or sovereignty over territories and inhabitants.<sup>12</sup> Furthermore, in contrast to terrorists, guerilla fighters usually respect the dividing line between combatants and non-involved civilians.

## New Actors, New Means

Although terrorism today is still mainly a »game of bomb and gun«, it has nevertheless been »enriched« by new forms of terrorism and new types of actors in the 1990s. But no clear relation is discernible between new types of terrorists and the use of new tactics and weapons. The weapons that either new or traditional terrorists use for their attacks depend on the effects they want to achieve as part of their overall communication strategy. For example, do they want to kill certain representatives of the opposed regime? (then bombs might do the best job), do they want maximum media coverage? (then Weapons of Mass Destruction or Cyberterrorism could be more suitable, or do they want destruction with mass casualties? (several possibilities). Figure 1 shows that traditional terrorists have already made use of new weapons while new-type terrorists have relied on traditions means.

Terrorism with political, revolutionary or religious motivation is not a new phenomenon of the 1990s.<sup>13</sup> Some of the best known terrorist groups of the 1970s and 1980s have either disbanded themselves (e. g. RAF) or declared an end to »war« as they were finally accepted as political partners (e. g. IRA, PLO). On the other hand, some well-known terrorist groups of the past keep on

fighting for their more and more diffuse aims (e.g. in the Middle East). Those which have carried on have changed their structures and tactics. But also new adversaries with unfamiliar motivations and different rationales have surfaced in the 1990s, e. g. groups with pseudo-religious motivation, »single-issue« terrorists or single persons with extreme political positions.

From the end of the 1960s to the end of the 1990s, the number of fundamentalist movements of all religious affiliations – in the broader understanding – tripled world-wide. Also there has been a virtual explosion of religious terror groups to today's level whereby almost a quarter of the terrorist groups currently active throughout the world are motivated by religious concerns.<sup>14</sup> Another important change in terrorism is mentioned by Taylor: »(Political; K.H.) Terrorism will continue to develop and flourish as a tool within broader conflicts. But rather than seeing terrorism as the traditionally-viewed instrument of ideological struggle (of »left-right«) we will observe the growth of terrorism related to what Huntington calls civilisations. Also we may see a rise in related to intra-civilisation disputes, as terrorism will still remain an attractive tool for any small, disaffected group to exercise disproportionate influence.«<sup>15</sup>

12. *Central Intelligence Agency (CIA): Guide to the Analysis of Insurgency*, Washington (not dated).

13. For background information on the currently existing terrorist groups see the detailed description issued by the US-Authorities in their 1998 terrorism report/[www/global/terrorism/1998 Report](http://www/global/terrorism/1998%20Report)).

14. *Ranstorp* (1996), p. 44.

15. *Taylor/Horgan* (1996), p. 20.

Table 1:  
Terrorists / Weapons Matrix

	New-type terrorists	Traditional Terrorists
New Weapons	Chemical Attack by the Aum-Cult in Japan (1995)	IRA attack on information systems, London Square Mile financial district (1992)
Traditional Weapons	Embassy bombings in Kenya and Tanzania, guided and sponsored by Osama bin Laden (1998)	ETA assassinations/ car-bombings in Spain (e.g. 2000)

In contrast to the stereotypical terrorist group of the past, today's terrorists are part of amorphous, indistinct organisations, operate on a linear rather than a hierarchical basis, have less easily defined or identified objectives, are more willing to inflict mass, indiscriminate casualties and claim credit less frequently than they did in the past.<sup>16</sup> Laqueur points out that »in the future, terrorists will be individuals or like-minded people working in very small groups (...). The ideologies such individuals and mini-groups espouse are likely to be even more aberrant than those of larger groups. And terrorists working alone or in very small groups will be more difficult to detect unless they make a major mistake or are discovered by accident«.<sup>17</sup>

Changes are also evident in operations, targets, alliances and activities.<sup>18</sup> In the past, terrorist groups were numerically constrained and often comprised of relatively small numbers. Operations were directed against a relatively narrow set of targets and selective and discriminate acts were typical. Terrorists operated out of defined sanctuaries or safe-havens and their operational areas were predictable. The threat they caused was limited in consequences and effects. They relied exclusively on traditional weaponry of the »gun and bomb« and on the traditional tactics such as kidnapping, aircraft hijacking, blackmail attempts, assassinations (or attempts), bombings etc.<sup>19</sup>

Today's terrorists are operating increasingly on an international level, not just in one region or country.<sup>20</sup> World-wide networks are rooted in transnational migrant communities. Connections with international organized crime can be found. Terrorists have made use of enhanced propaganda opportunities and intensified lobbying and political pressure by »political arms« or legal support groups.<sup>21</sup>

### Increased Vulnerability to Terrorism

President Clinton points out: »Terror has become the world's problem. Some argue, of course, that the problem is overblown, saying that the number of deaths from terrorism is comparatively small, sometimes less than the number of people killed by lightning in a single year. I believe that misses the point in several ways. (...) Terrorism has a new face in the 1990s. Today terrorists take advantage of

greater openness and the explosion of information and weapons technology. The new technologies of terror and their increasing availability, along with the increasing mobility of terrorists, raise chilling prospects of vulnerability to chemical, biological, and other kinds of attacks, bringing each of us into the category of possible victim. This is a threat to all humankind«.<sup>22</sup>

President Clinton mentioned a very important aspect that today's societies have to be aware of: their increased vulnerability. In fact, the »environmental conditions« for terrorists have changed.

- ▶ Living in the so-called information age, people get every possible information in a very short time and they get swamped by a growing mass of information. To get recognised, terrorists have to plan and carry out more and more spectacular attacks with a growing number of persons killed or injured to obtain the media coverage that they deem to be necessary to get broad public attention. »In recent years, terrorists have found it necessary to launch more dramatic and violent attacks to attain the same degree of publicity and government responses that smaller incidents previously generated. With terrorist attacks occurring on an almost daily basis, the public and the media have become somewhat desensitised. And with a multitude of terrorist groups »competing« for the international spotlight, more dramatic incidents are likely in the future«,<sup>23</sup> and, from another perspective, »Terrorists will seek more bang for the buck«.<sup>24</sup>
- ▶ Developments in information technology make it easier for terrorists to obtain weapon-related knowledge. Technical developments lead to more and sophisticated weaponry.

16. *Hoffman* (1999).

17. *Laqueur* (1996), p. 34.

18. Cf. *Tophoven* (1999 and 2000), *Laqueur* (1996), *Neunck* (1999), *Hoffman* (1999).

19. For a detailed analysis of traditional weaponry and tactics see *Clutterbuck* (1975), p. 39 ff.

20. *Deutch* (1997), p. 11.

21. *Hoffman* (1999).

22. Remarks by the President of the United States to the Opening Session of the 53<sup>rd</sup> United Nations General Assembly, United Nations, New York, September 21, 1998, The White House, Office of the Press Secretary.

23. *Simon* (1989), p. 12.

24. *Deutch* (1997), p. 11.

- ▶ Today's advanced societies are more dependent on electronic management and transmission of information (defence, banking, trade, transportation, transactions etc.).
- ▶ »Social islands« have emerged, comprised of those who feel marginalized by and from the unfolding of the information age.<sup>25</sup>
- ▶ Along with liberal civil rights, sensitivity has grown for ethical and environmental matters such as animal rights, environmental protection, the question of abortion etc..
- ▶ Terrorism can be ever more effectively combined with the growing and technically advanced sector of Organized Crime.<sup>26</sup>
- ▶ In the post-Cold-War era, the legitimacy of a number of states in (Eastern) Europe, Asia and Africa has been challenged by the growing assertion of both sub-national and transnational calls for » self-determination« by ethnic groups and religious movements. The level of instability and concomitant violence is further heightened by the rise of non-state actors willing to challenge the primacy of the state.<sup>27</sup>

Some scientists believe that the mentioned changes in terrorism and the surrounding environment have created new types of terrorists.

## New Types of Terrorists

### The Single-Issue Terrorist: Animals, Environment and the Right to Live

The term »Single-Issue Terrorism« is accepted as meaning the extreme militancy of individuals or small groups protesting against a perceived grievance or wrong attributed to governmental action or inaction.<sup>28</sup> Under this heading, three issues have gained salience: the »fight« for animal rights, environmentalism and the »fight« against abortion.

The issues are legitimate matters of concern. The vast majority of »activists« remains within the rule of law. But, comparable to ethnic, religious or ideological issues, a small extremist minority can be called terrorists. Smith states that »legitimate and traditionally moderate organisations such as animal welfare societies have for years achieved notable results on behalf of the cause for which they lobby. But, over the past two decades, some

of the more popular issues have attracted radical elements that now form an extremist militant core prepared to resort to threats, violence and destruction (...) to achieve their aims. In the case of the abortion issue, this has included murder«.<sup>29</sup> So far, the definition of terrorism given above fits perfectly. Some examples are presented in table 2: Although functioning domestically, single-issue terrorists are international in scope. A certain degree of communication takes place among extremist groups within individual issues, mainly via Internet. The threat of single-issue terrorism is still high; extremist incidents continue to occur in Europe and North America. Each of the mentioned issues remains controversial and will attract people ready to use extremist tactics and terror for selfish and believed-to-be-altruistic reasons.<sup>30</sup> The challenge of the future will be to provide an appropriate response to this threat that avoids overreaction.

### The » Bin-Laden-Type« Terrorist

Many scientists believe that, within the last decade, a new type of terrorist has been identified with the following attributes: high financial resources, legal businesses, extreme political or religious beliefs, no will to be directly involved in actions. Yet, few examples can be given, because few persons have appeared on the scene openly, so identification is one of the major challenges to intelligence- with one notable exception: Osama bin Laden.

Bin Laden can be described as a »private terrorist« with a »private army« that he uses for his interests and aims, based on a perverted understanding of Islam. The »dealer and banker of death and terror« sees terrorism the »marketing way«, mixing it with business. He uses his commercial contacts world-wide to finance his terrorist activi-

25. Cf. *Lange* (1998), p. 9.

26. *Lange* (1998), p. 11 f. calls this phenomenon »Symbiotic Terrorism«.

27. Cf. *Sloan* (1995).

28. *Smith* (1990), p. 7.

29. *Smith* (1998b), p. 1 f.

30. Cf. *Smith* (1998b), p. 7 f.

**Table 2:**  
**Incidents of Single-issue Terrorism**

<b>Fight for Animal Rights</b>	<b>Environmental Protection</b>	<b>Abortion: The Right to Live</b>
Product Contamination in meat shops, drugstores, supermarkets and department stores	1984 – Tree spiking hazardous to loggers using chain-saws, several persons seriously injured	Appearance of a fundamentalist anti-abortion handbook in the USA («The Army of God»), which gives detailed instructions on the sabotage of clinics, silencers for guns and C4 explosive, and states: »(...) we are forced to take aim against you (...) execution is rarely gentle«
Incendiary Techniques, Bombs and Mail Bombs.	1994 – The publication »A Declaration of War« in the USA advocated violence, incl. homicide against farms, animal research facilities, logging companies and hunters to stop environmental abuses.	
1989 – bombs attached to the cars of a veterinary surgeon and a university researcher in Britain		
1987 – A string of firebombs in department stores in England	1995 – Opposition against road-building in Britain included trip-wired booby traps, man-straps filled with pungee stakes; several workers injured.	Since 1993, five people have been killed and another 11 seriously injured in the USA. Clinics have been subjected to noxious gases and fire-bombs.
1993 – During the Christmas rush nine firebombs in four Chicago department stores.		
1994 – A series of letterbombs injured four persons in Britain	Continued destruction of equipment and infrastructure	Clinic staff has been threatened and harassed.
1995 – Letter bombs to a think-tank that supports the fur industry and a genetics laboratory in Canada.	1995 – British »Eco-Terror« magazine published plans to build firebombs and grenades, and urged their use against the police	Sniper incidents in Canada in 1994, 1995 and 1997 have wounded 3 doctors; a clinic war burned.
1998 – A variation of the mailbomb technique in Britain featured razor blades allegedly dipped in rat poison or AIDS-infected blood, one of which was mailed to Prince Charles.	In the USA, supposedly noxious chemicals were spilled in government offices and the head office of a logging company.	

Source: Smith (1998b).

ties. Experts assume that his enormous financial resources<sup>31</sup> have been smuggled into the European money market. More of his money can be found in countries which accept electronic money transfer without checking its origin. Most of his money is hidden in legal business activities and transactions. He is said to have business contacts with over 80 partners around the globe. Secret finance and trade agencies in Europe, the Islamic world and the USA administer the money depots. Some of his business partners don't even know for whom they are working. One of bin Laden's methods is to use his money to win new friends (e. g. investments in the banking sector in Sudan). This mixture of

business and terror was also practised in Kenya where bin Laden invested in a fish processing factory which was later used as a logistic base for the US-embassy bombing. Stephen Emerson, American scientist and expert on terrorism, states that bin Laden's special ability is to effectively connect different networks and that his strength is to consolidate diverse interests.<sup>32</sup>

31. At the beginning of his activities he had 300 million dollar to his disposal. The Bin Laden Clan made an estimated 5 billion dollar in the construction business.

32. Cf. *Tophoven* (2000b).

The danger and threat goes far beyond Osama bin Laden himself. It is this new type of terrorist with the personal abilities described above that modern societies have to be aware of. Their financial resources make them rather independent and legal and illegal business go hand in hand. They do not need permanent organisation structures and are therefore very difficult to detect. So the question: »How many bin Ladens are there world-wide?« cannot be answered. People with the attributes listed above and the potential of bin Laden could be found among the organised criminals and drug barons in Latin America and religious extremists in the Middle East and Central Asia. To detect and eliminate further Bin-Laden-type terrorists will be one of the main challenges in the future.

## Weapons of Mass Destruction in the Hands of Terrorists

### Interests, Accessibility and Barriers

Until the Aum cult attack with chemical weapons in 1995, only a few scientist and policy-makers were thinking about terrorism with »Weapons of Mass Destruction« (WMD).<sup>33</sup> The world was so shocked by this incident that the discussion intensified thereafter. WMDs are nuclear, biological and chemical weapons. But are they an alternative to traditional weapons for terrorist attacks? It is undoubtedly true that the use of one single device of such weapons might kill thousands of people in a rather short time. Protection against these weapons is very complicated or even impossible.

In attempting to answer the question, we have to keep in mind Bruce Hoffman's thesis: »Terrorists are interested in publicity, not killing«. <sup>34</sup> They have to be sure that they possess the adequate technical knowledge as well as the ability to make WMD work »at first try« because they will very rarely get a second chance. On the other hand, conventional terrorism still works as the bombings e.g. in Oklahoma City, Moscow and Dagestan have proved.

Furthermore, terrorists are very risk-averse. It is without doubt that the use of WMD needs more sophisticated knowledge and therefore bears higher risks because more complicated and complex operations are more likely to fail. That is

one of the reasons why terrorists are politically radical, but operationally rather conservative. The vast majority tends to adhere to the same sort of weapons they have successfully relied on in the past or only vary them very slightly though of course use is certainly made of developments in conventional weapon techniques.

But some incidents in the recent past, either attempts at stealing/smuggling of nuclear material or the purchase of substances that can serve as ingredients for biological and chemical weapons,<sup>35</sup> show that non-state actors have an increasing interest in WMD.<sup>36</sup> Two factors are significant for terrorists' interest in WMD:

- ▶ the increased world-wide access to materials and know-how for the production of such weapons, and
- ▶ the increased inclination of newly founded groups towards pseudo-religious/apocalyptic ideas.<sup>37</sup>

Table 3 shows that the use of WMD in terrorist acts is not impossible. According to Falkenrath, a specific threat of WMD terrorism arises when a group falls into 3 categories simultaneously:<sup>38</sup>

- ▶ It must be capable of acquiring and using WMD (including all the risks),
  - ▶ It must be interested in mass-murder, and
  - ▶ It must want to use WMD to achieve it,
- whereby the first category must be seen as the most crucial point.

There is no obvious affinity between the Bin Laden-type terrorist and the use of WMD. Groups capable of carrying out mass-casualty attacks would have to be unusually organized. Ad hoc groups that come together to carry out a specific attack or series of attacks are more likely to meet these requirements than »traditional« terrorist groups.<sup>39</sup> So far, terrorists have neither demonstrated that they can fully exploit the rising vulnerabilities of post-modern societies, nor that they desire and are able to wield WMD instruments

33. Cf. *Stern* (1998), p. 176.

34. *Hoffman* (1999a).

35. A detailed list of examples of »cases with NBC materials« is provided by *Neuneck* (1999).

36. Cf. *Sopko* (1996), pp. 3 ff. and *Neuneck* (1999), p. 8 f.

37. *Sopko* (1996), pp. 3 ff.

38. *Falkenrath* (1998).

39. *Stern* (1998), p. 178.

40. *Pilat* (1998), p. 172.

Table 3:  
**Accessibility and Production Barriers for WMD Weapons**

	Scientific Information for Production and Design	Accessibility of Material	Production of Weapon Material	Weaponization	Risk of Detection
<b>Nuclear Weapons</b>	Available publicly	Stealing/ smuggling	Technical challenge, but possible	Not impossible, but could lead to fizzle	Increasing
<b>Biological Weapons</b>	Available from open sources	Ordering from Biological services	Culturing micro-organism can be accomplished by individuals	Technical and intellectual challenge	Yes, indoor
<b>Chemical Weapons</b>	Available from open sources	Precursor materials available	In kitchen or basement	Challenge	Yes, indoor

Source: Neuneck (1999), p.4.

effectively.<sup>40</sup> But there is no doubt that such weapons are a dangerous enrichment of terrorists repertoire and yield a new challenge for states and policy-makers.

### Nuclear Terrorism

Nuclear weapons have to be divided into two basic categories: nuclear bombs (fissile material needed) and conventional bombs using radioactive material (non-fissile materials possible and likely). Concerning the design of a nuclear weapon, scientific information is not the limiting factor. The most significant technical barriers<sup>41</sup> in the case of nuclear bombs are the acquisition of fissile material and a chance of nuclear testing without getting detected, which seems to be almost impossible. Although the scientific information is said to be available publicly and nuclear materials might be obtained via stealing or smuggling, building a nuclear bomb is extremely difficult. Even countries with resources and expertise like Iraq have struggled unsuccessfully to produce one.<sup>42</sup>

So, a terrorist idea to produce a nuclear bomb does not seem to be a very good and promising one. Stealing could be an easier option. The often discussed problem of loose nukes, vagabonding nuclear material and frustrated scientists in Russia and the CIS has to be dealt with very seriously. The same holds for non-proliferation in general, even

though this refers primarily to states that have launched programs to become a nuclear power. Let us assume that it might be possible for terrorists to steal a nuclear bomb, say in Russia. How could it be smuggled out of the country, given the size, weight and dangers of such a bomb, and given intensified official search for it? How can it be brought to the place where it should detonate without being detected? It is easy to see that stealing a nuclear bomb does not seem to be a promising way for terrorists. But the strongest argument is that up to now the Russian nuclear weapons complex has proved to be stable because the Russian governments have been very concerned about security and are working to improve accountability and control. In addition, the Russians have concentrated their warheads in fewer locations and moved them out of areas of unrest.<sup>43</sup> Furthermore, the idea that any (rogue) state (»State-Sponsored Terrorism«) would hand over control of nuclear weapons to terrorists is hard to believe because the risk that they would get out of control and turn against their patrons would be too great.<sup>44</sup>

41. *Falkenrath/Newman/Thayer* (1998).

42. *Kamp* (1998), p. 170.

43. There were approximately over 500 nuclear storage sites in the Soviet Union and Eastern Europe in 1990 and there are less than 100 today in Russia.

44. Cf. *Kamp* (1998), p. 170.

The most likely possibility is that of stealing fissile or non-fissile material in Russia or elsewhere. Deutch points out that »despite the number of press articles claiming numerous instances of nuclear trafficking world-wide, we have no evidence that any fissile materials have actually been acquired by any terrorist organisation. We have also no indication of state-sponsored attempts to arm terrorist organisations with the capability to use any type of nuclear materials, fissile or non-fissile, in a terrorist act. Unfortunately, this does not preclude the possibility that a terrorist or other group could acquire, potentially through illicit trading, enough radioactive material to conduct an operation, especially one designed to traumatise a population«.<sup>45</sup>

To draw a conclusion, the highest danger and threat does not lie in a potential terrorist use of a nuclear bomb, but in a kind of environmental pollution with radio-active materials. Terrorists would not necessarily need fissile materials for their purposes. Non-fissile radioactive materials dispersed by a conventional explosive would certainly cause damage to health, property and the environment as well as societal and political disruption. Such materials could be used to contaminate water supplies, business centres, government facilities or transportation networks.<sup>46</sup> But, »traditional terrorist groups with established sponsors probably will remain hesitant to use a nuclear weapon, for fear of provoking a world-wide crackdown and alienating their supporters. In contrast, a new breed of multinational terrorists<sup>47</sup> might be more likely to consider such a weapon if it were available«.<sup>48</sup>

If a terrorist organisation wanted to inflict mass casualties and if the expected results would make sense in their overall communication strategy, it could try to use biological and chemical weapons, which are comparatively easier to acquire or produce.<sup>49</sup>

### Biological and Chemical Weapons:<sup>50</sup> Aum Shinrikyo and Beyond

Biological and Chemical Weapons (BCW) are often referred to as the »poor man's nuclear bomb«. Indeed, biological agents (pathogens such as viruses or bacteria) and chemical substances can be obtained rather easily because they are traded

mainly for medical reasons (biological agents) or can be bought legally (chemical substances). The knowledge of how to deal with these agents and substances is available publicly, e. g. via books like »The Poisoner's Handbook« and »Silent Death« in the United States. So the danger of terrorist use of biological and chemical substances to build weapons cannot be ruled out. Some of the advantages of BCWs for terrorist use could be:<sup>51</sup>

- ▶ the small quantities of toxic agents needed for mass-destruction attacks, which limit the costs and logistical difficulties of BCW's production or acquisition,
- ▶ their undetectability by traditional anti-terrorist sensor systems,
- ▶ in some cases, the lack of an agent »signature«, which makes it possible to disguise the cause of death,
- ▶ the extent of sheer terror and societal disruption that may be instilled in a target population.

In the past, experts considered such a terrorist option not to be very likely. This attitude has changed after the two terrorist attacks with chemical substances (Sarin nerve gas) by the Aum cult in Japan: their first attack in Matsumoto killed 7 people and injured another 500, their second and better known attack in the Tokyo subway system killed 12 people and injured approximately another 5,500. Furthermore several attempts at purchasing biological agents or chemical substances have been made by groups and single persons around the globe.<sup>52</sup> This clearly shows that terrorism with

45. Testimony before the Permanent Subcommittee on Investigations of the Senate Committee on Government Affairs by the DCI, *John M. Deutch*, 20 March 1996.

46. Cf. *Deutch* (1996), Testimony, opt. cit.

47. For example politically committed, mixed nationality Islamic militants or pseudo-religious cults like Aum Shinrikyo in Japan. The latter, known for their chemical attack in Tokyo, also tried to mine its own uranium in Australia and to buy Russian nuclear warheads.

48. *Deutch* (1996), Testimony, opt. cit.

49. *Falkenrath* (1998).

50. For a deeper insight into the problem of chemical and biological terrorism, see the brilliant and very detailed study by *Purver* (1995), which also summarizes the conclusions of most of the open literature.

51. Cf. *Purver* (1995).

52. Cf. *Sopko* (1996), pp. 3 ff.

53. *Neuneck* (1999), p. 3, and *Thränert* (2000).

54. *Falkenrath/Newman/Thayer* (1998), p. 16.

BCWs is possible and can be called successful to a certain extent.

But one has to differentiate. Biological weapons without a system for aerosol dissemination would not be very effective<sup>53</sup> and should be considered as potentially dangerous contaminants rather than WMDs.<sup>54</sup> An enormous mass of agents is required for inflicting mass casualties in chemical attacks on open-air targets. The danger here lies in outdoor attacks e.g. with a large truck bomb or indoor attacks killing a few hundred people.<sup>55</sup>

The groups extremely interested in ChemBio-Terrorism are cults or groups with »apocalyptic fanaticism« like Aum Shinrikyo in Japan or the already mentioned mentally disturbed/deranged single persons (»the chosen ones«) with a certain »mission« or »social philosophy«. The activities of the Aum cult turned out to be the only cases of concrete chemical terrorism. Fortunately, they did not have any imitators. This might be a clear sign that it is not that easy to carry out effective terrorist acts with biological or chemical weapons. Although Aum made very costly efforts over years, they were only able to produce Sarin of rather poor quality (diluted) which is not a very good result when compared to their inputs.<sup>56</sup> Aum was an organisation with over 40.000 members and had financial resources of approximately one billion US-Dollar, which they used to recruit scientific and technical experts from Russia, Japan and elsewhere.

As shocking as this act still is, it also shows in retrospect that such weapons are still no feasible alternative to conventional weapons concerning »effective« terrorist acts (in terms of destruction, casualties). The reasons are:<sup>57</sup>

- ▶ the technical barriers mentioned,
- ▶ the perceived uncontrollability of the agent, including the possibility of harm to the user,
- ▶ political disutility, including the likelihood of alienating (potential) supporters on moral grounds,
- ▶ fear of unprecedented governmental retribution that might follow,
- ▶ the lack of a perceived need for such indiscriminate, high-casualty attacks to reach the goals of the terrorists, and
- ▶ a general reluctance to experiment with unfamiliar weapons.

Still, there have been many reports of terrorist threats to use BCWs in attacks. Apart from Aum, such weapons have also been, »successfully« used in some instances such as product contamination and individual assassinations. But, given the mentioned risks, why do terrorists try to use BCWs? What they want and what they get is high media coverage and attention around the world. So one very important reason to use WMD in the future will not be their effectiveness, but the attention that can be caught by using them. If this thesis holds true, it is of minor importance what overall technical quality these weapons made by terrorists have. Another worrying aspect is that Aum has been able to work on their weapon projects over years without being detected by police or intelligence agencies.<sup>58</sup>

### The Likelihood of WMD Terrorism

The danger of ChemBioTerrorism seems to be higher than that of nuclear terrorism. Walter Laqueur points out:<sup>59</sup>

- ▶ Chemical agents are easier to produce than nuclear weapons, but very difficult to keep safely in stable conditions, and their dispersal depends very much on climatic factors.
- ▶ Biological agents are the most dangerous, but storage and dispersal is even trickier than for chemical agents. Also the risk of contamination for the people handling them is high and many of the most lethal bacteria and spores do not survive well outside the laboratory.
- ▶ Given the technical difficulties, terrorists are less likely to use nuclear devices than chemical agents, and least likely to use biological weapons.

On the whole, however, many scientists believe that the likelihood of future use of BCWs is, in contrast to nuclear weapons, considerable and growing. The reasons are:<sup>60</sup>

- ▶ increased security against traditional types of terrorist attacks,

55. *Falkenrath/Newman/Thayer* (1998), p. 16.

56. Cf. *Thränert* (2000).

57. *Purver* (1995).

58. *Thränert* (2000).

59. *Laqueur* (1996), p. 30.

60. For a summary see *Purver* (1995).

- ▶ public indifference to the latter, and the need for more spectacular acts to attract attention,
- ▶ a recent increase in high-casualty, indiscriminate attacks,
- ▶ the proliferation of BCWs and materials worldwide, and
- ▶ an increase in inter-ethnic and religiously-inspired violence with fewer humanitarian inhibitions.

The most important point, as far as terrorist motivation is concerned is the additional horror that is caused by the use of WMDs. This attaches a premium to investing in them.<sup>61</sup> Religious or pseudo-religious cults are particularly tenacious. Even after multiple failures in its efforts to use biological weapons, Aum Shinrikyo refused to switch to conventional weapons, developing chemical weapons instead for its attack in Tokyo.<sup>62</sup>

## Cyberterrorism

Cyberterrorism is being discussed as a new threat that terrorists might be able to cause via Internet. Generally, two classes of disruptive activities have to be distinguished:<sup>63</sup>

- ▶ *»Ordinary« Hacking*: This refers to operations against target Internet sites with the intention to cause disruption but not serious damage (loss of life etc.). Examples are Web sit-ins and virtual blockades, automated e-mail bombs, Web hacks, computer break-ins and computer viruses and worms.
- ▶ *Cyberterrorism*: This refers to the convergence of cyberspace and terrorism. It covers politically motivated hacking operations intended to cause grave harm such as loss of life or severe economic damage. An example would be penetrating air traffic control systems to make planes collide.

Only the latter will be considered in more detail here. Pollit offers a good working definition of Cyberterrorism: »Cyberterrorism is the premeditated, politically motivated attack against information, computer systems, computer programs and data which results in violence against non-combatant targets by subnational groups or clandestine agents«.<sup>64</sup>

Cyberterrorism offers »advantages«:<sup>65</sup> It can be conducted remotely and anonymously, it is relatively cheap, it does not require the handling of

explosives or a suicide mission and it would get extensive media coverage. But there are also some drawbacks:<sup>66</sup> Because systems are complex, it is harder to control an attack and achieve the desired level of damage and, unless people are injured, there is also less drama and emotional appeal.

There are two general methods of cyberterrorism: Information technology (IT) itself is the target and/or IT is the tool of a larger operation.<sup>67</sup> Table 4 shows some examples:<sup>68</sup>

At present, it may seem that there is little concrete evidence for a Cyberterrorism threat because only few examples can be given. These are, nevertheless, very alarming ones.<sup>69</sup>

- ▶ A »PLO« virus was developed at Hebrew University in Israel.
- ▶ In Japan, groups have attacked the computerised control systems for commuter trains, paralyzing major cities for hours.
- ▶ The Italian Red Brigade's manifesto specified the destruction of computer systems and installations as an objective for »striking at the heart of the state«.
- ▶ Sinn Fein supporters working out of the University of Texas at Austin posted sensitive details about British army intelligence installations, military bases, and police stations in Northern Ireland on the Internet.

The possibilities for hackers to create chaos are almost unlimited and the vulnerabilities will increase. An unnamed US intelligence official has pointed out that, with one billion US-Dollar and 20 capable hackers, he could shut down America.<sup>70</sup>

It is not hard to imagine that terrorists could do so as well, especially when they have sufficient financial resources and employ computer experts in legal businesses that can be used for or merged with their true intentions and, finally, if the targets are smaller like the manipulation possibilities

61. Cf. *Simon/Benjamin* (2000), p. 71.

62. Cf. *Simon/Benjamin* (2000), p. 71.

63. Cf. *Denning* (1999), p. 1.

64. *Pollit* (1997), p. 285.

65. *Denning* (1999).

66. *Soo Hoo/Goodman/Greenberg* (1997).

67. *Devost/Houghton/Pollard* (1996).

68. The Table is based on *Devost/Houghton/Pollard*, 1996, and enriched with examples provided by *Collin* (1997).

69. Cf. *Devost/Houghton/Pollard* (1996), p. 2.

70. Cf. *Laqueur* (1996), p. 35.

Table 4:  
Tool/Target Matrix of Cyberterrorism

	Physical Target	Digital Target
Physical Tool	Conventional terrorism (e. g. Oklahoma City bombing)	IRA attack on Square Mile financial district, London, 1992
Digital Tool	E. g. terrorists spoofing an air-traffic control system to bring down a plane, manipulating of computers in the food processing industry leading to poisoned products, or of the computer-controlled composition of medical products	E. g. Trojan horses in public switched network, or manipulation of financial transactions that could cause serious difficulties even for national economies

mentioned in table 4. Laqueur asks the conclusive question: »Why assassinate a politician or indiscriminately kill people when an attack on electronic switching will produce far more dramatic and lasting results?«.<sup>71</sup>

Just recently in his statement before the Joint Economic Committee in February 2000, John Serabian, Information Operations Issue Manager at the CIA, draws a rather alarming picture concerning terrorists: »We are detecting with increasing frequency the appearance and adoption of computer and Internet familiarity in the hands of these non-state actors. (...) Terrorists (...) have come to recognise that cyber weapons offer them new, low-cost, easily hidden tools to support their causes. (...) Terrorists and extremists already use the Internet to communicate, to raise funds, recruit, and gather intelligence. They may even launch attacks remotely from countries where their actions are not illegal (...). Cyber attacks offer terrorists the possibility of greater security and operational flexibility«.<sup>72</sup>

In summary, the use of new technologies would certainly secure high media coverage for terrorists. It could make sense in their overall »communication strategy«. Communication technologies therefore will be a very attractive target in future operations.

## Conclusion

Terrorism clearly is a phenomenon in transition. New types of actors have emerged, new means are being deployed, new controversial issues within or between societies make for new motives for extremist behaviour. But conventional terrorism

will remain the most important form of terrorism. However, it will be upgraded by developments in weapon technology. Therefore, it should not be played down. WMD terrorism might occur via single incidents but will not play a major role. Cyberterrorism, in turn, must be expected to become very important.

Terrorism is more than changing weapons, actors and motivations:<sup>73</sup> it is a kind of struggle that ultimately is fought in the political arena. Good intelligence and a professional security force are necessary. But what is most important is a public that is informed and engaged, that understands the nature of the threat, its potential cost, and why the fight against terrorism is its fight, too. ◀

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71. Laqueur (1996), p. 35.

72. Statement for the Record before the Joint Economic Committee on »Cyber Threats and the U.S. Economy« by John A. Serabian, Jr., Information Operations Issue Manager, Central Intelligence Agency, 23 February 2000, Washington D.C.

73. Cf. Chapter 9 (Responding to Terrorism) of the U.S. Department of Defense's 1997 Annual Defense Report.

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