PREFACE

Terrorism informatics is defined as the application of advanced methodologies and information fusion and analysis techniques to acquire, integrate, process, analyze, and manage the diversity of terrorism-related information for national/international and homeland security-related applications. These techniques are derived from disciplines such as computer science, informatics, statistics, mathematics, linguistics, social sciences, and public policy. Because the study of terrorism involves copious amounts of information from multiple sources, data types, and languages, information fusion and analysis techniques such as data mining, data integration, language translation technologies, and image and video processing are playing key roles in the future prevention, detection, and remediation of terrorism[1]. Within the homeland security industry, information fusion is defined as the use of computer technology to acquire data from many sources, integrate this data into usable and accessible forms, and interpret the results[2]. Although there has been substantial investment and research in the application of computer technology to terrorism, much of the literature in this emerging area is fragmented and often narrowly focused within specific domains such as engineering, computer science, computer security, information systems, knowledge management, and biomedicine.

The goal of this edited volume is to present an interdisciplinary and understandable review of terrorism informatics work for homeland security along two dimensions: methodological issues in terrorism research, including information infusion techniques to support terrorism prevention, detection, and response; and legal, social, privacy, and data confidentiality challenges and approaches.

SCOPE AND ORGANIZATION

This book has been grouped into two units. Unit I focuses on the methodological issues in terrorism research including trends, achievements and failures in terrorism research, methodological challenges in terrorism, challenges in retrieving and sharing terrorism information resources, and root causes of terrorism and the implications for terrorism informatics. It

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[1] National Research Council, 2003. Making the Nation Safer: the Roles of Science and Technology in Countering Terrorism, p11.

[2] Ibid, p. 166.

also attends to critical socio-technical topics relevant to information and knowledge management such as privacy, data confidentiality, and legal challenges. Unit I chapters address the following topics and concepts:

- Mapping the domain of terrorism research
- Identifying key terrorism researchers
- The impact on 9/11 on terrorism
- Primary sources for the study of terrorism
- Analyzing the root causes of terrorism
- The construction of information resources useful for the study of terrorism
- Threat assessment and analysis
- Methods to support counterterrorism
- Data mining and privacy concerns

Unit 2 presents current research, including case studies, on the application of terrorism informatics techniques (such as web mining, social network analysis, and multimodal event extraction and analysis) to the terrorism phenomenon. Unit 2 focuses on three major areas of terrorism research: prevention, detection, and response as identified by the National Research Council [3] and the U.S. White House's Office of Science and Technology Program (OSTP). [4] Unit III will present the critical sociotechnical topics relevant to information and knowledge management: social, privacy, data confidentiality, and legal challenges.

- Examining "Jihad" on the world wide web
- Comparing extremist groups websites across regions
- Analyzing extremist communications as manifested in web forums
- Terrorist analysis systems and detection
- Identification of potential bioterrorist weapons
- Detecting and analyzing anomalous content
- Examining "insider" threats
- Using web mining and social network analysis
- Video analysis and deception detection
- Situational awareness technologies for disaster response

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[3] Ibid., p. 167.
[4] Zahn, M.A. and Strom, K.J., 2004, "Terrorism and the Federal Social Science Research Agenda". Edited by M. Deflem. In Terrorism and Counter-Terrorism: Criminological Perspectives. Elsevier p112.

CHAPTER STRUCTURE

Each chapter follows a consistent structure to ensure uniformity and ease of use:

- Title
- Authors and affiliations
- Introduction: introduces the relevance and significance of the topic
- Literature review/Overview of the field: a systematic review of related works in the topic area
- Case study/Methods/Examples: One or two detailed studies or examples of selected techniques, systems, implementations and evaluations
- Conclusion and discussion
- Acknowledgements
- References and notes
- Suggested readings
- Online resources
- Questions for discussion

The work is further enhanced by author and subject indexes at the back of the book, intended to facilitate ease of access to the contents./

INTENDED AUDIENCE

The audience of the book is intentionally broad. It is intended to bring useful knowledge to scientists, security professionals, counterterrorism experts, and policy makers. It is also intended to serve as reference material and as a textbook in graduate-level courses related to information security, information policy, information assurance, information systems, terrorism, and public policy. Readers will learn new concepts, technologies, and practices developed in terrorism informatics through the comprehensive reviews of recent work and detailed case studies presented in each chapter. Students and researchers will broaden their understanding and knowledge in these new research topics. Practitioners will be able to better evaluate and/or employ new and alternative technologies for their current projects and future work.

2

RESEARCH ON TERRORISM

A Review of the Impact of 9/11 and the Global War on Terrorism

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CHAPTER OVERVIEW

This survey of terrorism research focused on research studies published in the first five years after the 9/11 attacks. It highlights a number of positive trends which can be seen in this initial period after 9/11. To begin with, it is clear that more researchers are working on the subject than before and there has been a real increase in collaborative studies. This allows studies to be more ambitious in both data-collection and data analysis, though there has only been a very small shift away from literature review-based research. There has, however, been a much more promising increase in the use of descriptive and inferential statistical analysis. The use of inferential statistics on terrorism data in particular has more than trebled since 9/11, a trend which can only help improve the reliability and validity of the conclusions being reached by researchers. Admittedly, this is an increase starting from an extremely low level indeed (and still compares poorly to core journals in other areas) but it is unquestionably a major step in the right direction.

1.   INTRODUCTION

Research on terrorism and terrorism-related issues has increased dramatically in the wake of the 9/11 attacks. This is not surprising. 9/11 witnessed the most destructive terrorist assaults in recorded history, and the attacks led to far bloodier conflicts as part of the subsequent war on terror. Terrorism has become the defining issue of international politics of the first decade of the 21st century. It would be remarkable if such prominence was not matched by a significant increase in research interest in this area. In 1988, Schmid and Jongman noted that 90 percent of the literature on terrorism had been written since 1969. If current trends continue, however, within two or three years we will certainly be able to say that over 90 percent of the entire literature on terrorism will have been written since 9/11. Indeed, we may already have passed that milestone. This is not to say that the literature before was sparse, but rather to emphasize the sheer volume of material now being produced in the area.

The scale of this new literature is difficult to grasp. Speaking in September 2002, Yonah Alexander commented that the previous year had seen roughly three new books on terrorism being published each week. This had sounded a considerable number at the time but as Figure 2-1 shows below it actually grossly underestimated the number of new books being published. Indeed, that level of publication was already reached in 2000 when some 150 books on terrorism were published. In contrast, in 2001 this figure jumped massively to 1108 titles, with naturally almost all of these being published in the final three months of the year. 2002 saw an even greater number of titles released with a staggering 1767 titles published (34 new books each week). Each of the following years has seen well over 1000 new books added to the literature. Indeed, the five years since 9/11 have probably seen more books published on terrorism than appeared in the previous 50 years. Currently, one new book on terrorism is being published every six hours. And this is just English-language titles (1).

The number of articles on terrorism in the academic journals has also increased hugely (though not to quite the same shocking level as with books). The journal *Studies in Conflict & Terrorism* brought out four issues per year prior to 9/11. Now it publishes on a monthly basis. Beyond the core terrorism studies journals, articles on the subject in other journals have also increased hugely across the board.(2) The ability to maintain an up-to-date understanding of the literature was already seriously stretched in the 1990s. Now, it is unquestionably impossible for one person to do so, and this can be seen in the growing number of research reviews being published both as articles and as books. In the final decades there were perhaps two or three such books published each decade. Today, that has changed to at least two or

three published each year (with the volume you hold in your hand being of course another addition), though the sheer amount of new books detailed in Figure 2-1 suggests that even this level may be far too low an estimate.
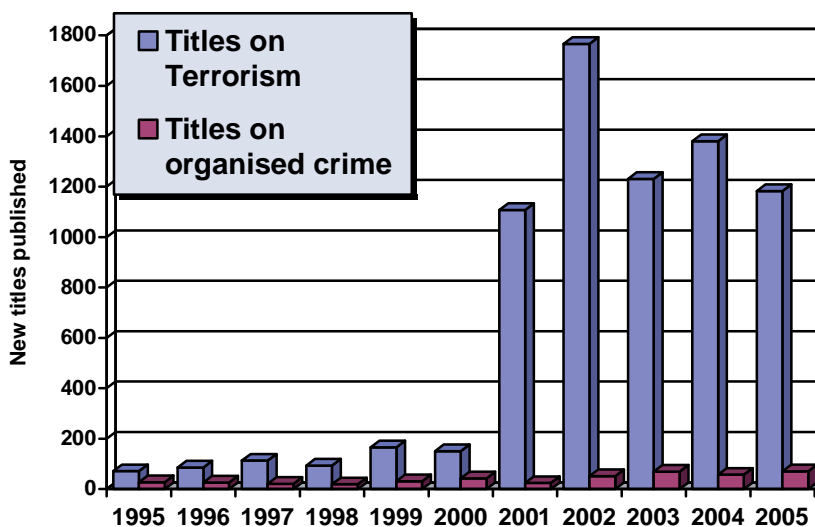

Figure 2-1. Books published on terrorism 1995 – 2005 (Organized crime books shown for comparison)

The rise in such reviews and surveys of the research literature reflects both the massive increase in volume and more significantly the massive increase in interest. For most of its history the study of terrorism has been conducted in the cracks and crevices which lie between the established academic disciplines. Few researchers devoted most of their scholarly activity to the area – for most it was a brief fling before returning to more traditional interests. But all this seems to be changing. The money available for research has increased markedly and a growing number of younger (and older) researchers are beginning to shift the bulk of their research activity to this area. We appear to be entering a renaissance age for terrorism studies and with so many students and scholars fresh to the field, the need for up-to-date and well informed reviews of the research has never been greater.

Yet gaining a good understanding of the existing knowledge base on terrorism is intimidating. The potential literature is vast and growing rapidly. In an effort to help provide a framework for understanding the literature, this chapter represents the latest in a series of articles by the author which have reviewed some aspects of research on terrorism.(3)

The first set of these papers focused on research carried out in the 1990s. That initial review found that many of the traditional problems associated with research on terrorism continued to eat away at the field's foundations during the 1990s. Early reviews such as Schmid and Jongman's famous work in 1988 had long appreciated that despite the fact that a very sizable body of literature had accumulated on terrorism, the substance of this writing was often very poor indeed. As Schmid and Jongman noted:

"Much of the writing in the crucial areas of terrorism research ... is impressionistic, superficial, and at the same time often also pretentious, venturing far-reaching generalizations on the basis of episodal evidence" (4).

This was an observation certainly shared by Ariel Merari who writing a few years later commented that:

"There are few social scientists who specialize in this study area. Most contributions in this field are ephemeral. Precise and extensive factual knowledge is still grossly lacking. Much effort must still be invested in the very first stage of scientific inquiry with regard to terrorism -- the collection of data" (5).

In examining the quality of research on terrorism, Schmid and Jongman noted that "there are probably few areas in the social science literature on which so much is written on the basis of so little research". They estimated that "as much as 80 percent of the literature is not research-based in any rigorous sense; instead, it is too often narrative, condemnatory, and prescriptive" (6).

My first review showed that this pessimistic state of affairs was largely unchanged (7). During the 1990s, 68 percent of the research was found to be based on the literature-type reviews criticised by Schmid and Jongman. Further, the related long-running shortage of terrorism researchers also continued to weaken the area. While the backgrounds of researchers may be relatively diverse, there has in general been a consistent lack of researchers to carry out investigative work in the area. Since it emerged as a clear and substantial topic of study, terrorism has suffered from a near-chronic deficiency of active researchers. The 1990s review found that terrorism studies had 40 percent fewer authors contributing to articles compared to fields such as criminology (where many of the same research issues and limitations also apply). The lack of researchers meant that less expensive (in terms of time and effort) data gathering and data-analysis methods were being used with consequent concerns over the quality and reliability of the findings.

The next review added analysis of research in the first three years following 9/11 (8). While this showed some distinct changes had taken place in the field, the old problems were still very much present. That said, three years is a very short space of time in research terms. A survey by Garvey,

Lin and Tomita (1979), for example, found that on average it took researchers 13 months to complete a study and write up the results for submission to a journal (9). Once submitted, it took on average another 15 months before the article actually appeared in print. The result is that it can often take nearly two and half years between research starting and the findings actually making it into print in a journal. Thus the previous review arguably really only assessed the initial wave of research started in the direct aftermath of 9/11, and it is perhaps not terribly surprising that the old, long-running problems were still very much in evidence. Many of the major funding initiatives only became active after this period, and a review now – five years on – provides a somewhat better opportunity to assess the impact of the post-9/11 environment on the nature of research.

Arguably the best way to identify trends and patterns in research efforts is to examine the published literature produced by active researchers. While the literature on terrorism is relatively young in academic terms - existing in a meaningful sense since only the late 1960s – Schmid and Jongman noted that by the time of their review it had nonetheless grown far beyond the scope "of one single researcher [to] survey the field alone". Indeed, the two Netherlands-based writers pulled in the assistance of over fifty other researchers in order to complete their review.

As already indicated, the situation today is considerably more intimidating. The sheer volume of material being published is staggering and even five years after the dramatic events of 9/11 the current flood of books and articles shows no sign of abating. The result is that any effort to review the field faces increasingly difficult decisions in terms of what to review. Hundreds of academic journals have published at least one article relating to some aspect of terrorism in the past ten years. A review which incorporated every such journal would be a formidable undertaking. Fortunately, the presence of two long-established journals which have an explicit and primary focus on terrorism research provides an accessible medium to gauge the state of research. These journals are *Terrorism and Political Violence* (TPV) and *Studies in Conflict & Terrorism* (SICAT). Taken together, and bearing in mind their different publishers, separate editorial teams and largely separate editorial boards (though there is some overlap on this last) the two journals can be regarded as providing a reasonably balanced impression of the research activity and interests in the field.

However, it is important to note that many active researchers have not published in these two journals and have instead preferred to publish elsewhere. It would be a mistake to assume that all of the key researchers publish in these journals or that the journals reliably represent the nature of most research on the subject. Some other reviews of the field have tried to address this issue by incorporating a wider range of journals. Increasing the

quantity of journals however is not necessarily a guarantee of increasing the reliability of a review. Czwarno (2006) for example, reviewed 12 journals in her survey (10). These included both SICAT and TPV but also included other journals which only rarely published terrorism related pieces. Czwarno reported that from 1993 – 2001 in most of the journals she reviewed only 1% to 3% of the articles were on terrorism. Such a very low rate does raise question marks over the merits of examining these journals to begin with and raises concerns over how representative the journals were. Czwarno focused primarily on international relations type journals but there would certainly be journals in other disciplines such as psychology and criminology which could also have provided a 1% publication rate. It is churlish however to be too critical. Clearly, there are different benefits to casting a wider net, but the essential point is that it is extremely difficult to be truly representative in reviewing an interdisciplinary area such as terrorism studies. The approach adopted here is to review only those journals which publish primarily and consistently on terrorism (and for both TPV and SICAT the clear majority of their articles are routinely focused on terrorism-related subjects).

Consequently, this paper presents the results of a review of the published output of the primary journals in the area from 1990 to October 2006. As with the previous reviews, it is hoped that a review of this nature can be both of interest and of practical value to other writers and researchers on the topic, and that it may also help to establish the broader context in which individual research efforts occur and help illustrate how the field is evolving in the aftermath of 9/11 and the advent of the so-called 'global war on terror'.

2.   THE NATURE OF THIS REVIEW

Academic journals have a surprisingly diverse range of content. For the two journals under consideration here, this includes articles, research notes, editorials, book reviews, conference reports, review essays, database reports, and official documents and reports. The most immediate question facing a surveyor is how much of this material should be considered? In deciding this, the main criteria has to be which items are consistently the best indicators of significant research activity and effort? This review follows the lead of the UK's RAE, which has judged that peer-reviewed journal articles provide a good measure of the broad quality of research work. As a result the following review focuses solely on articles published in the journals during the time period.

This is a relatively stringent criteria and other reviewers may be willing to be more inclusive. For example, there is case to consider that research

notes should be included in a review such as this. They have not been included here however because of the considerable variation displayed in the items so classed in the journals. While some research notes were significant documents – both in terms of length and content – most were extremely brief and cursory. Indeed, it is something of a mystery as to why some papers were classed as research notes when they seemed in every respect to be comparable to articles published elsewhere in the same issue. It would be invidious however for one reviewer to subjectively select from among the other categories what he or she regards as equivalent to article standard. Rather than attempt this, this review simply excludes entirely from consideration all items which were labelled or described as other than an article. While this inevitably means that a few significant works are not considered, it means that overall the review is focused on what can be considered to be consistently the substantial research outputs of a nearly seventeen year period (11).

3.   TRENDS IN DATA-GATHERING AND ANALYSIS

One of the most serious problems facing research on terrorism has been the long running shortage of experienced researchers. As a field, terrorism studies has struggled to attract new researchers and then hold onto them. The review of research in the 1990s clearly showed that compared to other academic areas such as criminology (which presents many similar challenges to the study of terrorism), research on terrorism was depending on the work of far fewer researchers. In a review of leading criminology journals it was found that 497 articles had been written by a total of 665 authors. For the terrorism journals in the 1990s, 490 articles were written but this was the output of just 403 authors. This was a far lower level compared to the criminology journals and highlighted the dependence on a small pool of active researchers. The figure also highlighted the lack of collaborative research. As Figure 2-2 shows, less than 10 percent of articles published before 9/11 were the work of two or more researchers. The vast majority of studies were being carried out by individual researchers working alone.

This relative isolation emphasised the lack of research funding available in the area. Collaborative research is more dependent on research grants. Without funding, researchers are much more restricted in what they can aspire to and are much more likely to have to squeeze the research effort in between other activity. There are knock-on consequences of such a situation: limited resources mean that research which involves more time and effort will be avoided. Instead, researchers will focus on quicker and cheaper approaches. Quick and cheap is fine to a certain extent, but inevitably if a

field is very heavily dependent on such work, serious questions about the reliability and validity of any findings must emerge.
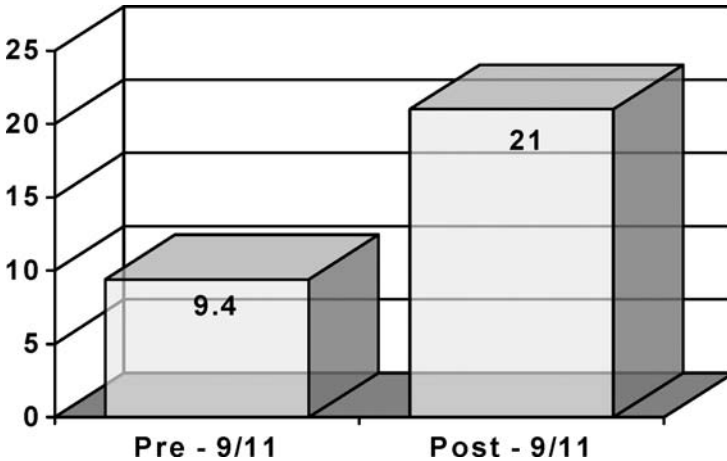

Figure 2-2. Collaborative Research

Following 9/11, however, there has been a major increase in collaborative work. This reflects the increased interest among researchers (new and old) for the area and also reflects the increased availability for funding on the subject. As Figure 2-2 shows, collaborative work has more than doubled. The field still lags well behind other applied disciplines such as criminology and forensic psychology, but it is certainly a step in the right direction.

The natural following issue is whether the increasing number of researchers and increased funding has led to any improvements in data gathering and analysis. Figure 2-3 presents a somewhat disappointing picture in this regard. An old failing of the field has been the very heavy reliance on literature review methods. Schmid and Jongman were very critical of the paucity of fresh data which researchers were producing. In the 1990s this problem continued with 68 percent of the research essentially taking the form of a literature review and not adding any data which was previously unavailable to the field. The influx of additional researchers since 9/11 does not seem to have improved this situation much. As Figure 2-3 shows, 65 percent of articles are still essentially reviews. While this represents a small improvement on the 1990s, it is only a small one. One feels that a great deal more needs to be done before research is consistently building on past work rather than merely rehashing old data.

While Figure 2-3 might present a dispiriting picture, there is somewhat more encouragement to be taken from Figure 2-4. While the data gathering methods appear to be more or less the same as before, the way in which this data is analysed does seem to be shifting a little faster.
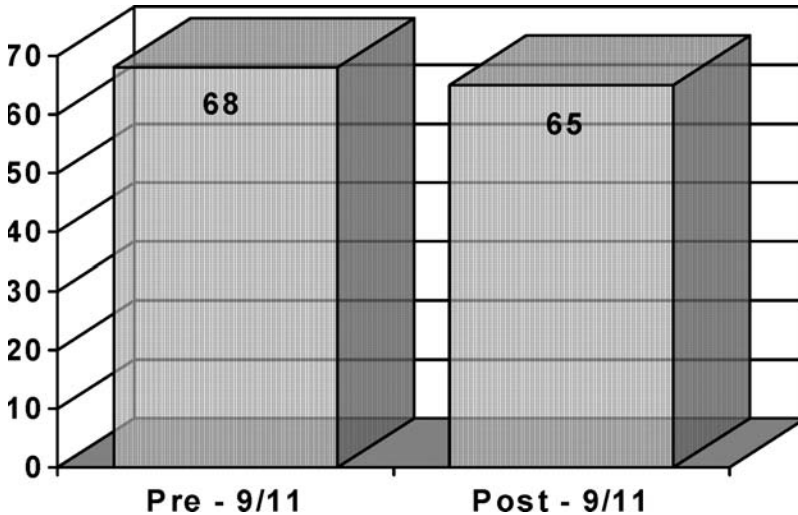

Figure 2-3. Literature review-based research

Since the 1950s, all of the social science disciplines have experienced a rapid increase in the use of statistics. People are extremely complex, and their behavior and thoughts are the result of a confusing interaction of emotions, motivations, learned behaviors and genetically determined traits. Consequently, social science researchers typically have to work with very 'noisy' data where there are potentially a vast number of factors exerting an influence on any one behavior, event or trend. Statistical analysis has emerged as a way for researchers to determine which factors genuinely are important and which are not. Descriptive statistics enable the researcher to summarize and organize data in an effective and meaningful way. Inferential statistics allow the researcher to make decisions or inferences by interpreting data patterns. Inferential statistics are regarded as particularly valuable as they introduce an element of control into research which can help to compensate if relatively weak data collection methods were used. In experimental designs control is normally achieved by randomly assigning research subjects to experimental and control groups. However, this can often be very difficult to achieve in real world research and consequently the lack of control throws doubt on any association between variables which the

research claims to find. Inferential statistics though can help to introduce a recognized element of control, so that there is less doubt and more confidence over the veracity of any findings (12).

It is no coincidence that some of the most significant and influential books published on terrorism since 9/11 have been ones which have made extensive use of statistics to support the authors' arguments. Such key works include Marc Sageman's *Understanding Terror Networks*, Robert Pape's *Dying to Win* and Ronald Clarke and Graeme Newman's *Outsmarting the Terrorists* (13). While many might disagree with some elements of these books, there can be no denying that each has had a tremendous impact both in the research communities and (even more importantly) among policy-makers and other practitioners. It is highly unlikely that these texts could have been as influential if they had not provided and relied heavily on statistical evidence to support the arguments being made.

Figure 2-4 shows that these books are unusual within terrorism research. Only a small minority of studies included either descriptive or inferential statistics prior to 9/11. Just 19 percent of articles had such analysis to support any arguments. This is not surprising given the heavy reliance on literature review methods in the field. There has been a definite improvement in the situation since 9/11, with 28 percent of articles now using statistics. This is a definite step in the right direction and the big increase in inferential analysis in particular (going from 3 percent to 10 percent of articles) is an important shift.
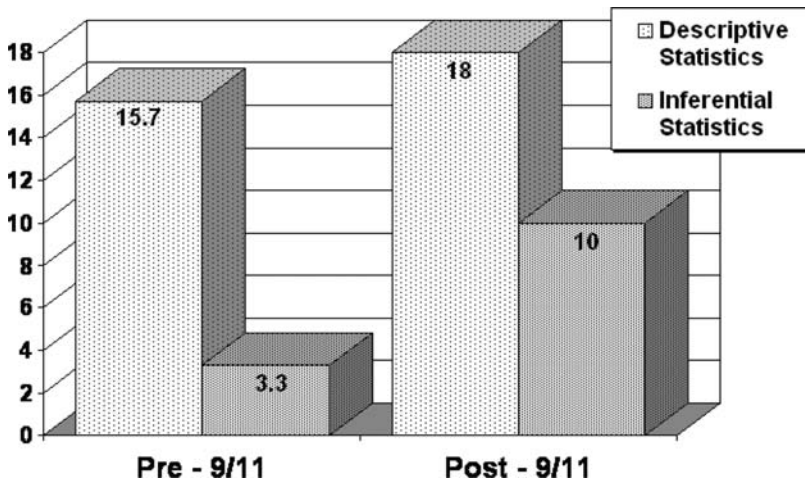

Figure 2-4. Statistical Analysis in Terrorism Research

It is important to stress here that this chapter is not arguing that statistical analysis should be a feature of *every* research study on terrorism. On the contrary, much valuable research can be conducted which does not involve the use of statistics. However, terrorism research clearly suffers from a serious imbalance and the argument here is that more effort should be made to address this imbalance. Statistics alone are not the way forward, but neither is avoiding their use to the degree that the terrorism research community currently does.

The extent of the imbalance is starkly illustrated in Figure 2-5. This compares the use of statistics in journal publications in two other areas of research with the terrorism journals: forensic psychology; and, criminology (14). The reason for choosing these particular areas is that the research backgrounds of both these disciplines have a number of similarities with research conducted on terrorism. The subject matter published in journals in these areas focus on the various actors and activities involved in the criminal justice system and in the commissioning of crime.
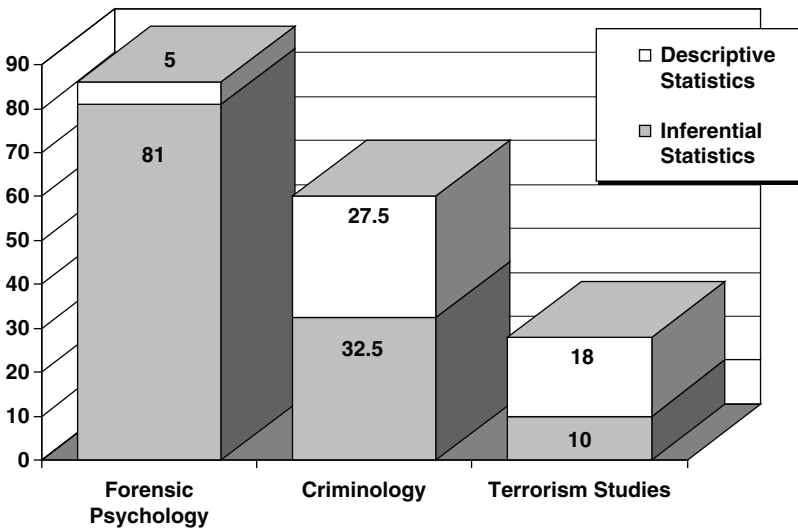

Figure 2-5. Comparing statistical analysis across three research areas

As a result, the subject matter often shares comparable similarities with terrorism in terms of difficult research populations, real world relevance as well as considerable concerns with human suffering and injustice. Thus when compared to other areas within the social sciences, such journals do seem to offer some legitimate comparison with the terrorism journals However, despite the similarities, the manner in which researchers in these two areas treat data is very different to how it is treated by terrorism researchers. 86% of research papers in forensic psychology and 60% of papers in criminology contain at least some form of statistical analysis. In both cases, inferential statistics account for the majority of this analysis. In both disciplines, the use of statistics is seen as an important and accepted way in which to ensure that the claims made by researchers meet recognized quality controls. Despite the improvements since 9/11, terrorism articles still lag well behind these other applied areas, and concerns must remain over the validity and reliability of many of the conclusions being made in the field.

4.   RESEARCH ON TERRORIST GROUPS

One of the most notable findings in the previous reviews of the research literature was just how little research was focused on al-Qaeda in the ten years prior to 9/11. Al-Qaeda was an active and growing organisation in this period and was responsible for several high profile terrorist attacks including the highly destructive bombings of US embassies in Africa in 1998 and the well publicised attack against the USS Cole in 2000. Yet despite what in hindsight seems quite a significant trajectory, the group attracted almost no research attention. As Figure 2-6 shows, in the twelve years prior to 9/11, al-Qaeda was the subject of only 0.5 percent of research articles. In the core journals this represented only two articles (al-Qaeda was mentioned briefly in other articles but in only two was the organisation a major focus for the research) (15).

This failure to notice the growing significance of al-Qaeda has been noticed by other reviewers and most especially by Monica Czwarno who found that the lack of attention paid to the organisation was mirrored across a wide range of journals and was not simply a failing of the two core specialist journals (16).
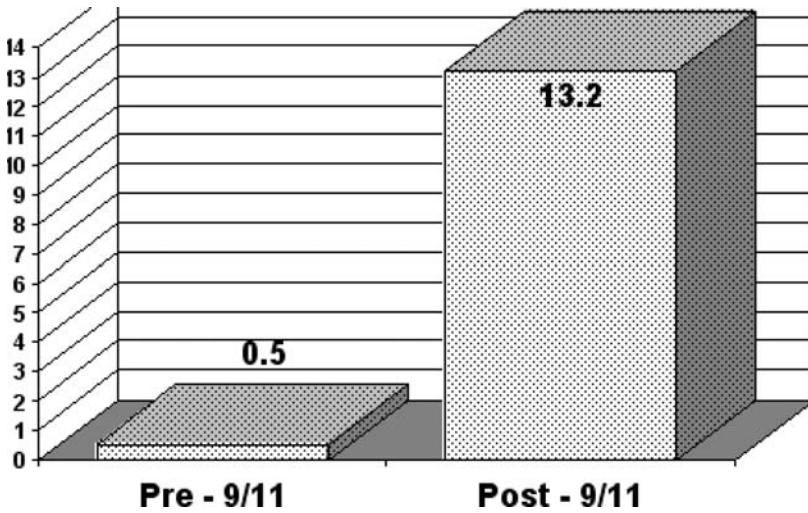
Figure 2-6. Research on al-Qaeda

As figure 2-6 emphasises the neglect preceding 9/11 has been replaced by a surfeit of interest in the five years after that date. Currently, out of every seven articles published in the core journals one is focused on al-Qaeda. It is rare indeed for any of the issues published in the last five years to not contain at least one article which is substantially devoted to at least some aspect of the group.

Figure 2-7 underlines this transformation in research attention. Since 9/11 there have been 30 research articles in the core journals focused on al-Qaeda (compared to just two in the preceding twelve years). Interest in other groups has remained broadly similar. The most studied terrorist group prior to 9/11, the Irish Republican Army (IRA) still attracts considerable attention. Indeed, the Irish group actually attracts slightly more attention now than it did in the 1990s which is remarkable given the group has been on cease-fire for many years. There have been perhaps more significant increases in attention on groups like Hezbollah and Earth liberation Front which are interesting.
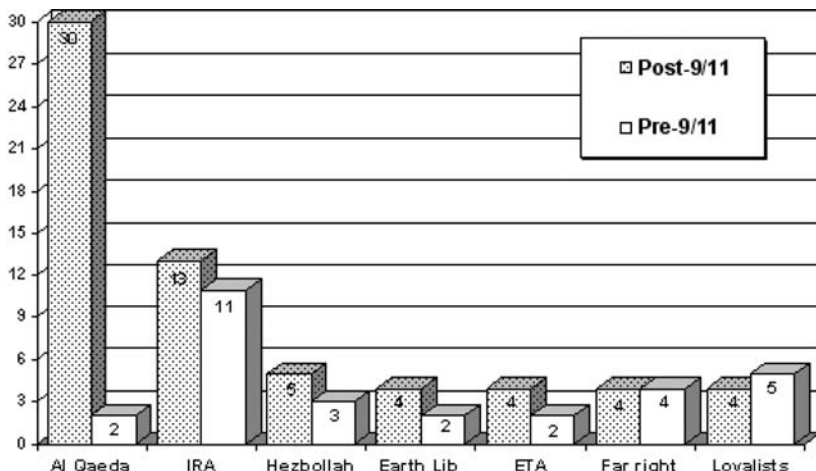
Figure 2-7. Most studied organisations post-9/11

The increased attention on Hezbollah is especially intriguing as this preceded the 2006 Israeli invasion of Lebanon in an effort to defeat the organisation and cannot be seen as a reaction to such events. On the contrary, it may be a sign that the research literature was showing awareness of the growing significance of the movement.

While the research literature clearly missed the growing significance of al-Qaeda, it would be unfair to say that the community was entirely unaware of the growing importance of Islamist terrorism. Figure 2-8 shows very clearly that research on Islamist terrorist groups has been steadily increasing over the past seventeen years. In the first half of the 1990s 14 percent of articles were focused on some aspect of Islamist terrorism. This included groups such as al-Qaeda, Hamas, Islamic Jihad and Hezbollah. This rose to over 23 percent in the latter half of the 1990s representing a significant increase in research attention on this area. Since 9/11, however, Islamist terrorism has completely dominated the field. Nearly 63 percent of the literature is on this subject (almost two out of every three articles). In the past forty years there has never been such a heavy focus on one category of group in the literature.
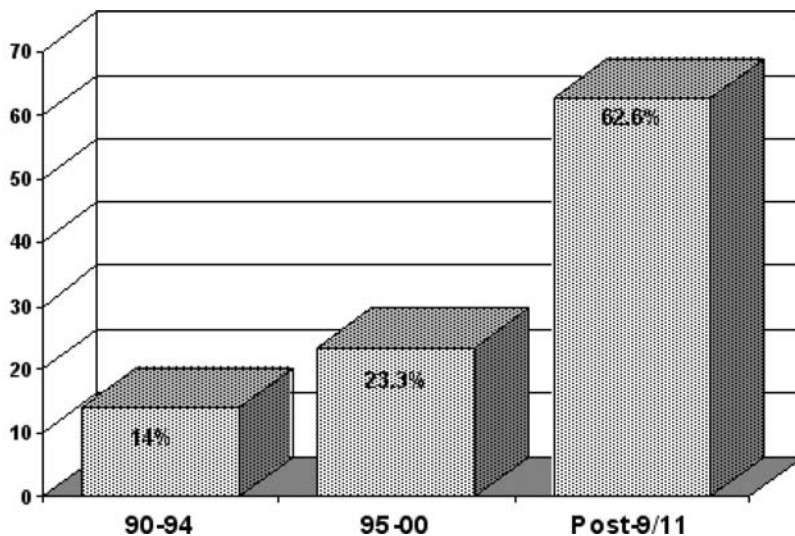
Figure 2-8. Research on Islamist Terrorist Groups

While it is understandable that the field would show such a heavy bias in this direction in the aftermath of 9/11 and the war on terror, any objective analysis must still regard the current state of the literature as extremely skewed. If it continues like this for much longer there is a serious risk that terrorism studies as an area will effectively become *Islamist* terrorist studies with all other types of organisations relegated to only peripheral interest.

5.   RESEARCH ON TERRORIST TACTICS

Suicide terrorism is not a new phenomenon but prior to 9/11 it was certainly relatively ignored by terrorism researchers, considered more of a curiosity than a major subject for analysis. Figure 2-9 shows that only a tiny proportion of articles looked at this issue - only 0.5% of articles - a bare handful. That however changed in the aftermath of 9/11 the most devastating terrorist attacks of all time, and accomplished through the use of suicide tactics. Since 9/11, the amount of research work being focused on this phenomenon has increased enormously. For every one study carried out prior to 9/11, 20 are being carried out now. One article in ten published on terrorism since 9/11 has been focused particularly on suicide terrorism. So intense has been the growth of research on this one aspect of terrorism, that some researchers are now pushing for the creation of a sub-discipline of

suicide terrorism studies. How realistic (or necessary) such ambitions are is questionable but the debate does at least emphasise the enormous growth of activity on an aspect of terrorism which traditionally was grossly under-explored.

The increased work being focused on suicide terrorism is arguably both overdue and useful. However, increased research is also being focused on other aspects of terrorism which are less obviously of growing importance. Of particular concern is the growing amount of research investigating the (potential) use of Chemical, Biological, Radiological and Nuclear weapons (CBRN) – also often referred to as weapons of mass destruction (WMDs) - by terrorists. Figure 2-10 shows that the amount of research being focused on CBRN terrorism has doubled since 9/11. The first review on research after 9/11 showed an even higher proportion of articles looking at this issue, though this seems to have declined slightly since then (17).
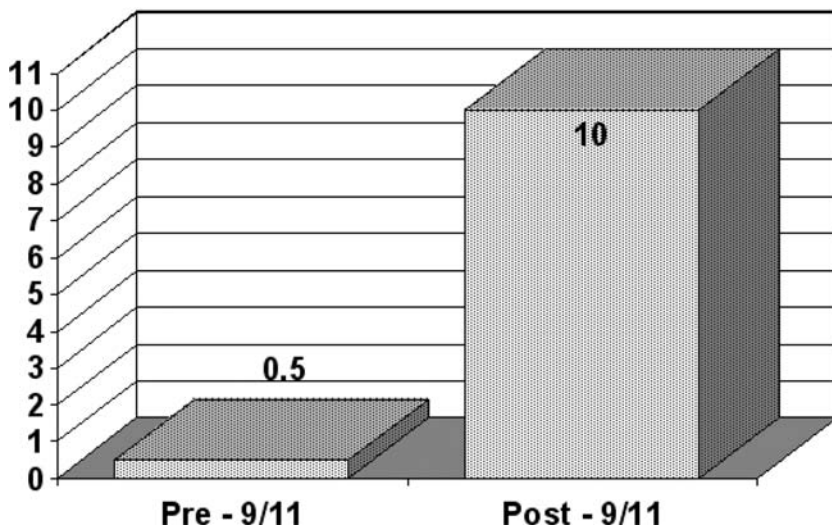

Figure 2-9. Research on Suicide Terrorism

As with the previous review, a key question here continues to be why is there this increased interest in terrorism using CBRN weapons? After all, 9/11 was not a CBRN attack. 3000 people may have been killed but the hijackers did not use a nuclear bomb to cause the carnage, they did not spray poisonous chemicals into the atmosphere or release deadly viruses. They used box-cutters. Nevertheless, CBRN research has experienced major growth in the aftermath. Is this increase justified?
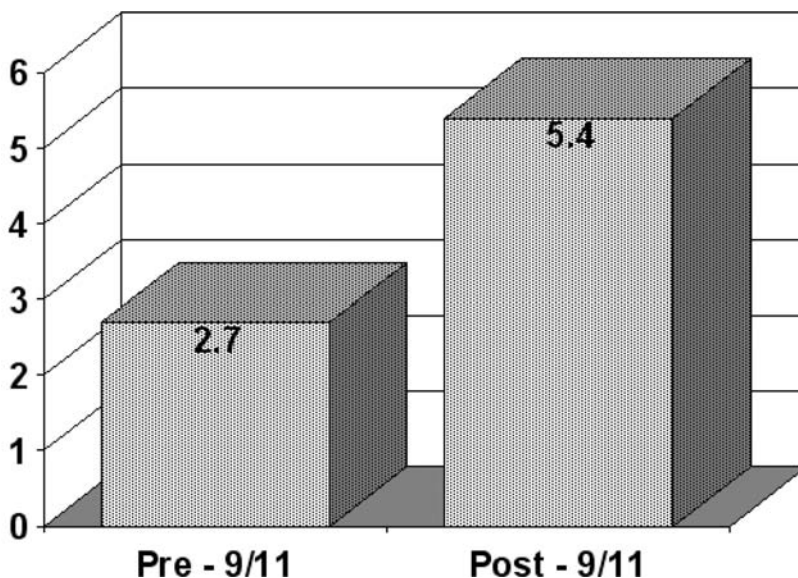
Figure 2-10. Research on CBRN Terrorism

The short answer is probably not, but then CBRN research has always probably been over-subscribed. Prior to 9/11, nearly six times more research was being conducted on CBRN terrorist tactics than on suicide tactics. Indeed, no other terrorist tactic (from car-bombings, hijackings, assassinations, etc.) received anywhere near as much research attention in the run up to 9/11 as CBRN. If the relatively low amount of research attention which was given to al-Qaeda is judged to be the most serious failing of terrorism research in the years prior to 9/11, the relatively high amount of research focused on the terrorist use of CBRN must inevitably be seen as the next biggest blunder.

To date, in the few cases where terrorists have attempted to develop CBRN weapons they have almost always failed. In the handful of instances where they have actually managed to develop and use such weapons, the highest number of individuals they have ever been able to kill is 12 people. In the list of the 300 most destructive terrorist attacks of the past twenty years, not a single one involved the use of CBRN weapons. Yet somehow one impact of the 9/11 attacks is that CBRN research - already the most studied terrorist tactic during the 1990s - has actually managed to attract even more research attention and funding - doubling the proportion of articles focused on CBRN in the journals.

If the articles were focused on mass casualty terrorism that would be more understandable. 9/11 was certainly a *mass casualty* terrorist attack, and

indeed there have been a few studies which have looked at mass casualty terrorism since 2001 (18). However, the research is not taking such an approach and instead is very much focused on terrorist use of chemical, biological, radiological or nuclear weapons (CBRN). This relative (but increasing) obsession with CBRN is disturbing for a number of reasons. First, it detracts attention from more lethal tactics which terrorists frequently and routinely use. Consider the lack of attention given to suicide tactics in the 1990s. Well over 1000 people were killed by suicide terrorism in the 1990s. In the same period, attacks using CBRN weapons killed just 19 people. Yet it was CBRN which attracted six times more research energy than suicide terrorism.

A degree of research looking at CBRN terrorism is justified. Instances such as the 1995 Tokyo subway attack and the post-9/11 anthrax letters show that CBRN attacks *can* happen (albeit only rarely). Such attacks have never caused mass fatalities however and the popular acronym of Weapons of Mass Destruction (WMD) in describing CBRN weapons is desperately misleading. Despite the rarity - and the extreme unlikelihood of terrorists being able to accomplish a truly devastating attack using these weapons – CBRN remains a popular topic for government and funding bodies. They will award research grants for work on this topic when other far more common and consistently far more deadly terrorist tactics are ignored.

Those who had hoped that 9/11 - a stunning example of how non-CBRN weapons can be used to kill thousands of people - might then have heralded at least a modest shift away from CBRN research will be disappointed. Ultimately, the central lesson of 9/11 in this regard has been profoundly missed.

6.   SOME CONCEPTUAL ISSUES

Terrorism has a very long history, one that can be comfortably traced back thousands of years (19). Yet, it would be difficult to appreciate this based on the literature published in the core journals in the past two decades. As Figure 2-11 shows very little research explores past terrorist conflicts. Before 9/11, only one article in 26 looked at historical conflicts. Since 9/11, interest in historical cases has collapsed and now only one article in 46 is focused away from current events.

It is natural and reasonable that in the years immediately after the most destructive terrorist attacks in recorded history, that the research field should focusing on the now, on current issues, actors and events. Such a strong focus on contemporary issues, however, runs the real risk of losing an

understanding of the broader context of terrorist conflicts, patterns and trends and without such awareness important lessons can be missed.
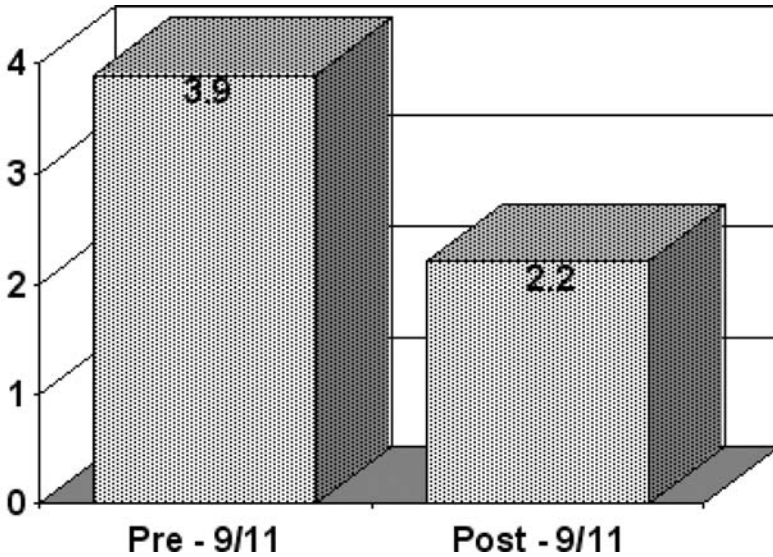

Figure 2-11. Research with a historical focus

An example I have used previously is that many observers treat the current US military involvement in Iraq as a strictly modern issue linked only to the previous Iraq war and the more recent Global War on Terror. There is no awareness that this is not the first time that the US military has faced an insurgency in an occupied country where the insurgents frequently use suicide tactics to attack technologically superior American forces. Yet, this was exactly the circumstances faced by US forces at the start of the 20th century as they fought insurgents in the Philippines. Beginning in 1900, US control of the Southern islands of the Philippines was contested by native Moro tribes. The US forces typically won overwhelming victories in all their conventional battles with the Moros, but then faced increasing attacks from individual *amoks* and *juramentados*, Moro warriors who attacked US positions and personnel in suicidal efforts armed often only with swords and spears (20). It took nearly 13 years of fighting before Moro resistance to the US presence finally receded. Yet the lessons from this bitter and painful conflict are being ignored. A closer inspection of such historical cases may help prevent the current conflict in Iraq enduring 13 years. Ignoring such experiences however seems unlikely to improve the odds of a more successful campaign.

Yet terrorism research has never been especially good at exploring the past. Prior to 9/11, only 3.9% of articles examined non-contemporary terrorism and less than half of these looked at terrorism prior to 1960. We know that terrorism is not a recent phenomenon and that it has been occurring in some form or another for over two thousand years. Yet this wider context is almost entirely ignored as terrorism research is increasingly driven by a need to provide a short-term, immediate assessment of current groups and threats. Efforts to establish more contextualised and stable guiding principles have been almost entirely side-lined. This is a serious cause for concern and the dramatic decline in historical research since 9/11 is deeply troubling.

7.   CONCLUSIONS

Prior to 9/11, the study of terrorism was carried out on the periphery of academia. The funding available for researchers was extremely limited and the number of researchers prepared to focus a substantial element of their careers on the subject was paltry. In most cases it was harmful to an academic or research career to follow such interests and most of those who were genuinely interested in the subject found that they had to incorporate other issues into their work in order to remain professionally viable. 9/11 has brought much greater interest in the subject of terrorism and for the first time the possibility of an expanded core of dedicated researchers exists. It is likely that the field and the amount of research being conducted will continue to grow over the coming years. It is not certain however whether this growth will be sustained or even if the gains made in the first years since the New York and Washington attacks will not be eroded over the coming decade.

In considering the focus of research on terrorism since 9/11, there are some worrying trends. The increased attention to CBRN threats is unjustified and it is disturbing that even more research activity is now being devoted to this area. The relatively heavy focus on CBRN prior to 9/11 was misplaced to begin with and produced research which was worthless with regard to what al-Qaeda did then and subsequently. The concern with CBRN is ultimately built on the premise of the fears and nightmares of politicians and policy-makers. The link to reality is often tenacious at best.

The diminishing place for historical analysis in terrorism research is also a cause for concern, but it is probably wise not to place excessive emphasis on this trend at this stage. The 9/11 attacks were the most destructive terrorist attacks in recorded history and many of the key factors relating to the event were notoriously under-studied (e.g. al-Qaeda, suicide terrorism,

etc.). It is only natural that the field should now devote serious and substantial effort to improving our knowledge base and understanding of these subjects. Terrorism research, however, does have a legacy of missing important trends. The research of the 1990s would not have flagged to an interested reader that al-Qaeda would be universally regarded as the most important and prominent terrorist group of the 2000s. One wonders what other significant trends are now being dangerously overlooked?

Yet, this survey of research has not reached entirely negative conclusions and it is important to highlight a number of positive trends which can be seen in this initial period after 9/11. To begin with, it is clear that more researchers are working on the subject than before and there has been a real increase in collaborative studies. This allows studies to be more ambitious in both data-collection and data analysis and while there has only been a very small shift away from literature review-based research, there has been a much more promising increase in the use of descriptive and inferential statistical analysis. The use of inferential statistics on terrorism data in particular has more than trebled since 9/11, a trend which can only help improve the reliability and validity of the conclusions being reached by researchers. Admittedly, this is an increase starting from an extremely low level indeed (and still compares poorly to core journals in other areas) but it is unquestionably a major step in the right direction.

Ultimately, it is still very early to judge what the overall impact 9/11 and the new world order will have on terrorism research. This review was based on the research studies published in the first five years after the attacks. As discussed earlier, within research timeframes this is a short period of time. It will probably be another two or three years before a full and reliable assessment of the impact of the 9/11 on terrorism research will be possible. To date, we have seen that the field has become even more concerned with contemporary issues than before. This is probably unhealthy if it lasts but is hardly surprising given the issues which were missed prior to 9/11.

It is worth recognising as well that the field is showing signs of generally moving in the right direction when comparisons are made with the results of the first review carried out three years after 9/11. Compared to this chapter, that earlier review found a higher level of CBRN research, less historical research, less collaborative work, less variety in research methods, and less use of statistical analysis. In short on almost all of the key issues considered here, the first three years were less satisfactory than a review which includes the full five years after 9/11. The differences between these two reviews in most cases are small, but they exist nonetheless. The hope is that they represent a swing in positive directions, a change of direction which can be maintained and built upon.

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1. These figures are based on statistics provided by Amazon.com. The statistics relate to non-fiction titles on the subject of terrorism published in a given year. The figures may not include every relevant title published in a year, but should be seen as broadly representative. The statistics were accessed on August 1, 2006.
2. See, for example, Monica Czwarno (2006). Misjudging Islamic Terrorism: The academic community's failure to predict 9/11. *Studies in Conflict and Terrorism*, 29/7, pp.657-694.
3. The findings from the previous reviews were published in the following papers: (1) Andrew Silke (2001). The Devil You Know: Continuing Problems with Research on Terrorism, *Terrorism and Political Violence*, 13/4, pp.1-14; (2) Andrew Silke, (2004). The Road Less Traveled: Recent Trends in Terrorism Research. In A. Silke (Ed.), *Research on Terrorism: Trends, Achievements and Failures* (pp.186-213). London: Frank Cass; and, (3) Andrew Silke (2006). The Impact of 9/11 on Research on Terrorism. In Magnus Ranstorp (Ed.) Mapping Terrorism Research. Oxford: Routledge.
4. Alex Schmid and Albert Jongman (1988). *Political Terrorism: A New Guide to Actors, Authors, Concepts, Databases, Theories an Literature* (Amsterdam: North Holland Publishing Company), p.177.
5. Ibid.
6. Ibid., p.179.
7. See Andrew Silke (2001) note 3, and Silke (2004) note 3.
8. Andrew Silke (2006) note 3.
9. Garvey, W., Lin, N., & Tomita, K. (1979). Research studies in patterns of scientific communications: III, Information-exchange processes associated with the production of journal articles. In W. Garvey (Ed.), *Communication: The essence of science* (pp.202-224). Oxford, England: Pergamon Press.
10. Monica Czwarno (2006). Misjudging Islamic Terrorism: The academic community's failure to predict 9/11. *Studies in Conflict and Terrorism*, 29/7, pp.657-694.
11. Each article which was published in the review period was entered into a database based on eleven separate features. Coding was made for each author of each article on the following features:
    a. Author name
    b. Whether first, second or third author
    c. Journal title
    d. Journal Volume details
    e. Year of Publication
    f. Country where the author is based
    g. Occupation/background of the author
    h. Geographic focus of the article
    i. Temporal focus of the article
    j. Terrorist Group focus of the article
    k. Terrorist Tactic focus of the article
    l. Conceptual focus of the article
    m. Data-gathering methods used
    n. Statistical analysis methods used

12. Chava Frankfort-Nachmias and David Nachmias, *Research Methods in the Social Sciences (5th edition)* (London: Arnold, 1996) pp.427-428.
13. Marc Sageman (2004). *Understanding Terror Networks*. Philadelphia: University of Pennsylvania Press; Robert Pape (2005). *Dying to Win: The Strategic Logic of Suicide Terrorism*. New York: Random House; Ronald Clarke and Graeme Newman (2006). *Outsmarting the Terrorists*. London: Praeger Security International.
14. Two journals from both disciplines were reviewed. In all the cases the review period stretched from 1995 to 1999 and a random selection of eight issues from each journal title were reviewed.
15. The criteria used when judging the focus of an article was that the paper had to be primarily about one or at most two groups. It was not sufficient that a group was briefly mentioned or received discussion of a page or two. There had to be substantial evidence that the group was a major focus of the article.
16. Monica Czwarno (note 2).
17. See Andrew Silke (note 7).
18. For example the valuable contributions made by Chris Quillen: Chris Quillen, 'A historical analysis of mass casualty bombers', *Studies in Conflict and Terrorism* 25/5 (2002) pp.279-292; and, Chris Quillen, 'Mass casualty bombings chronology', *Studies in Conflict and Terrorism* 25/5 (2002) pp.293-302.
19. For an excellent introduction to this subject see Robert Asprey, *War in the Shadows* (London: Little Brown, 1994).
20. For more on this campaign see D. Woolman, 'Fighting Islam's fierce Moro warriors', *Military History*, 9/1 (2002) pp.34-40.

SUGGESTED READINGS

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DISCUSSION QUESTIONS

1. Very little research was carried out on al-Qaeda prior to 9/11. Can you assess why this happened? (It might be helpful to consider the terrorist groups which were receiving most of the research attention.)
2. Research on terrorism can be biased in a number of ways. Try and identify some potential biases and assess how they may affect the way research is conducted.
3. Does the wider interest in CBRN weapons help or harm terrorism studies?

4. Based on the material in this chapter, what do you think are the most
   serious problems facing research on terrorism today?