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Biothreat and Policy Pathways:

Influences upon current bioterrorism policies in the UK

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I hereby declare that this dissertation has not been, and will not be, submitted to this or any other university for the award of any other degree.

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Abstract

The threat of terrorism, and in particular the threat of terrorists using biological weapons, has grown since the early 1990s, over the decade the assessment and perception of threat escalated despite an absence of biological weapons use.

This research explores policy responses to the threat from bioterrorism in the UK between 1990 and 2005. A case study approach is used to examine the emergence and rise of the bioterrorism threat, and the institutional arrangement in place to confront that threat. The dissertation further investigates the construction of the threat narrative. The policy area of bioterrorism is obscured by secrecy. Therefore, this dissertation looks towards policy responses to pandemic influenza, and uses responses to pandemic influenza as a heuristic device to illustrate the difficulties of risk assessment and the accompanying institutional complexity.

The study posits that traditional, academic risk assessment methodologies do not appear to have as large an influence as the narratives. Furthermore, the prevailing conceptualisation of the bioterrorism threat is the product of the confluence of three threat narratives. These narratives have become entangled and subsequently embedded in the institutional response. Moreover, a number of events have influenced and shaped the threat narrative of bioterrorism. First, a change in perception (sarin, 1995); then a jolt to the political and institutional structures (September 11, 2001); and finally, further bombings and plots have augmented the threat narrative (Madrid & London).

This study is positioned at the intersection of policy studies and risk assessment, contributing to an understanding of the formation of institutional threat perceptions.

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1 Introduction

The two past decades have seen a significant devotion of policy attention to the problem of biological weapons (BW) in the hands of non-state actors. The threat of bioterrorism has become a pervasive topic in political debate, the media, and academic discourse. A number of reasons have been put forward to account for the increased focus on bioterrorism in the UK and elsewhere, amongst them are: the uncovering of the covert Soviet BW programme and the possibility of proliferation of knowledge and materials out of this programme into the hands of states and non-state entities in the early 90s; the terrorist use of chemical agents in Japan by the Aum Shinrikyo cult in 1994-5;¹ the events of 9/11 and the ensuing ‘anthrax letters’ in the United States in 2001. Further adding to concerns over terrorists using non-conventional means, is the emergence of Islamic fundamentalism and “home-grown terrorism” in the UK – the attacks of July 7, 2005 in London and various plots which allegedly involved chemical, radiological or biological substances.

¹ Later, it was discovered that the Aum cult had attempted to cultivate and use biological agents. These attempts, including the attempted procurement of botulinum toxin and the spraying of *Bacillus anthracis* slurry were however, unsuccessful. See: Wheelis, M. & others (2006) *Deadly Cultures - Biological Weapons since 1945*. Cambridge, Massachusetts and London, England: Harvard University Press; and Leitenberg, M. (2005) *Assessing the Biological Weapons and Bioterrorism threat*. US Army War College

Threat assessments and expert advice are important to the policy formation process as a way of informing policy decisions. The focus of this research is on the key institutional actors involved in the policy formulation and threat assessment process, and how different narratives shape policy. This research does not attempt to assess the level or the validity of the threat.

A (fortunately) sparse historical record of real life incidents of bioterrorism poses a particular challenge for the assessment of the threat. However, a balanced and measured policy response is necessary so that, among other things, the socially beneficial uses and peaceful applications produced by scientific research are not unduly disrupted or restricted.

An assumption made throughout this dissertation is that specific understandings, framings, or conceptualisations, of the bioterrorism threat inform the policy response. That is understandings, perceptions and conceptualisations of policy makers – those actors within a policy network who make and shape policy decisions, not the ‘public’. The policy makers’ impression of the threat from bioterrorism is informed and shaped by advice given to them from various sources – from expert sources, experience, intelligence, to popular media, and preconceptions.

The bioterrorism threat can be understood as a compound of terrorism and biological weapons. Both of these complicated and diffuse categories are represented in an over-simplified narrative in policy discourse. Both have a long history in the UK. The UK maintained a significant interest in biological weapons, in one form or another, from the 1930s to the present day – starting with defensive preparations, escalating to offensive research and

developments, and eventually subsiding back into a defensive position.² The UK had an equally significant history of terrorism, going back to colonial times: Irish republican bombing campaigns on the mainland from the 1930s, rising to prominence in the 1960s and 70s, and continuing until the late 1990s; as well as the Lockerbie bombing in 1988.

The following chapters explore how this bioterrorism threat narrative has evolved and subsequently shaped the policy response by gradually becoming embedded in institutions. The concept of policy narratives is used as a heuristic device within a case study approach to chart how the threat of bioterrorism has been constructed, how it is assessed, and how responses to the threat have evolved over time – from the late 1980s to 2005. However, the story of bioterrorism, its assessment, and to a certain extent, the responses to it have been veiled in secrecy complicating the investigation. Thus, a second case study, on pandemic influenza, has been included. The threat from pandemic influenza is used to illustrate a variety of aspects pertaining to the difficulty of risk assessment and the accompanying institutional complexity to highlight some wider issues which play a role in the construction of the bioterrorism threat narrative. Moreover, the pandemic influenza case lends itself as an illustrative device because preparedness for natural outbreaks of infectious disease bears some similarity to preparations against unnatural

² Formal consideration of the threat of biological (bacteriological) warfare was initiated in 1936, although intelligence reports on foreign biological capabilities appeared sporadically in the 1920s indicating some concern. See: Balmer, B. (2001) *Britain and Biological Warfare: Expert Advice and Science Policy, 1930-65*. Basingstoke: Palgrave Macmillan; & Gradon, B. & G. S. Pearson (1999) British biological warfare and biological defence, 1925-45. In: *Biological and Toxin Weapons: Research, Development and Use from the Middle Ages to 1945*, eds. Geissler, E. & J. E. van Courtland Moon, Stockholm: SIPRI (OUP)

outbreaks of disease, and can place a state in a better position to respond to man-made events.

The deliberate spread of pathogenic material by non-state actors, bioterrorism, has been posited before³, but serious and sustained policy attention to it emerged only in the late 1980s. The specific focus in this dissertation is on processes and debates in the UK. The following chapters will gradually build up a picture of the factors which have contributed to the emergence of the bioterrorism threat in the UK.

The bioterrorism threat is conceptualised here in the following way: Several distinct and separate narratives came together in the late 1980s. These narratives are overly simplified and corrupted abstractions of complex phenomena – ‘technological progress’, ‘terrorism’, and ‘WMD’. Their confluence resulted in the threat of bioterrorism being framed in a specific way. This amalgam of narratives has been reinforced by a number of events which have caused institutional responses. These institutional responses in turn have augmented the threat narrative. The now prevailing conceptualisation of the bioterrorism threat which has been constructed from these three narratives stands to become further entrenched with continued

³ The threat of terrorist use has been invoked, for example, during House of Commons debates of the *Biological Weapons Bill* in 1973. Conservative MP David Price, for example, explicitly mentions “terrorist who wishes to poison the water supply...[which] is by no means fictional today if one considers the activities of terrorist groups around the world.” He continues and refers to “the annexe to the World Health Organisation publication ‘Health Aspects of Chemical and Biological Weapons’ under the heading ‘Sabotage of Water Supplies’”. One does not have to be a super-Power or even a nation State to do that.” Hansard (1973) *Biological Weapons Bill*. 21 November 1973, vol. 864, col. 1503-1504W: Hansard (Commons). Several allegations of attempted acquisitions and alleged use prior to the 1980s are outlined in: Tucker, J. B. (2000) *Toxic terror: assessing the terrorist use of chemical and biological weapons*. Cambridge, Ma. and London: MIT Press; chapters 3,4 & 5 in particular.

events of terrorism, as well as inevitable scientific and technological advances. Bioterrorism has thus been constructed, or evolved into an intractable problem.

The study is based on interviews as well as archival and documentary research, which is guided by two research questions: Who are the main actors in the policy making process with regard to bioterrorism? How are threats of bioterrorism assessed in the UK?

A finding of this research is that traditional, academic risk assessment methodologies do not appear to have as large an influence as the narratives that have been identified.

2

Methodology

Introduction

The choice of methods should reflect their appropriateness for the research questions. This dissertation investigates the influences upon current UK bioterrorism policies, especially the role of narratives, threat assessment and the mechanisms of policy formation. This chapter addresses the research questions, the methodological framework, and the methods used to gather empirical material and procedural details of the research in order to answer the research questions.

The central concern of this dissertation is how policy is made in the face of high uncertainty. In particular, this research looks at the case of policy formation and risk management in the UK.

A case study approach is used to investigate the policy formation process and the role of narratives in shaping the approach taken by the UK Government to manage highly uncertain risks. The particular case used here is that of bioterrorism. However, bioterrorism threat assessments are veiled in secrecy – this curtails access to information in many instances, rendering research difficult. The case of pandemic influenza is used to illustrate the difficulties of risk assessment and the accompanying institutional complexity

to illuminate the case of bioterrorism. The pandemic flu case thus serves as a heuristic device to illuminate the British approaches to bioterrorism policy.

Choice of the cases

Both cases, bioterrorism and pandemic influenza, overlap substantially, despite being idiosyncratic. The cases share key features which makes the pandemic influenza case suitable to be used to illuminate the case of British bioterrorism policy and illustrate certain aspects of it.

The threat of disease is at the heart of both cases; both cases have the potential to cause a high level of morbidity, mortality and economic disruption; both are framed as security issues; and both cases are complex and the policy discourse is lead by “expert knowledge”. Both cases are also characterised by an abundance of uncertainty about the likelihood of occurrence and severity of the impact, although the policy discourse focuses on high impact scenarios. There is, however, a notable difference between the two cases. The case of pandemic influenza represents a threat which is, or should be, much better understood than that of bioterrorism. Three notable influenza pandemics occurred in the twentieth century 1918, 1957, and 1968; whereas there is no history of any significant or large scale bioterrorism *event*.⁴ The response to the threat of terrorist using unconventional weapons has received considerable attention, scrutiny and criticism in the US, whereas the political response to the threat in the UK remains less well understood outside of the policy community. The US remains a dominant global actor in responses to terrorism. Furthermore, political processes in US tend to be more

⁴ Questions over scale and significance are difficult to judge, and are subjective and contingent on the measure of impact. The anthrax letters of 2001, for instance, had a significant political impact although casualty numbers were relatively low.

transparent, open to scrutiny than those in the UK. A decision was made to study the UK because it is less studied than the US.

The UK is a major actor in the international regime which prohibits biological weapons. It is a depository of the 1972 Biological Weapons Convention, along with the US and Russia and has taken a leading role in key aspects of the effort to effectively prohibit biological weapons.⁵

The political system and the approach taken to confront the challenge of bioterrorism are significantly different in different countries, indicating that the institutional set-up, and overall framing of the problem play an important role.

Research Questions

Two research questions are posed to investigate the policy response to the threat of bioterrorism in the UK. The research questions are used to explore the policy community – policy makers and shapers – and policy process. The focus is on the policy community (found in institutions) and policy processes, rather than the role of the media or public perception of risk or threat. Below, each research question is outlined and briefly discussed.

⁵ UK proposals to strengthen the ban on biological methods of warfare in 1968 started negotiations of the Biological Weapons Convention. In 1969 it was the UK that tabled the first draft convention. Sims, N. R. A. (2001) *The evolution of biological disarmament (SIPRI CBW Studies No.19)*. Oxford: Oxford University Press. Since then the UK has played a leading role in biological arms control, Robinson describes the UK as a standard-bearer in various aspects of international efforts to control biological and chemical weapons. House of Commons - Foreign Affairs Committee (2000) *Eight Report: Weapons of Mass Destruction (Session 1999-2000 HC 407)*. London: The Stationery Office (2 August 2000), Appendix 29: Memorandum submitted by Professor J P Perry Robinson, University of Sussex.

First research question:

The first step in this investigation is the identification of the main, or key, actors who are involved in the policy making process. Thus, the first research question serves a descriptive purpose.

Who are the main actors in the policy making process with regard to bioterrorism?

The qualifier in this question – the main actors – hints at the assumption that not all actors who are involved in the process are equally important. Mahoney states that not all pieces of evidence count equally. Some actors are instrumental in the process, and are what Mahoney calls ‘smoking guns’; others are less important members of the policy network.⁶ In answering this first research question the policy network or institutional arrangement will be explored, and key actors identified. The identification of the main actors involved in the policy making process is the critical first step to understand how policy is made in the UK with regard to deliberate release of pathogenic material.

In the case of bioterrorism there is a particular problem. Parts of the policy network reside within the ‘intelligence machinery’, where secrecy on grounds of national security is commonplace. Furthermore, parts of the response capability are also kept opaque for similar reasons. The problem of secrecy and security will be revisited below in greater detail. Answering the first research question enables the second question to be explored.

⁶ Mahoney, J. (2007) Qualitative Methodology and Comparative Politics. *Comparative Political Studies*, 40(2), 122-144

Second research question:

The second research question explores how the threats of bioterrorism and pandemic influenza are assessed and how that assessment influences policy decisions in the UK.

How are threats of bioterrorism assessed in the UK?

Two closely linked features of the policy formation process are explored. The first feature this question investigates is the model of policy formation; the second feature is the model of assessment. These are two distinct but related features. First, the model of policy formation is the way in which the policy network links together – how decisions and assessments are passed on from one actor in the network to another – it can thus be understood as the mechanism of policy formation. The second feature is exploring through which means the threat assessment is being done, that means what conceptual tools are being used to assess the threat. This part of the research question is most affected by concerns over secrecy. However, it should be pointed out that the objective is to gain an insight into the ‘mode of assessment’ rather than what the assessment concludes. The ‘mode of assessment’ is the mechanical, or structural, feature of the assessment, how the assessment is done; whereas the result(s), or the product, of an assessment (what the assessment concludes) is likely to be sensitive information, and thus inaccessible for academic scrutiny.

This question is subservient to the first question as it can not be answered adequately, nor understood, in isolation from the previous question, but must be embedded in the bigger picture of the policy formation framework.

Although there is an initial need for a sequential approach to the research questions – answering the second research question relies on the first question being answered – the overall approach is, however, iterative, rather than sequential. The next section looks at the methodological framework and the approach taken in this study.

Case Study Approach

The case study methodology is the preferred research strategy when asking ‘how’ and ‘why’ questions.⁷ The case study method represents a diverse set of research strategies with a lot of variation in the design and use. The diversity of the case study approach is due to its application to a variety of disciplines and situations.⁸

A case study method has advantages over more formal modelling and statistical tests when studying complex systems, such as the policy making and formulation process, which involve different structural components, path dependencies, a variety of actors with strategic interactions and relatively unstructured and infrequent phenomena with unique characteristics.⁹ A case study is an appropriate approach when asking questions about “a contemporary phenomenon within its real life context especially when the

⁷ Yin, R. K. (1994) *Case study research: design and methods*. Thousand Oaks: Sage

⁸ Authors who have drawn attention to various uses of case studies in social science include: Bennett, A. & C. Elman (2007) Case Study Methodology in the International Relations Subfield. *Comparative Political Studies*, 40(2), 170-195; George, A. L. & A. Bennett (2004) *Case Study and Theory Development in the Social Sciences*. Cambridge, MA: Belfer Center for Science and International Affairs; Yin, R. K. (1994) *Case study research: design and methods*. Thousand Oaks: Sage; & Platt, J. (1988) What can case studies do? *Studies in Qualitative Methodology*, 1, 1-23

⁹ Bennett, A. & C. Elman (2007) Case Study Methodology in the International Relations Subfield. *Comparative Political Studies*, 40(2), 170-195

boundaries between phenomenon and context are not clearly evident”.¹⁰ This section explains the specific research strategy adopted in this study.

There are a number of competing definitions of case studies. To avoid methodological confusion I follow the definition developed by Gerring, who defines a case study as:

an intensive study of a single unit for the purpose of understanding a larger class of (similar) units¹¹

where a unit is a

spatially bounded phenomenon, for example a nation-state, revolution, political party [...] at a single point in time or over some delimited period of time.¹²

Gerring’s definition is complicated; however, it serves a purpose in reducing much of the ambiguity in case study research, which arises from the diversity of different approaches, and what Moaz refers to as the impression that case studies “are a synonym for freeform research where everything goes”.¹³

The approach used here, within the case study, is “process tracing”. Following George and Bennett, *process tracing* is a method for looking at causal mechanisms or to explain outcomes. In short, it is the use of *narratives*

¹⁰ Yin, R. K. (1994) *Case study research: design and methods*. Thousand Oaks: Sage, p.13

¹¹ Gerring, J. (2004) What is a Case Study and What is it good for? *American Political Science Review*, 98(2), 341-354, p.342

¹² Ibid. p.342

¹³ Maoz, Z. (2002) Case study methodology in international studies: From storytelling to hypothesis testing. In: *Evaluating methodology in international studies*, eds. Harvey, F. P. & M. Brecher, Ann Arbor: University of Michigan Press, 161-186, p.164-165, quoted in: Bennett, A. & C. Elman (2007) Case Study Methodology in the International Relations Subfield. *Comparative Political Studies*, 40(2), 170-195, p.341

to explain processes with the aim to link the processes to both: causes and outcomes. The narrative needs to be verified and other competing explanations need to be eliminated.¹⁴ Thus, process tracing is not unlike a historical study. For the purpose of this dissertation, the narratives are gathered from interviews, published materials, and available literature. I will return to the concept of narratives in the concepts chapter below in greater detail.

A case study approach is used because the formation of policies to address highly uncertain events with potentially large consequences is a phenomenon with unique characteristics, as mentioned above. The specificity of the case, its idiosyncrasies, makes it difficult to generalize beyond this case to the wider population; in other words: to generalize from the bioterrorism case study to wider policy formation processes in the UK. It has to be kept in mind that generalization from a bounded and focussed topic to a wider field is problematic, not least because of peculiar features of the case. Thus, extending findings, from the case under investigation (bioterrorism policies in the UK) to policy making in the UK as a whole, must be treated with care, or avoided altogether.¹⁵

The case study approach and the process tracing technique serve two purposes. First, a descriptive aim, to answer the first research question (*Who are the main actors?*). Second, to link the conceptual framework to the empirical findings; in order to answer the second research question (*How are*

¹⁴ George, A. L. & A. Bennett (2004) *Case Study and Theory Development in the Social Sciences*. Cambridge, MA: Belfer Center for Science and International Affairs

¹⁵ Similar concerns over the generalisability of single cases are raised elsewhere. See, for example: Burnham, P. & others (2008) *Research methods in politics*. Basingstoke: Palgrave Macmillan, pp.63

the threats assessed).¹⁶ The methodological framework has largely been sourced from writers in studies of politics, even if this methodological approach is applicable in various social science disciplines, there is a difference in aims between political studies and policy research, the latter being the one attempted here. Unlike political inquiry, where the development of theories is the “quintessential end”¹⁷ in itself; in policy studies the development of theories is rather a means for providing policy makers with “generic knowledge” that will help them form effective strategies. In other words, policy studies has a problem-solving nature, at least in aspiration, and therefore an inherent instrumental rationality guiding the research.¹⁸

The following section outlines sources of evidence and method of data collection used in this dissertation.

Use of Interviews

The use of interviews is a critical part in this investigation. The interview process was ongoing throughout the research, especially informal interviews which tended to be ad hoc, conducted when and where opportunity arose. Formal interviews occurred at two periods of time in the research project. The

¹⁶ This is a two-way process – using the methodology as a heuristic backdrop to the theoretical conceptual framework to exemplify and build on theory; and conversely, to use the methodological framework to build theories. As Eisenhardt points out, the process between theory building and data collection is iterative. Eisenhardt, K. M. (1989) Building theories from case study research. *Academy of Management Review*, 14(4), pp. 532-550.

¹⁷ Eckstein, H. (1975) Case study and theory in political science. In: *Handbook of political science*, eds. Greenstein, F. I. & N. W. Polsby, Reading, Massachusetts: Addison-Wesley, p.86

¹⁸ Brunner makes a similar point: policy studies should be problem oriented and it is in its contribution to policy that its validity can be tested. Brunner, R. D. (1991) The policy movement as a policy problem. *Policy Sciences*, 24(1), 65-98

first was early in the research, after a rough identification of the topic, to gain an insight into views on bioterrorism. The second part of the formal interview process was undertaken in the later stages of the research project, to gather specific information on processes, networks, and actors. However, the use of interviews also presented a number of problems. This section will outline the interview methodology and problems encountered.

Two general approaches were used – formal and informal. Formal interviews were pre-arranged, with a list of questions which were asked in a semi-standardised qualitative manner. The semi-standardised qualitative interview is useful to “uncover insights or unanticipated areas of relevance to the study, which can then be followed up and capitalized on with the same respondent in the same interview.”¹⁹ Interviews were tailored, or adapted, to each respondent and thus varied in content and questions according to the respondent’s specific field of expertise and organizational affiliation.²⁰

The interview candidates for formal interviews were given a précis of the study undertaken, together with a request for an interview appointment. Interviews were generally conducted in a relatively informal atmosphere with the interviewee happy to share anecdotes and stories. Access to interviewees, and selection of potential candidates, was facilitated by an extensive network of contacts of the Harvard Sussex Program, and in consultation with my supervisors. Interviewees also suggested further interview contacts whom they felt should be included in this study and would be useful to this investigation. Referrals of this kind can not only indicate ‘who knows who’ but also give

¹⁹ Richardson, S.& others (1965) *Interviewing - its forms and functions*. New York and London: Basic Books, p. 54

²⁰ A list of interviewees has been deposited with my supervisors.

some insight on the value one actor places upon another and the socio-dynamics of the network.²¹ But referrals can also lead to a kind of 'lock-in' into a specific network of like minded individuals.

Informal interviews and informal discussion provided a good source of information for this research. These were unscheduled short discussions or questions and answers, held at conferences, or similar meetings, and conducted when opportunity arose, either by asking speakers specific questions about their presentations during question and answer sessions, or through approaching speakers or potential interviewees for an informal discussion after presentations or during general 'coffee talk'. However, these 'interviews' were generally restricted to a small number of questions, and more general comments, rather than in depth discussions of the subject due to constraints on time and access to the respondents at these venues. Opportunity for many of these informal approaches arose during seminars organized by, amongst other, the Harvard Sussex Program at the University of Sussex, at conferences organized by the Royal United Services Institute in London, and, in the early stages of the research the research consortium of the ASSRBCVUL²² project.

The interview "population" included a range of respondents with different affiliations and backgrounds to gain a broad set of views on the issues involved in the policy formation process and the policy network

²¹ Duke, K. (2002) Getting beyond the 'Official Line': Reflections on dilemmas of access, knowledge and power in researching policy networks. *Journal of Social Policy*, 31(1), 39-59.

²² European Commission FP6 programme Project 502476: "Assessment of the vulnerabilities of modern societies to terrorist acts employing radiological, biological or chemical agents with the view to assist in developing preventative and suppressive crisis management strategies"

involved. Respondents included security industry representatives; academic scholars; serving and retired government officials, police, journalists, civil servants; and serving and retired military personnel.

Problems with interviews

Conducting interviews in this peculiar field of inquiry (biological weapons and terrorism and associated policies) presented a number of problems connected to trust and familiarity of the interviewer with the interviewee. Similar to Duke, I found that “gaining physical access to my respondents was relatively easy, it proved much more difficult to negotiate access to their personal views and opinions”.²³

Issues surrounding a perceived sensitivity of the subject of biological terrorism and attribution in some cases were a common obstacle. To overcome the perceived sensitivity of the subject in formal interviews a précis was prepared to inform the potential interviewee of the specifics of the dissertation. In informal interview settings this was done by a verbal précis specifically pointing out that the study does not involve sensitive aspects as it is a study in science and technology policy research concentrating on policy mechanisms and policy networks. Gaining access and establishing rapport was important and an on-going process. Connection to the Harvard Sussex Program, and regular conference attendance helped to create familiarity with the respondents, and eased some of the concerns. However, despite explanation of the nature of the research many, but not all, of the respondents remained guarded, or unwilling to divulge any but the most obvious,

²³ Duke, K. (2002) Getting beyond the 'Official Line': Reflections on dilemmas of access, knowledge and power in researching policy networks. *Journal of Social Policy*, 31(1), 39-59, p.48

superficial information. One respondent explained refusal to be interviewed the following way:

“I hope that you will appreciate that derivation of the threat position is perhaps the most sensitive of all the activities that are carried out in government. Knowledge of even the process used could inadvertently give an advantage to an aggressor and hence it must be closely guarded.”²⁴

In formal interviews anonymity of the respondent was always offered. Respondents, in formal as well as informal interviews, often introduced information and anecdotes with “...this is off the record, but...” However, despite being interesting, in most cases the information gained “off the record” was only of peripheral interest, to this dissertation, if at all.

Many of the conferences, seminars, presentations, and talks attended were held under the Chatham House Rule.²⁵ The Rule states that the information gained can be used freely, but the identity and affiliation of the speaker may not be revealed. The Rule’s aim is to provide anonymity to facilitate the free and open sharing of information. Non-attributable information gained in this way is difficult to use in an academic study, and where possible I have attempted to gain the information from a different source, where this was not possible the location, venue and date are cited, and the Chatham House Rule condition is noted.

²⁴ Senior Home Office Official, personal communication, 14th July 2008

²⁵ The Chatham House Rule states that: “When a meeting, or part thereof, is held under the Chatham House Rule, participants are free to use the information received, but neither the identity nor the affiliation of the speaker(s), nor that of any other participant, may be revealed”. Further explanation of the Rule and its interpretation can be found at: <http://www.chathamhouse.org.uk>

Information gained in interviews was triangulated, or corroborated, where possible with respondents interviewed at a later stage, or with the help of documentary evidence where available to increase confidence in the information gained in interviews, formal and informal, and to be able to place the information in the correct historical, institutional, and wider context of the research. The real value of most of the interviews turned out to be that they guided and supported finding of documents, provided anecdotal evidence, detail, direction, and corroboration. Most of the respondents remain unacknowledged due to confidentiality and non-attribution agreements. However, the interview process was critical and helped substantially in the construction of the case study, and in answering the research questions as far as possible.

Use of Documents

Documentary evidence was, together with interviews, another important source of information for this dissertation. A variety of different documentary sources, material and information was consulted, and where possible primary or secondary sources were used.²⁶ Attempts have been made, wherever possible, to corroborate information with a variety of sources; this was, unfortunately, not always possible due to secrecy and confidentiality, or general sparseness of information publically available.

²⁶ Documentary sources can be categorised as 'primary', 'secondary', and 'tertiary'. This rough distinction is based on two factors: timescale and the intended audience – primary sources are part of or produced at the event in question for internal circulation (e.g. government documents); secondary sources are produced after an event consisting of other evidence given to participants and publically available (e.g. Command Papers, Parliamentary debates and news reports), tertiary sources are reconstructing the event and are in the public domain (e.g. books, academic publications). See, for example: Burnham, P. & others (2008) *Research methods in politics*. Basingstoke: Palgrave Macmillan

The dissertation benefitted greatly from two information collections which have been accumulated and maintained by the Harvard Sussex Program: the Sussex Harvard Information Bank (SHIB) and the CBW Events database. The SHIB is a subject orientated archive storing thousands of primary, secondary and tertiary documents, going back to the 19th Century. The CBW Events database contains a fully searchable, partially published chronology of over 16300 events pertaining to chemical and biological warfare armament and disarmament going back to 1986.

These two sources of documentary material were complemented, where necessary, by collecting documents from a variety of sources: governmental and inter-governmental and non-governmental agencies, as well as libraries, online repositories, and news paper archives.

At several locations in this dissertation confidential and secret material – which has been declassified and publically released – is quoted. There is an inherent problem with these kinds of resources, as with much of the information gained in an area of inquiry where secrecy is habitually employed. Material released into the public is rarely complete, it is either redacted or only snippets are provided (material found in the Butler Inquiry²⁷ is a good

²⁷ On 3 February 2004, the Foreign and Commonwealth Secretary announced in the House of Commons that the Prime Minister decided to establish a committee of Privy Counsellors to review intelligence on weapons of mass destruction. The terms of reference were “to investigate the intelligence coverage available in respect of WMD programmes [...and] to investigate the accuracy of intelligence on Iraqi WMD up to March 2003, and to examine any discrepancies between the intelligence gathered, evaluated and used by the Government before the conflict, and between that intelligence and what has been discovered by the Iraq survey group since the end of the conflict; and to make recommendations to the Prime Minister for the future on the gathering, evaluation and use of intelligence on WMD, in the light of the difficulties of operating in countries of concern.[...The committee] will have access to all intelligence reports and assessments and other relevant Government papers, and will be able to call witnesses to give oral evidence in private.” Lord Butler (2004) *Review of Intelligence on Weapons of Mass*

example of this), thus lacking context. These incomplete pieces of information allow only a blinkered view of the information at hand. Further complicating the picture is that even complete documents would not necessarily give a fuller picture, especially in the case of intelligence; as Colin McColl, former head (1988-1994) of the British Secret Intelligence Service (MI6) said – the most intelligence can provide is “cat’s eyes in the dark”.²⁸

Participation in an Expert Group

The third source of information for the dissertation was the participation in a research consortium engaged in a co-ordination action funded by the European Commission.²⁹ This co-ordination action, with the project acronym ASSRBCVUL, assessed the vulnerabilities of the European society to radiological, biological and chemical terrorist attacks, and evaluated and proposed countermeasures.

The following section will outline the co-ordination action in more detail, and outline the role and effect that engagement with the co-ordination action had on this dissertation.

The European Commission has, in response to the terrorist attacks of September 2001, and the wider perception of a threat from terrorism,

Destruction, HC 898. London: The Stationery Office (14 July 2004), p. 1

²⁸ McColl’s metaphor likens counter-terrorism efforts to a cat in the darkness, in darkness all one can see are the eyes of the cat rather than the whole of the creature. Economist (2005) *Cat’s eyes in the dark* Economist (London) 19 March 2005, pp. 32-34

²⁹ For information on the project see: European Commission FP6 Project 502476 ASSRBCVUL Co-ordination action, SSP Area 8.1.B.2.7, “Assessment of the vulnerabilities of modern societies to terrorist acts employing radiological, biological or chemical agents with the view to assist in developing preventative and suppressive crisis management strategies”, Executive Summary, May 2007

prepared a programme of activities to counter the threat of radiological, biological and chemical terrorism (RBC). In order to inform its Member States of the threat posed by, and the societal vulnerabilities to RBC terrorism a prospective study was performed by an international consortium of ESTO³⁰ network members. ASSRBCVUL was meant to update the restricted ESTO study and to make the updated findings of ASSRBCVUL available to a wider audience by avoiding classification. This, however, failed. An 'EU restricted' classification suppressed much of the resultant report.

ASRBCVUL was carried out by an international consortium of seven organizations³¹, each with responsibility for discrete work packages. The overall remit of the study was to:

“assess technological, social, economic and psychological vulnerabilities of modern societies [to terrorist acts employing radiological, biological or chemical agents] with the view to developing preventive, risk communication and crisis management strategies”³²

The work packages were assigned to individual organizations and served to set the operational goals. These goals included the assembly of a model of European society to assess the impact of RBC terrorism, an up-to-date threat

³⁰ ESTO stands for the “European Science and Technology Observatory”, and was a network project of the European Commission Joint Research Centre (JRC) Institute for Prospective Technological Studies (IPTS). ESTO was a “platform of experts engaged in monitoring and analysing scientific and technological developments and their relation and interaction with society”.

³¹ The consortium was comprised of seven partner organizations and about 15 participants: Netherlands Organization for Applied Scientific Research (TNO), the consortium lead partner; Compagnie Européenne d’Intelligence Stratégique (CEIS); Centro Nacional de Biotecnología (CSIC); Swedish Defence Research Agency (FOI); University of Sussex (author’s affiliation); Institute for Prospective Technological Studies (IPTS) of the European Commission’s Joint Research Centre (JRC); University of Ottawa.

³² European Commission FP6 programme for integrating and strengthening the European Research Area, paragraph 2.7, task 5

and vulnerability assessment, a collection of existing policy and countermeasures, designing of a set of planning scenarios which were informed by the preceding threat and vulnerability assessment, and an assessment of policies and countermeasures on an international, EU, and Member State level. Literature reviews were augmented by expert opinion of consortium participants and their associates. The project was harmonised overall through a series of meetings in which progress and structure of individual working packages were discussed and amended as necessary.

As part of the University of Sussex team I was able to participate in discussions and drafting of the report that resulted from the consortium's effort. Being actively engaged in the conceptualisation of the problem of RBC terrorism within an expert group allowed insights into various modes of how threat assessments might be done. Another consequence of being involved in the project, apart from benefiting from participation in discussions, was that the project affected my understanding of the threat assessment process and possible manifestations of the threat. Furthermore, the project gave me an insight into potential shortcomings of a threat assessment exercise. These shortcomings are, for example, connected to how the remit is set for an assessment exercise, politics and tensions within a policy (or working) network, the dilution of meaning through negotiated common understanding of concepts to the lowest common denominator, and resource and time constraints, all of which may adversely affect the outcome of such an assessment exercise.

3

Concepts & Theory

Introduction

This section will explore key concepts applicable to this dissertation with a view towards defining terms for use in this dissertation. The concept of biological weapons and that of bioterrorism are explained in detail as they are central to the present study. The term ‘bioterrorism’ is defined here as “the use of a ‘biological weapon’³³ in acts of ‘terrorism’³⁴.” The following sections discuss in detail the specific meaning of these terms in the context of this dissertation concluding with the above definition.

Second, the concept of pandemic influenza is briefly examined as it is used in this dissertation as a heuristic device as described in chapter 2. Third, policy formation models are explained as understood in this dissertation.

³³ ‘Biological weapon’ as defined by Section 1(1) and (2) *Biological Weapons Act 1974* (c.6); that is excluding the amendment of the *Anti-Terrorism Crime and Security Act 2001* concerning transfers of toxins and other biological agents. This definition has been transposed from the 1972 Biological Weapons Convention, see below for an elaboration.

³⁴ ‘Terrorism’ as defined by Section 1(1) of the *Terrorism Act 2000*. It is worth noting that this definition of terrorism includes “serious damage to property” (Section 1(2b)) which could be interpreted in the context of biological weapons use as infestations of crops and infection of livestock in anti-agricultural terrorist attacks. It is also conceivable, however unlikely, that use of anti-material biological agents falls into this category.

Fourth, the concepts of risk and threat are outlined and their use in this dissertation are explained.

Concept of biological weapons

The concepts of 'biological weapons' and 'biological weapons agents' are central to this dissertation and thus a formal definition of what the terms mean is needed here.

Some of the difficulty of defining biological weapons stems from a wide variety of different modes of dissemination, uses, and agents that can be chosen. This section outlines what a biological weapon is for the purpose of this dissertation.

Biological weapons are, broadly speaking, comprised of two components: a biological agent and a means of delivery of that agent.³⁵

The easier of the two to define is the means of delivery, which refers to equipment used to disseminate the agent. These range from bombs and spray tanks to affect large areas, to poison arrows or a phial containing the agent to affect a single or localised target. Besides ammunition, animals, such as arthropods, can also be used as carriers of disease, for example fleas carrying plague, mosquitoes carrying malaria. In this case the arthropod would be a means of delivery carrying the biological agent.

³⁵ Following the *Biological Weapons Act 1974* (c.6) a biological weapon can be either since the definition of a biological weapon hinges on the purpose to which material is put to. The separation into two principal components follows: SIPRI (1973) *The problem of chemical and biological warfare: a study of the historical, technical, military, legal and political aspects of CBW, and possible disarmament measures*. - Vol. 2 : *CB weapons today*. Stockholm International Peace Research Institute. Stockholm: Almqvist & Wiksell, p.27

Biological agents are more difficult to define. Biological agents are, literally speaking, something living.³⁶ Thus, they can range from bacteria to plants and from fungi to animals and their products. The problem with defining biological agents, in the context of biological weapons, is the bounding of the category. Commonly, in the biological weapons context, biological agents are pathogenic, which literally means suffering- or disease-causing. Agents, in the biological weapons sense, are micro-organisms, including viruses.³⁷ Moreover, biological agents can also include products of living organisms, such as toxins, which can be isolated and used as biological weapons agents.³⁸ Causing disease, pathogenicity in other words, appears to be a defining factor.³⁹ Apart from arthropod infestations, biological weapon agents are pathogenic in the sense that they cause clinical symptoms in the affected organism either

³⁶ Literally 'bio-' of or relating to life or living. Stemming from ancient Greek βίο-, combining form (as in βιόδωρος life-giving) of βίος life. Oxford English Dictionary (1989) *Oxford English Dictionary - 2nd Edition (Online)*. Oxford: Oxford University Press

³⁷ See: World Health Organization (2004) *Public Health Response to Biological and Chemical Weapons - WHO Guidance (2nd Edition)*. Geneva: World Health Organization. Although viruses are not strictly living they are included as biological agents because of their pathogenic properties and ability to replicate, albeit only within host cells. Another example of non living pathogenic material in the above sense are infectious proteins, or prions, thought to be the causative agent of variant Creutzfeldt-Jakob disease (vCJD) in humans, and bovine spongiform encephalopathy (BSE) in cattle.

³⁸ Some biological agents are pathogenic because they secrete, or produce toxic substances (for example the bacterium *Clostridium botulinum*, the causative agent of botulism, produces botulinum toxin; or the plant *Ricinus communis* which produces ricin toxin). Their pathogenicity relies on toxicity rather than replication within the host. Even more complicating is the fact that consideration has been given to arthropods as biological weapons. The Colorado potato beetle (*Leptinotarsa decemlineata*) and *Thrips palmi* are examples of so called "pytopathogenic" (plant disease-causing) agents which cause destruction through infestation, rather than infection. The Colorado potato beetle was perceived to be a threat by the Germans during World War II. See: Geißler, E. (2003) *Anthrax und das Versagen der Geheimdienste*. Berlin: Kai Homilius Verlag. Cuba formally accused the USA of using a biological weapon by disseminating *Thrips palmi* over her territory, in 1997. See: Sims, N. A. (2006) Legal Constraints on Biological Weapons. In: *Deadly Cultures - Biological Weapons since 1945*, eds. Wheelis, M., L. Rózsa & M. Dando, London: Harvard University Press, 329-354

³⁹ Perhaps size is another defining factor, because a dog or man, however vicious, would not be considered a biological agent.

through infection or toxicity. These agents cause harm through their infectivity, or their toxic properties. The clinical symptoms caused by biological agents range from incapacitation to lethality.⁴⁰

The use of infective or toxic agents has a long history in warfare as a means to overcome an enemy, dating back to ancient history.⁴¹ Although historical antecedents of “germ warfare” are interesting and possibly illuminating in terms of normative prohibitions against the use of disease and poisons it is important to distinguish these episodes from the modern understanding of biological warfare. An understanding of how disease works is not necessary to use disease in warfare, however, without this understanding the use of disease is haphazard and a matter of chance – which does not mean that it is ineffective as shown by historical examples of poisonings of wells, hurling diseased bodies over the walls of besieged cities, and distribution of disease tainted gifts such as blankets and handkerchiefs.⁴² The formulation of the germ theory of disease – following the work of, amongst others, John Snow, Louis Pasteur, Joseph Lister and Robert Koch towards the end of the 19th Century – enabled less haphazard and more deliberate, targeted use. Prior to

⁴⁰ Sidell, F. R. & others (1997) *Medical Aspects of Chemical and Biological Warfare*. Falls Church, VA: Office of the Surgeon General (Army)

⁴¹ Estimates for the first use of biological warfare or biological weapons range widely, for a discussion on the historical use of biological and chemical agents and weapons see: Mayor, A. (2003) *Greek Fire, Poison Arrows and Scorpion Bombs: Biological and Chemical Warfare in the Ancient World*. Gerald Duckworth & Co Ltd; Noah, D. L. & others (2002) The history and threat of biological warfare and terrorism. *Emergency Medicine Clinics of North America*, 20, 255-271; SIPRI (1971) *The problem of chemical and biological warfare: a study of the historical, technical, military, legal and political aspects of CBW, and possible disarmament measures*. - Vol. 1 : *The rise of CB weapons*. Stockholm International Peace Research Institute. Stockholm: Almqvist & Wiksell

⁴² See for example: Mayor, A. (2003) *Greek Fire, Poison Arrows and Scorpion Bombs: Biological and Chemical Warfare in the Ancient World*. Gerald Duckworth & Co Ltd; & Wheelis, M. & M. Sugishima (2006) Terrorist use of biological weapons. In: *Deadly Cultures - Biological Weapons since 1945*, eds. Wheelis, M., L. Rózsa & M. Dando, Cambridge, Massachusetts and London, England: Harvard University Press, 284-303

the germ theory, disease was thought to be caused by bad air, foul smells, the pollution of decay – noxious vapours coming from putrescent organic matter, called ‘miasma’ accordingly, in which disease generates spontaneously. Only following the identification of the causation of disease was it possible to ‘bottle disease’ – the germ theory of disease and the understanding of disease causation thus also enabled germ warfare in its modern incarnation.

During the long use of disease and poisons all four routes of exposure have been exploited. The routes of exposure are concerned with the uptake of the agent into the target organism, which occurs: via inhalation, via consumption of agents in food or drink, via direct injection, or via direct contact with the target.⁴³ Targets of biological weapons are biological organisms, and thus include not only humans but plants and animals as well.⁴⁴ State programmes of the 20th century have primarily focussed on the production of aerosols to infect human populations. Aerosols can drift with the wind contaminating large areas.⁴⁵

⁴³ Uptake via direct contact is where an agent crosses the epidermis, that is via the skin in animals, or membrane or cuticle in plants.

⁴⁴ Another target of biological weapons can be inanimate material. Further, for an in depth discussion of biological weapon systems see: SIPRI (1973) *The problem of chemical and biological warfare: a study of the historical, technical, military, legal and political aspects of CBW, and possible disarmament measures*. - Vol. 2 : *CB weapons today*. Stockholm International Peace Research Institute. Stockholm: Almqvist & Wiksell; for medical aspects of different agents see: Sidell, F. R. & others (1997) *Medical Aspects of Chemical and Biological Warfare*. Falls Church, VA: Office of the Surgeon General (Army)

⁴⁵ For an example of an aerosol being carried by wind and contaminating a large area see: Guillemin, J. (1999) *Anthrax: The Investigation of a Deadly Outbreak*. London: University of California Press. The large area concept, mostly a British conception, was initially developed for use against human targets in maritime theatres and later for land based use against urban population as well as crops and livestock. Biological weapons were also developed for purposes of assassination. Aerosols, however, are not the only way of targeting large numbers of people. Contamination of food and water supplies is also possible. For an example of food contamination which resulted in 751 identified cases see: Török, T. J. & others (1997) A large community outbreak of Salmonellosis caused by

Biological weapons have utilities, other than causing harm directly through toxicity or infectivity. One such utility is contamination of produce to render it unfit for consumption, or contamination of landscape, which has been used militarily in the concept of 'area denial'. An important factor for use against human targets is the psychological dimension of biological weapons. Disease has a certain kind of dread associated with it.⁴⁶ Invisible, possibly contagious, disease is seen as insidious, attacking the body from within.⁴⁷

Biological Weapons as Weapons of Mass Destruction

The reason for outlining different means of delivery of biological agents and toxins, and thus different uses to which these agents can be put to is to highlight differences in destructive potential within the category of biological weapons. The destructive potential can range, depending on the means of

intentional contamination of Restaurants salad bars. *Journal of the American Medical Association*, 278(5), 389-395

⁴⁶ One explanation of this dread is the psychology of disgust and associated hygienic behaviour. The psychology of disgust explains dread as a defence mechanism against infectious disease. This behaviour is an evolutionary adaptation rooted in culture as well as human behaviour. See: Jefferson, C. (2009) *The Taboo of Chemical and Biological Weapons: Nature, Norms and International Law*. Brighton: University of Sussex; & Curtis, V. & A. Biran (2001) Dirt, Disgust, and Disease. *Perspectives in Biology and Medicine*, 44(1), 17-31.

⁴⁷ Cole, L. A. (1998) The Poison Weapons Taboo: Biology, Culture, and Policy. *Politics and the Life Sciences*, 17(2), 119-132

Referring to gas in particular and chronic disasters in general, Erikson states: "It is furtive, invisible, unnatural. [...] it moves for the interior, turning the process of assault inside out and in that way violating the integrity of the body". This is why disease invokes a special kind of dread. In: Erickson, K. (1994) *A new species of trouble - the human experience of modern disaster*. London: W.W. Norton & Company, p.150

Fritz Haber, one of the initiators of gas warfare in World War I explained, in 1920, to officers of the Reichswehr that contamination is unlike combat with normal means, to which the senses get used to. When exposed to a contaminant "[...] each change in perception, which nose or mouth sense, unsettles the soul with imaginations of an unknown consequence and is thus a new challenge to the morale...". Fritz Haber, 1920, Lecture delivered to Officers of the Reichswehr. Reproduced in part in: Gratz, J. (2003) *Chemische Kampfstoffe - Der Tod der aus Deutschland kam*. Löhrbach: Werner Pieper & Die Grüne Kraft, p.7 (my own translation)

delivery and agent used, from the poisoning of a single person to large area applications with the potential for massive destruction of life, or massive disruption of human activity.

This range of destructiveness is important to note as biological weapons are classed as “weapons of mass destruction” (WMD), alongside with nuclear and chemical weapons. WMD is a precise term as used in arms control treaties and has a long history in disarmament negotiations. In January 1946, the term appeared in a United Nations General Assembly document outlining the establishment of a commission to deal with the problems raised by the discovery of atomic energy. The commission’s terms of reference specifically included, amongst other tasks, task ‘b’, which reads:

“the Commission shall make specific proposals:
(b) for the elimination from national armaments of
atomic weapons and of all other major weapons
adaptable to mass destruction”.⁴⁸

Attention is drawn here to the term’s history, and that it grew out of the specific meaning in the context of disarmament and arms reduction. Today, the term is used to simply denote the three weapons systems. WMD has

⁴⁸ United Nations General Assembly Resolution 41 (I), 24 January 1946. See also Chapter 7: “Chemical and bacteriological weapons defined as weapons of mass destruction” In: SIPRI (1971) *The problem of chemical and biological warfare: a study of the historical, technical, military, legal and political aspects of CBW, and possible disarmament measures. - Vol. 4 : CB disarmament negotiations, 1920-1970*. Stockholm International Peace Research Institute. Stockholm: Almqvist & Wiksell. The term was first used, according to Carus, by William Lang, Archbishop of Canterbury: “Who can think without horror of what another widespread war would mean, waged as it would be with all the weapons of mass destruction?” Lang, W. C. G. (1937) *Archbishop's appeal - Individual will and action* The Times (London) 28 December 1937, pp. 9-10. Carus dates the term’s modern usage to 1945, and attributes the term to a joint statement by US President Harry Truman, UK Prime Minister Clement Attlee and Canadian Prime Minister Mackenzie King. The joint statement included the words “weapons adaptable to mass destruction”. Carus, S. (2006) Defining “Weapons of Mass Destruction”. *Occasional Paper, Center for the Study of Weapons of Mass Destruction*, January(4), p.3

become shorthand for chemical, biological and nuclear weapons, this is misleading as there are fundamental differences between them. These differences include the specific way of causing harm in their target, the delivery to the target, the type of damage caused, and the method of production of the different weapons. Importantly, the term WMD only denotes one small part of the spectrum of damage that these weapons can cause, namely the massively destructive part, at the extreme end of a threat spectrum; at the other end of the spectrum are the so called “non-lethal” weapons. Jones thus complained about the use of the term:

“The truth is that the term ‘weapons of mass destruction’ is pretty hopeless in that it doesn’t mean very much, but WMD rolls easily off the tongue and is now so imbedded in the language that we are stuck with it.”⁴⁹

The use of biological weapons

Despite a long history of use and knowledge of disease and poisons, historical incidents are rare compared with conventional means of warfare and conventional terrorism, especially during the 20th and 21st Century.⁵⁰ Various authors have offered explanations to account for the rarity of use. These explanations can be grouped in four main categories, ‘make and use’, ‘taboo and morality’, ‘legal constraints’, and ‘impact’.

⁴⁹ Jones, B. (2009) *Written Evidence to the Hutton Inquiry and the Butler Review*. <http://www.iraqinquirydigest.org/?p=4577>: Iraq Inquiry Digest, 6 December 2009, Annex B

⁵⁰ Examples of discussions of historical and modern uses of biological weapons, respectively, can be found in: Mayor, A. (2003) *Greek Fire, Poison Arrows and Scorpion Bombs: Biological and Chemical Warfare in the Ancient World*. Gerald Duckworth & Co Ltdⁱ and Wheelis, M. & others (2006) *Deadly Cultures - Biological Weapons since 1945*. Cambridge, Massachusetts and London, England: Harvard University Press; a further discussion of non-state use can be found in: Tucker, J. B. (2000) *Toxic terror: assessing the terrorist use of chemical and biological weapons*. Cambridge, Ma. and London: MIT Press

The first explanation is that biological weapons are difficult to make and use. This explanation is concerned with the difficulty of obtaining virulent pathogens and cultivating them in sufficient quantities, purifying the agent and eventually effective delivery to a target. Delivery to a target can be accomplished in a variety of ways as indicated above. Each method has technical difficulties associated with it. For example, used in explosive ordinance much of the payload (the agent) is destroyed, sprayed agents are affected by meteorological conditions and the adverse effects of UV radiation and other sources of environmental challenges to the viability of the agent. Contamination of water supplies suffers from dilution of the agent. Moreover, the release of biological agents can cause 'blow back', which is a possible boomerang effect of biological weapons. Blow back can occur in two varieties: the first is that an aerosol can literally be blown back by wind. The second form of blow back is that contagious diseases can infect those who have initially released the agent. The 'make and use' explanation is comprised of the technical difficulties of making and using biological weapons and the unpredictability of biological agents once released. However, crude dissemination of biological agents is not necessarily technically difficult, nor does it require in-depth knowledge of aerobiology, microbiology, or an understanding of pathogenicity. Historical episodes, such as catapulting plague victims into besieged cities, or contaminating cisterns are testament to the relative ease of crude dissemination of biological agents.⁵¹

The second group of explanations is normative, concerned with the taboo and morality against the use of poisons and disease. It has been argued that

⁵¹ See, for example: Wheelis, M. (1999) Biological warfare before 1914. In: *Biological and Toxin Weapons: Research, Development and Use from the Middle Ages to 1945*, eds. Geissler, E. & J. E. van Courtland Moon, Stockholm: SIPRI (OUP)

the use of poisons and disease is morally repugnant and that an ancient cross-cultural taboo exists against use of these insidious and nefarious means of waging war.⁵² Thus, it can be argued that armed forces or groups resorting to the use of morally repugnant means risk disaffecting sympathisers by appearing to be morally corrupt. Disaffecting sympathisers may not prevent some groups from using disease and poisons as weapons. Other groups, however, will be deterred from their use because support of sympathisers is an important part of their campaign.⁵³ The 'taboo and morality' explanation is a precursor to the next two explanations.

Legal constraints against the use of biological weapons can be regarded as the codification of the taboo. From early examples found in Indian Code of Manu to modern international conventions, the prohibition of poisons and disease is a recurring theme in the conduct, and morality, of war and conflict.⁵⁴ Violating rules of engagement and rules of conduct may not be an obstacle,

⁵² Cole, L. A. (1998) The Poison Weapons Taboo: Biology, Culture, and Policy. *Politics and the Life Sciences*, 17(2), 119-132

⁵³ See Post, J. M. (2005) The psychology of WMD terrorism. *International Studies Review*, 7(1), 148-51. Post differentiates six different types of terrorist groups according to their motivations: Social Revolutionaries, National Separatists, Religious Fundamentalists, New Religious Extremists, Right Wing, Single Issue Extremists. Post ascribes different propensities to use either the tactic of discriminate target selection to advance a bargaining position, or the tactic of random targeting to cause social paralysis by inflicting mass casualties. Although the analysis offered by Post is restricted to terrorist groups, wider lessons can be drawn from it in terms of the importance of societal perception (and acceptance) of the use of particular varieties of force (tactics).

⁵⁴ For example, the Indian Code of Manu forbade the use of poisoned arrows and flaming throw torches, Islam forbids the poisoning of water. Regulation of the conduct of war leading to the modern international codification of the prohibition of biological weapons can be traced to Western European medieval Christian doctrine and standards of chivalry. Traditions and customs in the conduct of war were captured in military manuals after the end of the Napoleonic war. Various international bodies sought to moderate the conduct of hostilities resulting in the declaration of St Petersburg in 1868, The Hague peace conferences of 1899 and 1907. van Wynen Thomas, A. & A. J. Thomas Jr (1970) *Legal Limits on the use of Chemical and Biological Weapons*. Dallas: Southern Methodist University Press. See also: Jefferson, C. (2009) *The Taboo of Chemical and Biological Weapons: Nature, Norms and International Law*. Brighton: University of Sussex

but credible sanctions – the possibility of retribution and punishment – may be inhibitive.⁵⁵

The last group of explanations is concerned with the tactical and strategic impact of biological weapons and is a combination of technical difficulties of using biological weapons and the moral implications of their use. Biological weapons, disease in this case rather than poisons, require time before effects manifest themselves. This time lag, or incubation period, not only delays the physical impact, that is decimating the enemy, but also the psychological impact. Modern warfare and some forms of terrorism depend on spectacular displays of power. Armies use, for example, aerial bombings as a show of force, whereas terrorist groups use improvised explosive devices or other highly visible means to achieve an immediate and often symbolic impact upon an audience. The relatively slow onset of illness may not serve the purpose of displaying strength and power. However, the incubation period of disease creates an ideal opportunity for covert releases and undetected escape of a perpetrator.

Working Definition – biological weapon

Having outlined the difficulty of defining what constitutes biological agents this section turns towards definitions found elsewhere in order to arrive at a working definition of biological weapons used in this dissertation. The first step towards a definition is the definition found in the 1972

⁵⁵ To this end suggestions have been made to introduce, and strengthen, prohibitions against the use of chemical and biological weapons into international law: Meselson, M. & J. Robinson (2002) A draft convention to prohibit biological and chemical weapons under international criminal law. In: *Treaty Enforcement and International Cooperation in Criminal Matters: with Special Reference to the Chemical Weapons Convention*, eds. Yepes-Enriquez, R. & L. Tabassi, The Hague: TMC Asser Press, 457-469

*Convention on the Prohibition of Biological and Toxin Weapons (BWC).*⁵⁶ The BWC is an international treaty which outlaws development, acquisition, production and stockpiling of biological and toxin weapons. Instrumental to the convention is the way it defines its scope. Rather than defining specific agents, quantities thereof, or technologies that are prohibited, the BWC is built on what is known as the “general purpose criterion”. As the term implies the prohibition is constructed on the purpose of use, rather than the prohibition of certain artefacts. The BWC defines its scope in Article I:

- (1) Microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes;
- (2) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.⁵⁷

A definition by purpose of use rather than by artefacts serves two important functions: first, biological, medical and all other peaceful research is exempted from the prohibition, so that these purposes are not inhibited. Second, by not specifying artefacts, at the time of writing, ensures that the BWC stays abreast of unforeseen technological developments. There is still a certain ambiguity in the terms used in the convention. However, the terms “microbial or other biological agents” and “toxins” create a catch-all clause because it does not matter what “their origin or method of production” is as

⁵⁶ The Convention on the Prohibition of the development, production and stockpiling of bacteriological (biological) and toxin weapons and on their destruction. Signed at London, Moscow, and Washington on 10 April 1972, entered into force on 26 March 1975. The text of the convention can be found at <http://www.opbw.org>.

⁵⁷ United Nations (1972) *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction*. Washington DC, London, and Moscow, 10 April 1974

long as there is a “justification for prophylactic, protective or other peaceful purposes”.⁵⁸

The reason for turning towards the BWC first is twofold. First, the UK was the originator of the idea for the BWC as a separate treaty, is a state party and one of three depositories of the treaty.⁵⁹ Second, as a state party of the convention the UK is obliged to implement the provisions of the BWC into domestic law. As an international treaty the BWC operates on the level of nation states, and not on the level of the individual. Article IV of the BWC thus states that:

Each State Party to this Convention shall, in accordance with its constitutional processes, take any necessary measures to prohibit and prevent the development, production, stockpiling, acquisition or retention of the agents, toxins, weapons, equipment and means of delivery specified in article I of the Convention, within the territory of such State, under its jurisdiction or under its control anywhere.⁶⁰

It should be noted that Article IV of the BWC requires each State Party to prohibit activities, as set out in Article I cited above, on its territory. The BWC

⁵⁸ Another instance of the “general purpose criterion” can be found in the 1993 Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, commonly referred to as the Chemical Weapons Convention, or CWC. Conventions and treaties must be interpreted “in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose” following article 31, paragraph 1 of the 1969 Vienna Convention of the Law of Treaties, this includes the ambiguity found in the BWC and the general purpose criterion.

⁵⁹ The other two depository states are the United States of America and the Russian Federation.

⁶⁰ United Nations (1972) *Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on their Destruction*. Washington DC, London, and Moscow, 10 April 1974

does not require violations to be penalised, neither nationally nor internationally.⁶¹

In the UK, the BWC was adopted in, and implemented through, the *Biological Weapons Act 1974*.⁶² Article 1 of the *Biological Weapons Act 1974* reads:

1(1) No person shall develop, produce, stockpile, acquire or retain—
any biological agent or toxin of a type and in a quantity that has no justification for prophylactic, protective or other peaceful purposes; or
any weapon, equipment or means of delivery designed to use biological agents or toxins for hostile purposes or in armed conflict.⁶³

There are two important points to note here. First, the UK adopted Article I of the BWC almost word for word in the *Biological Weapons Act 1974*, only substituting the words “microbial or other” biological agent with “any” biological agent.⁶⁴ Thus, the UK has adopted the general purpose criterion of the BWC, which prohibits those purposes of use that have “no justification for prophylactic, protective or other peaceful purposes”. Second, with the

⁶¹ Efforts to strengthen the BWC in this respect are on-going. A specific proposal for the international criminalization of the use and acquisition of biological and chemical weapons can be found in: Meselson, M. & J. Robinson (2002) A draft convention to prohibit biological and chemical weapons under international criminal law. In: *Treaty Enforcement and International Cooperation in Criminal Matters: with Special Reference to the Chemical Weapons Convention*, eds. Yepes-Enriquez, R. & L. Tabassi, The Hague: TMC Asser Press, 457-469

⁶² *Biological Weapons Act 1974* (c.6), 8 February 1974

⁶³ Ibid.

⁶⁴ In section 1(2) of the *Biological Weapons Act 1974* a definition is found which reflects the complete adoption of the BWC, it reads: “In this section – ‘biological agent’ means any microbial or other biological agent; and ‘toxin’ means any toxin, what ever its origin or method of production.”

adoption of the general purpose criterion it has been illegal in the UK since 1974 for any person engage in acts specified in the Act.⁶⁵

Prohibited activities connected to Biological Weapons

The comprehensive prohibitions achieved through the *Biological Weapons Act 1974*, and thus the general purpose criterion, have subsequently been supplemented and extended by a host of Parliamentary Acts in response to terrorism. The Acts that have most notably affected the *Biological Weapons Act 1974* are: *Terrorism Act 2000*, *Anti-terrorism, Crime and Security Act 2001*, and *Terrorism Act 2006*.

The *Terrorism Act 2000* makes it an offence to “provide instruction or training in the making or use: (c) of chemical, biological or nuclear weapons”⁶⁶,

⁶⁵ It should be noted that the BWC and the Biological Weapons Act 1974 prohibit the development, production, stockpiling, acquisition and retention of defined agents. The Fourth and Sixth Review Conferences of the BWC reaffirmed “that the **use** by States Parties, in any way and under any circumstances, of microbial or other biological agents or toxins, that is not consistent with prophylactic, protective or other peaceful purposes, is effectively a violation of Article I.” (emphasis added). BWC/CONF.IV/9 Final Document of the Fourth Review Conference (1996); & BWC/CONF.VI/6 Final Document of the Sixth Review Conference (2006). Use of disease and poisons is also covered by the *Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare*, otherwise known as the 1925 Geneva Protocol. The Geneva Protocol bans “use in war of asphyxiating, poisonous, or other gases and of all analogous liquids, materials or devices” as well as “bacteriological methods of warfare”. The 1925 Geneva Protocol was signed on the 17 June 1925, and entered into force on 8 February 1928, and is considered customary international law, binding all states not just signatories. On a national level, in the UK, the *Offences Against the Person Act 1861* (c.100) refers to “whosoever shall unlawfully and maliciously administer to or cause to be administered to or taken by any other person **any poison or other destructive or noxious thing**” (emphasis added) so as to either “endanger life or inflict grievous bodily harm” (section 23) or “injure, aggrieve, or annoy any other person” (section 24) “shall be guilty of a felony”, or “shall be guilty of a misdemeanour”, respectively. The division of crimes into felonies and misdemeanours was abolished by the *Criminal Law Act 1967*, c. 58, part 1, section 1.

⁶⁶ *Terrorism Act 2000* (c.11) section 54(1)

conversely it is also an offence to receive instruction or training. This includes inviting or accepting an invitation to receive instruction or training⁶⁷, and to “incite” or “commission” anything listed under section 1 in the *Biological Weapons Act 1974*.⁶⁸

The *Anti-terrorism, Crime and Security Act 2001* includes various parts pertaining to biological weapons, notably, Part 6 “Weapons of Mass Destruction”, Part 7 “Security of Pathogens and Toxins”, Part 13 “Miscellaneous – Dangerous Substances”, and Schedule 5 “Pathogens and Toxins”. The Act extends the *Biological Weapons Act 1974* and makes it an offence to “transfer any biological agent or toxin to another person or enter into an agreement to do so”.⁶⁹ Further, the *Anti-terrorism, Crime and Security Act 2001* covers offences perpetrated outside of UK territory by UK persons. Section 45, which is entitled, “Customs and Exercise prosecutions for biological weapons offences” outlines offences as involving-

the development and production outside of the United Kingdom of any thing mentioned in section 1(1)(a) or (b)
the movement of any such thing into or out of any country or territory;
any proposal or attempt to do anything falling within paragraph (a) or (b) above⁷⁰

Further, the *Anti-terrorism, Crime and Security Act 2001* makes it an offence to assist or induce acts contravening section 1 of the *Biological Weapons Act 1974*, these offences include “aiding, abetting, counselling,

⁶⁷ *Terrorism Act 2000* (c.11) section 54(2) and 54(3)

⁶⁸ *Terrorism Act 2000* (c.11) section 59 and 62(2)(b), respectively.

⁶⁹ *Anti-terrorism, Crime and Security Act 2001* (c.24) section 43

⁷⁰ *Anti-terrorism, Crime and Security Act 2001* (c.24) section 45, this section is inserted into section 1 of the *Biological Weapons Act 1974*, thus paragraph 1(a) refers to the definition of a biological weapon found in Article 1 of the *Biological Weapons Act 1974* as cited above.

procuring or inciting the commission of, or attempting or conspiring to commit, such an offence”.⁷¹ It should be noted that Part 6 of the *Anti-terrorism, Crime and Security Act 2001*, is specifically concerned with amendments of the *Biological Weapons Act 1974*, the *Chemical Weapons Act 1996*, and with nuclear weapons related issues is entitled “Weapons of Mass Destruction”. The term “Weapons of Mass Destruction” is not mentioned at any place in the Act, apart from the title of Part 6. Neither, the *Biological Weapons Act 1974*, nor the *Chemical Weapons Act 1996* makes a reference to, or use of, the term “weapons of mass destruction”.

Part 7 of the Act is concerned with what is known as biosecurity and biosafety, which is, in simple terms, keeping pathogens safe from people, and people safe from pathogens, respectively. This part of the Act draws on Schedule 5 of the Act which lists viruses, rickettsia, bacteria and toxins for the purposes of Part 7. Part 7 of the *Anti-terrorism, Crime and Security Act 2001* defines “dangerous substances” as:

anything which consists of or includes a substance for the time being mentioned in Schedule 5; or
anything which is infected with or otherwise carries any such substance.

The Act requires that notifications are given to the Secretary of the State about: premises that hold dangerous substances and information about measures taken to secure dangerous substances, and persons with access to the dangerous substances. The Act confers powers of entry to constables of the police to enter premises⁷², after prior notice, that hold dangerous

⁷¹ Anti-terrorism, Crime and Security Act 2001 (c.24) section 50

⁷² Presumably ‘premises’ include, amongst other things, university and commercial laboratories, chemical, agricultural and pharmaceutical research and production

substances. Constables can also require occupiers of such premises to follow directions concerning adequately securing substances, to limit, or deny, access of certain person to dangerous substances, and order the destruction of the substances.⁷³ Various definitional matters of this Part of the *Anti-terrorism, Crime and Security Act 2001* are worth noting. First, dangerous substances are defined as those found in Schedule 5, they are not defined by a purpose criterion. The Secretary of State can amend the list given certain conditions are met. Section 58(b) thus states that:

“the Secretary of the State may not add any pathogen or toxin to that Schedule [5] unless he is satisfied that the pathogen or toxin could be used in an act of terrorism to endanger life or cause serious harm to human health”⁷⁴

Moreover, Section 75 clarifies that the powers of this Part of the Act only extends to toxic chemicals, animal and plant pathogens and pests where:

there is a risk that the pathogen or pest is of a description that could be used in an act of terrorism to cause –
widespread damage to property;
significant disruption to the public; or
significant alarm to the public.⁷⁵

facilities, etc. Section 60(4)(a) explains that “relevant premises” are any in which any dangerous substances are kept or used.

⁷³ *Anti-terrorism, Crime and Security Act 2001* (c.24) section 59-73

⁷⁴ *Anti-terrorism, Crime and Security Act 2001* (c.24) section 58(3). It is worth noting here that the Schedule 5 has been amended by the addition of further pathogens – see for instance Statutory Instrument 2007 No. 926 The Part 7 of the *Anti-terrorism, Crime and Security Act 2001* (Extension to Animal Pathogens) Order 2007 and Statutory Instrument 2007 No. 929 The Schedule 5 to the *Anti-terrorism, Crime and Security Act 2001* (Amendment) Order 2007.

⁷⁵ *Anti-terrorism, Crime and Security Act 2001* (c.24) section 75(4)

The *Anti-terrorism, Crime and Security Act 2001* also prohibits hoaxes, that is the use of any substance or other things with the intention to make someone believe that it is dangerous.⁷⁶

The *Terrorism Act 2006* makes it an offence to provide or receive training for, or in connection with the preparation of acts of terrorism, or to assist in such provisions. The Act states that a person commits an offence if he receives or provides, or assists in providing, instruction or training in specific skills. The skills pertinent to this dissertation which the Act refers to are: “the making, handling or use of a noxious substance”.⁷⁷ The term “noxious substances” means the same as “dangerous substances” in the *Anti-terrorism, Crime and Security Act 2001*.⁷⁸ The *Terrorism Act 2006* makes it also an offence to glorify, encourage, induce persons to prepare or instigate acts of terrorism.⁷⁹

In summary, biological weapons are substances that include pathogenic toxins, microbes, and other biological agents or devices to disseminate them,⁸⁰ that can be used maliciously to endanger or harm life.

Concept of (bio)terrorism

The term bioterrorism implies the use of biological weapons by terrorists. Thus, following the definition of biological weapons, a discussion of what

⁷⁶ *Anti-terrorism, Crime and Security Act 2001* (c.24) section 114

⁷⁷ *Terrorism Act 2006* (c.11) section 6(3)

⁷⁸ *Terrorism Act 2006* (c.11) section 6(7)

⁷⁹ *Terrorism Act 2006* (c.11) section 1. Glorification of terrorism “includes any form of praise or celebration, and cognate expression” *Terrorism Act 2006* (c.11) section 21(5c)

⁸⁰ Following the BWC agents and means of delivery are treated separately as subclauses of Article I, mentioning neither a conjunctive ‘and’, or an alternative ‘or’. The UK *Biological Weapons Act 1974* (c.6) does contain an ‘or’, thus either agent or means of delivery are covered. The over-riding emphasis in both instruments is on the purpose either agent or means of delivery are put to.

constitutes 'terrorism' is required. The following section is on the definition of terrorism in general, concluding with a working definition of bioterrorism as understood in this dissertation.

Literature on terrorism is substantial and has grown dramatically since the events of September 11.⁸¹ This section can only discuss a small section of this literature, with a view towards the definition of terrorism and the formulation of a working definition of bioterrorism for this dissertation.

'Terrorism' is a political term and its definition depends on the context it is used in. The term 'terrorism' is now used widely for a variety of different activities from crank phone calls, electronic attacks, to suicide bombings. In colloquial usage the term shifts and changes.⁸² Within one newspaper article, for example, which refers to a specific event, terms like 'extremism', 'fundamentalism', 'guerrilla', and 'militants' can be used interchangeably with 'terrorism'.⁸³ Etymologically, 'Terrorism' derives from Jacobin's 'Reign of Terror',⁸⁴ or the system of the 'Terror' during the French Revolution of 1789-

⁸¹ See for example: Lum, C. & others (2006) Are counter-terrorism strategies effective? The results of the Campbell systematic review on counter-terrorism evaluation research. *Journal of Experimental Criminology*, 4(2), 489-516. Silke states: "The published output on terrorism has also exploded. Yonah Alexander recently [Sep 2002] commented that more than 150 books on terrorism were published in the first 12 months after the attacks on New York and Washington. This works out as roughly three new books each week, a level which looks to have been largely sustained since then. He questions – rightly – whether the quality of this flood of print would stand the test of time." Silke, A. (2004) *Research on terrorism: trends, achievements & failures*. London: Frank Cass, p. 25

⁸² Zulaika, J. & W. A. Douglas (1996) *Terror and Taboo, the follies, fables and faces of terrorism*. New York and London: Routledge, p.97

⁸³ Hoffman, B. (1998) *Inside terrorism*. London: Gollancz Hoffman gives various examples of the terms being used interchangeably in newspaper articles. (p. 36-7)

⁸⁴ Oxford English Dictionary (1989) *Oxford English Dictionary - 2nd Edition (Online)*. Oxford: Oxford University Press More accurately, the English term 'terrorism' derives from 'Reign of Terror', from the French 'régime de la terreur'. The French term 'terreur' (or in English 'terror') comes from Latin 'terrere', meaning 'to frighten'. The phrase 'régime de la terreur' describes the form of governance of the revolutionary state, which

94. The term came into common usage after it was adopted by Russian anarchists in their violent struggle against tsarist rule in the late 19th Century.⁸⁵

The difficulty in defining terrorism is often attributed to the problem of separating the phenomenon of terrorism from other types of political violence. The term 'terrorism' has become a catch-all for phenomena such as guerrillas fighting, insurgencies, freedom fighters, or organized crime.⁸⁶ As Jenkins quips "terrorism is what the bad guys do."⁸⁷ The phrase "one man's terrorist is another man's freedom fighter" is a caricature of the definitional problem and is an example of the ambiguity and subjectivity inherent in the use of

used organized, targeted and systematic intimidation to subdue dissent and counter-revolutionaries. The semantic shift of the term, from method of governing to struggle against ruling powers to derogatory label used to delegitimize political opponents, is further discussed in Rapin, A.-J. (2009) Does terrorism create terror? *Critical Studies on Terrorism*, 2(2), 165-179, p.165-6

⁸⁵ Richardson traces the root of terrorism as a tactic to achieve political or religious ends back to ancient times. Three groups are used as historic examples: the Roman-targeting Zealots in ancient times, the Middle Eastern Assassins in the medieval period, and the Indian Thugi who operated from medieval times through to modern times. She cites the persistence of the terms (zealot, assassin, and thug) as an example of the impact of terrorism has had as a tactic over time. Richardson also lists more recent examples of precursors: Irish Nationalists of the Fenian Rising of 1867; Mikhail Bakunin (1814-1876) as an organizer of small violent revolutionary groups that claim to represent the masses; and the above cited Russian Anarchists, groups such as Narodnaya Volya who assassinated the Tsar Alexander II, on 1 March 1881. The difference between the three historical groups and the more recent precursors of terrorism is in their motivation, whereas the emphasis for the 'ancient three' was religious, groups after the French Revolution were more politically motivated. The examples also serve the purpose to illustrate that terrorism is not new. See: Richardson, L. (2006) *What terrorists want: Understanding the terrorist threat*. London: John Murray; Pape, R. A. (2006) *Dying to Win - Why Suicide Terrorists do it*. London: Gibson Square Books; Hoffman, B. (1998) *Inside terrorism*. London: Gollancz

⁸⁶ See: Jenkins, B. M. (1980) *The Study of Terrorism: Definitional Problems*. Santa Monica: RAND; Gearty, C. (2009) Response to Charles Townshend. *Critical Studies on Terrorism*, 2(2), 319-320p. 320; and Richardson, L. (2006) *What terrorists want: Understanding the terrorist threat*. London: John Murray

⁸⁷ Jenkins, B. M. (1980) *The Study of Terrorism: Definitional Problems*. Santa Monica: RAND, p.1

terrorism. However, the phrase confuses legitimate ends with illegitimate means, or legitimate grievances with illegitimate tactics.⁸⁸

In 1988, Schmid and Jongman surveyed leading scholars on terrorism and counted 109 definitions with 22 definitional elements, the list has undoubtedly grown since in definitions and constituent elements. Their survey revealed that the three most frequent definitional elements are “violence or force” (83.5%); “political” (65%); “fear” (51%); on average eight elements are used to define terrorism.⁸⁹ Consensus on a generic and universally adopted definition has yet to emerge. However, there are some definitional elements which are almost commonly accepted in academic discourse. Terrorism is a pejorative label which is given to one’s enemies, and as such it is a moral judgement, and furthermore, terrorism is a type of violence.⁹⁰ Schmid and Jongman offer a definition, or as they state, another definitional attempt. This definition is a

⁸⁸ Richardson, L. (2006) *What terrorists want: Understanding the terrorist threat*. London: John Murray Further, Jenkins argues that “terrorists recognize no neutral territory, no non-combatants, no by-standers” whereas the rules of war prohibit taking hostages, recognise neutral territory, and give civilians and non-combatants at least theoretical immunity from deliberate attack. Thus, for Jenkins the phrase should be “one man’s terrorist is everyone’s terrorist” Jenkins, B. M. (1980) *The Study of Terrorism: Definitional Problems*. Santa Monica: RAND, p.2

⁸⁹ Schmid, A. P. & A. J. Jongman (1988) *Political Terrorism: A new guide to actors, authors, concepts, data bases, theories, and literature [expanded and updated: 2006]*. New Brunswick: Transaction, p. 5

⁹⁰ There is general agreement amongst scholars on the fact that terrorism can be, and is, perpetrated by states, but state terrorism is often excluded for analytical or methodological reasons. This approach has been justified, most recently, by Richardson by stating that: “we have generations of work conducted by political scientist, historians and international lawyers to help us understand the behaviour of states. If we want to understand terrorists we must see them operating as sub-state clandestine groups” Richardson, L. (2006) *What terrorists want: Understanding the terrorist threat*. London: John Murray, p. 22. For other instances of this practice see, for example: Jenkins, B. M. (1980) *The Study of Terrorism: Definitional Problems*. Santa Monica: RAND; Hoffman, B. (1998) *Inside terrorism*. London: Gollancz; Saul, B. (2005) Attempts to define 'Terrorism' in International Law. *Netherlands International Law Review*, 52, 57-83; Richardson, L. (2006) *What terrorists want: Understanding the terrorist threat*. London: John Murray.

lowest common denominator, resulting from accommodating a wide range of comments and criticisms from their survey. The definition reads:

Terrorism is an anxiety- inspiring method of repeated violent action, employed by (semi-)clandestine individual, group, or state actors, for idiosyncratic, criminal, or political reasons, whereby – in contrast to assassination – the direct targets of violence are not the main targets. The immediate human victims of violence are generally chosen randomly (targets of opportunity) or selectively (representative or symbolic targets) from a target population, and serve as message generators. Threat- and violence based communication processes between terrorist (organization), (imperilled) victims, and main targets are used to manipulate the main target (audience(s)), turning it into a target of terror, a target of demands, or a target of attention, depending on whether intimidation, coercion, or propaganda is primarily sought.⁹¹

Lord Carlile of Berriew criticises this definition in his review of the definition of terrorism from a legal point of view for being too inclusive, because it would result in crimes being labelled as terrorism where the label is not suitable.⁹² Schmid and Jongman acknowledge that such a lengthy and complex definition is open to criticism. Their definition, or classification, reflects the complexity and range because terrorism can be used by “almost

⁹¹ Schmid, A. P. & A. J. Jongman (1988) *Political Terrorism: A new guide to actors, authors, concepts, data bases, theories, and literature [expanded and updated: 2006]*. New Brunswick: Transaction, p. 28.

⁹² Lord Carlile of Berriew (2007) *The Definition of Terrorism*, Cm 7052. Independent Reviewer of Terrorism Legislation: The Stationery Office, paragraph 15. Citing only part of the Schmid and Jongman definition Lord Carlile gives the example of “Thomas Hamilton the loner Dunblane child murderer. Terrible crimes though he committed, terrorism is not a suitable label” (Ibid.) He contends that this crime would be classed as terrorism when using the Schmid-Jongman definition. In his conception of terrorism this crime was the act of a “child murderer” rather than an act of terrorism.

anyone as a tactic or strategy, for almost any reason and in almost any number of ways".⁹³

Richardson outlines a number of characteristics of terrorism which sets terrorism apart from other forms of political violence, echoing some of the elements in the Schmid-Jongman definition. According to Richardson terrorism is politically inspired, it communicates a message, the audience of that message is not the target of the violence, and the target of the violence are civilians. For Richardson these characteristics outline the 'primary tactic' used, and are a rule of thumb rather than a hard and fast rule, because "in the very messy worlds of violence and politics all actions don't always fit neatly into categories".⁹⁴ Contrasting terrorism with guerrilla warfare, which Richardson calls "the most proximate form" of political violence stating that "guerrillas are an irregular army fighting the regular forces of a state [...] conducting themselves along military lines".⁹⁵ Whereas:

if the primary tactic of an organization is deliberately to target civilians, then they deserve to be called a terrorist group, irrespective of the political context in which they operate and irrespective of the legitimacy of the goals they seek to achieve.⁹⁶

Jenkins cautions against labelling groups as terrorist, because once the label is attached to a group every subsequent action of that group will be

⁹³ Schmid, A. P. & A. J. Jongman (1988) *Political Terrorism: A new guide to actors, authors, concepts, data bases, theories, and literature [expanded and updated: 2006]*. New Brunswick: Transaction, p. 28.

⁹⁴ Other features characterising terrorism are that terrorism must involve violence, has a symbolic significance, and for analytical reasons terrorism is sub-state and not a state activity. Richardson, L. (2006) *What terrorists want: Understanding the terrorist threat*. London: John Murray, p. 23.

⁹⁵ Ibid. p. 23

⁹⁶ Ibid. p. 23

classed as terrorism. Jenkins' caution is concerned with erosion of the definition of terrorism. In other words, if someone has acquired the label 'terrorist' their subsequent actions are likely to be called 'terrorism'⁹⁷ whether or not the action is "politically motivated subversive violence"⁹⁸.

Jenkins defines terrorism by the nature of the act, not the identity of the perpetrator. His definition is sharper than that of Richardson, who defines terrorism as a 'tactic'. Both define terrorism by the nature of the 'act'. However, there is a subtle difference in the conception between Richardson and Jenkins. Richardson, writing in 2006, contents that the conceptualisation of terrorism as a tactic is policy orientated with a view towards counter-terrorism:

"understood as a tactic it makes little sense to speak of defeating terrorism. Tactics are used as long as they are effective. Our goal ... should be to *contain* the use of this tactic" [emphasis added]⁹⁹

Jenkins, writing in 1980, is concerned with researching terrorism quantitatively, thus using the concept of an "instance" rather than that of 'tactic' or 'strategy' is better suited for methodological reasons.¹⁰⁰

The, often lamented, lack of definition, especially in academic discourse, is the result of numerous understandings and conceptualisations of terrorism, and is as such not a failure of the discourse on terrorism but indication of lively debate. Horgan and Boyle note that:

⁹⁷ Jenkins, B. M. (1980) *The Study of Terrorism: Definitional Problems*. Santa Monica: RAND

⁹⁸ Gearty, C. (2009) Response to Charles Townshend. *Critical Studies on Terrorism*, 2(2), 319-320 p.320

⁹⁹ Richardson, L. (2006) *What terrorists want: Understanding the terrorist threat*. London: John Murray, p. 22

¹⁰⁰ Jenkins, B. M. (1980) *The Study of Terrorism: Definitional Problems*. Santa Monica: RAND

“Any attempt to impose a single consensus definition on something that one can understand as a tactic, strategy, concept, social or political phenomena would be an over-simplification of a complex phenomenon. There are so many conflicting definitions of terrorism precisely *because* terrorism scholars have realized that judgements about what is and is not terrorism are inherently contested. Scholars are unlikely to ever uncover an accepted definition of terrorism because of the deep differences of opinion over the acceptability, justifiability and legitimacy of both the methods and causes associated with those who conduct terrorist acts.” [author’s own emphasis]¹⁰¹

However, finding a definition is important in a legal context. In international law, attempts have been made to capture a generic definition of terrorism for more than seven decades, again, indicating the importance of a definition as well as the inherent difficulty in doing so. The practice of defining ‘acts of terrorism’, rather than ‘terrorism’ goes back to the mid 1930s to negotiations at the League of Nations for the 1937 *Convention for the Prevention and Punishment of Terrorism* where terrorism is defined as:

“criminal acts directed against a State and intended or calculated to create a state of terror in the minds of particular persons or a group of persons or the general public”¹⁰²

A generic definition of terrorism was disputed, the treaty attracted few signatories, and the treaty did not enter into force following the collapse of the League of Nations.¹⁰³

¹⁰¹ Horgan, J. & M. J. Boyle (2008) A case against "Critical Terrorism Studies". *Critical Studies on Terrorism*, 1(1), 51 - 64, pp.55

¹⁰² Cited in: Saul, B. (2006) The legal response of the league of nations to terrorism. *Journal of International Criminal Justice*, 4(1), 78-102, p.90

¹⁰³ Ibid. Another noteworthy early reference to terrorism in international law can be found in continued...

More recently, in 1994, the UN adopted the Declaration on Measures to Eliminate International Terrorism¹⁰⁴, in an effort to create a comprehensive international legal framework to address international terrorism. A number of treaties have resulted from these efforts¹⁰⁵, however negotiations to conclude the *Comprehensive Convention on International Terrorism* are ongoing since 1996.¹⁰⁶ One of the main stumbling blocks in the negotiation is the definition of terrorism. The problem of a definition in international law has not yet been resolved.¹⁰⁷ In 2011, the UN Ad Hoc committee reported on outstanding issues concerning the draft text of the *Comprehensive Convention On International Terrorism* that several delegations:

“reiterated that the convention should contain a definition of terrorism that would provide a clear distinction between acts of terrorism covered by the convention and the legitimate struggle of peoples in the exercise of their right to self-determination or under foreign occupation [...and that] the convention should address terrorism in all its forms and manifestations, including State terrorism, that activities undertaken by the armed forces of States not regulated by

the *Protocol Additional to the Geneva Conventions of 12 August 1949, and Relating to the Protection of Victims of Non-International Armed Conflicts (Protocol II)*. Adopted on 8 June 1977 and entered into force 7 December 1979, available online at <http://www.icrc.org>. Part II (Humane Treatment) Article 4.2 (d) makes direct reference to, inter alia, “acts of terrorism”, but the treaty fails to define the term.

¹⁰⁴ UN General Assembly resolution A/RES/49/60, 9 December 1994.

¹⁰⁵ These are the 1997 Terrorist Bombing Convention, the 1999 Terrorist Financing Convention, and the 2005 Acts of Nuclear Terrorism Convention.

¹⁰⁶ The UN established an Ad Hoc Committee, tasked with, amongst other things, “developing a comprehensive legal framework of conventions dealing with international terrorism”. The Ad Hoc committee was established pursuant to UN General Assembly resolution A/RES/51/210, 17 December 1996.

¹⁰⁷ In 2006 the UN launched a “Global Strategy to Counter Terrorism”, the on-going negotiations and failure to reach consensus for a “Comprehensive Convention on International Terrorism” is indicative of the definitional difficulties involved. See UN document A/RES/60/288, 8 September 2006. See also: UN Information Service, release GA/L/3276, 10 October 2005 “Agreed definition of term ‘Terrorism’ said to be needed for consensus”.

international humanitarian law should also fall within its scope. While referring to previous proposals, some delegations considered that it might be necessary to revisit the text of the definition of terrorism...”¹⁰⁸

The definition of terrorism is not just a semantic or academic exercise - embedded in legislation the term ‘terrorism’ triggers many powers of the executive of a state.¹⁰⁹

As well as in numerous international treaties, definitions of ‘acts of terrorism’ can be found in national policy documents.¹¹⁰ In the UK, the main legislation addressing terrorism is the *Terrorism Act 2000*, *Anti-terrorism Crime and Security Act 2001*, and the *Terrorism Act 2006*.¹¹¹

Terrorism in UK Law

Five Acts of Parliament currently regulate terrorism related activity in the UK, they are: the *Terrorism Act 2000*, the *Anti-terrorism Crime and Security Act 2001*, the *Prevention of Terrorism Act 2005*, *Terrorism Act 2006*, *Counter-Terrorism Act 2008*.¹¹²

¹⁰⁸ United Nations (2011) *Report of the Ad Hoc Committee established by General Assembly resolution 51/210 of 17 December 1996. Fifteenth session (11 to 15 April 2011)* New York: General Assembly, Official Records, Sixty-sixth Session, Supplement No. 37, A/66/37, p. 7

¹⁰⁹ Lord Carlile of Berriew (2007) *The Definition of Terrorism*, Cm 7052. Independent Reviewer of Terrorism Legislation: The Stationery Office

¹¹⁰ There are 20 UN conventions on terrorism, 5 of which are deposited with the Secretary-General, 8 multilateral conventions deposited with other depositories, and 7 regional conventions. For UN conventions and treaties see: <http://untreaty.un.org/English/terrorism.asp>

¹¹¹ For UK Acts see: <http://www.statutelaw.gov.uk>

¹¹² The *Prevention of Terrorism Act 2005* and the *Counter-Terrorism Act 2008* are mentioned here for sake of completeness in respect to Parliamentary Act regulating terrorism in the UK. The *Prevention of Terrorism Act 2005* regulates ‘Control Orders’ and as such not

In UK law the first instance of defining terrorism can be found in the *Prevention of Terrorism (Temporary Provisions) Act 1989*, a temporary law subject to annual renewal. The Act has ceased to have effect with the introduction of the *Terrorism Act 2000*. The *Prevention of Terrorism (Temporary Provisions) Act 1989* defined terrorism as:

The use of violence for political ends, and includes any use of violence for the purpose of putting the public or any section of the public in fear.¹¹³

The *Prevention of Terrorism (Temporary Provisions) Act 1989* definition of terrorism is broad in its remit as it is any violence for political ends, on the other hand it does not include a provision for the threat of violence. In his review of the definition of terrorism the independent reviewer of terrorism legislation in the UK, Lord Carlile, states that the *Prevention of Terrorism (Temporary Provisions) Act 1989* excludes acts of terrorism done for reasons other than political, such as terrorism done for religious or non-political ideological reasons.¹¹⁴

The *Reinsurance (Acts of Terrorism) Act 1993* contains the second and still current definition found in UK law. The Act addresses liability of reinsuring

further relevant to this dissertation. The *Counter-Terrorism Act 2008* confers further powers to gather and share information, powers to act against terrorist financing, makes provisions about detentions and questioning, prosecution and punishment of terrorist offences, and confers authorisations for post-charge questioning.

¹¹³ *Prevention of Terrorism (Temporary Provisions) Act 1989* (repealed) (c. 4). The definition dates back to at least 1974 when the *Prevention of Terrorism (Temporary Provisions) Act 1974* was initially introduced by then Home Secretary Roy Jenkins in response to the IRA Birmingham bombing. The *Prevention of Terrorism (Temporary Provisions) Act 1974* (c. 56) section 9(1) states: "terrorism" means the use of violence for political ends, and includes any use of violence for the purpose of putting the public or any section of the public in fear.

¹¹⁴ Lord Carlile of Berriew (2007) *The Definition of Terrorism*, Cm 7052. Independent Reviewer of Terrorism Legislation: The Stationery Office

risks against any loss, or damage to, property in the UK as a result of 'acts of terrorism'. Section 2(2) defines 'acts of terrorism' as:

(2) In this section "acts of terrorism" means acts of persons acting on behalf of, or in connection with, any organisation which carries out activities directed towards the overthrowing or influencing, by force or violence, of Her Majesty's government in the United Kingdom or any other government de jure or de facto.¹¹⁵

The *Reinsurance (Acts of Terrorism) Act 1993* is limited to specific acts, namely the overthrowing or influencing of HM Government, using either force or violence. The *Reinsurance (Acts of Terrorism) Act 1993* is therefore based on the objective of terrorism, as opposed to the motivation, ideology or specific criminal activities.

In 1996, addressing the shortcomings of the *Prevention of Terrorism (Temporary Provisions) Act 1989* Lord Lloyd of Berwick recommended that even if lasting peace was established in Northern Ireland there would still be a need for permanent counter-terrorism legislation.¹¹⁶ HM Government acted on the advice with the publication of a permanent anti-terror Bill, which eventually resulted in the *Terrorism Act 2000*, which includes the present definition of terrorism in UK law.

The *Terrorism Act 2000* section 1 (amendment by the *Terrorism Act 2006* is italicised) defines terrorism as:

In this Act "terrorism" means the use or threat of action where -

¹¹⁵ *Reinsurance (Acts of Terrorism) Act 1993* (c. 18) section 2(2)

¹¹⁶ Lord Lloyd of Berwick (1996) *Inquiry into Legislation against Terrorism*, Cm 3420. Independent Reviewer of Terrorism Legislation: The Stationery Office

the action falls within subsection (2),
 the use or threat is designed to influence the
 government [*or an international governmental
 organization*] or to intimidate the public or a section of
 the public, and
 the use or threat is made for the purpose of advancing a
 political, religious or ideological cause.
 Action falls within this subsection if it—
 involves serious violence against a person,
 involves serious damage to property,
 endangers a person's life, other than that of the person
 committing the action,
 creates a serious risk to the health or safety of the
 public or a section of the public, or
 is designed seriously to interfere with or seriously to
 disrupt an electronic system.
 The use or threat of action falling within subsection (2)
 which involves the use of firearms or explosives is
 terrorism whether or not subsection (1)(b) is satisfied.
 In this section—
 "action" includes action outside the United Kingdom,
 a reference to any person or to property is a reference
 to any person, or to property, wherever situated,
 a reference to the public includes a reference to the
 public of a country other than the United Kingdom, and
 "the government" means the government of the United
 Kingdom, of a Part of the United Kingdom or of a country
 other than the United Kingdom.
 In this Act a reference to action taken for the purposes
 of terrorism includes a reference to action taken for the
 benefit of a proscribed organisation.¹¹⁷

The definition of terrorism in the *Terrorism Act 2000* frames terrorism in a specific way. The *Terrorism Act 2000* is concerned with the objectives of terrorism. The objective of terrorism is defined as the advancement of a political, religious or ideological cause. In order to advance these causes threats or intimidation of the public or the government are used. The means to threaten, influence, or intimidate the public are outlined in Section 1(2)-(5),

¹¹⁷ *Terrorism Act 2000* (c.11) section 1, as amended by the *Terrorism Act 2006* (c.11) section 34(a)

and include: threatening or causing serious violence against people, endangering people's life, health or security, damaging property, or interfering with electronic systems. The definition does not outline the '*motives*' of terrorism, just that terrorism is done for political, religious or ideological causes, thus it is based on objectives. Motives, or motivations, for terrorism determine, amongst other things, the objectives of terrorism.¹¹⁸

In UK law terrorism is understood as a tactic or method. Thus, it is characterized as what one does, not who one is. In this way the definition of terrorism found in UK law satisfies concerns over assigning the label of terrorist to groups or individuals, a practice which could erode the definition of terrorism. However, Part 2 and Schedule 2 of the *Terrorism Act* 2000 are directly concerned with the proscription of groups and organizations. Moreover, Part 3 is concerned with 'terrorist property'.¹¹⁹ Although these sections of the *Terrorism Act* 2000 are essentially related to operational and procedural counter-terrorism measures and powers of the executive – the inclusion of these sections are a departure from the practice of defining 'acts

¹¹⁸ Other things determined by the motivation may be the choice of target, choice of weaponry, severity and gravity of attacks or damage sought. Following; Post, J. M. (2005) The psychology of WMD terrorism. *International Studies Review*, 7(1), 148-51; and Pape, R. A. (2006) *Dying to Win - Why Suicide Terrorists do it*. London: Gibson Square Books. Post, for example, uses six categories of motivations: National-Separatist, Social-Revolutionary, Radical Religious Fundamentalist, New Religious, Right-Wing. Typologies to categorise terrorist groups have been used for many years and for many purposes and thus include a wide variety of different classifications. For examples of typologies see Schmid, A. P. & A. J. Jongman (1988) *Political Terrorism: A new guide to actors, authors, concepts, data bases, theories, and literature [expanded and updated: 2006]*. New Brunswick: Transaction A discussion of terrorist decision making can be found in Post, J. M. (2000) Psychological and Motivational Factors in Terrorist Decision-Making: Implications for CBW terrorism. In: *Toxic Terror: assessing the terrorist use of chemical and biological weapons*, ed. Tucker, J. B., Cambridge, Ma. and London: MIT Press, 273-289

¹¹⁹ *Terrorism Act* 2000 (c.11) as amended by the *Terrorism Act* 2006 (c.11). The *Terrorism Act* 2006 makes substantial amendments to the *Terrorism Act* 2000 in regard to the proscription of organizations.

of terrorism', and thus potentially eroding and diffusing the definition of terrorism.¹²⁰

Working Definition – bioterrorism

In UK law bioterrorism is not defined, although implicitly recognised in terrorism legislation through amendments of the *Biological Weapons Act 1974*. As discussed above, the *Biological Weapons Act 1974* defines a biological weapon as any microbial or other biological agent, or toxin what ever its origin or method of production of a type and in a quantity that has no justification for prophylactic, protective or other peaceful purposes or any weapon, equipment or means of delivery designed to use biological agents or toxins for hostile purposes.

The provisions of the *Terrorism Act 2000*, the *Anti-Terrorism Crime and Security Act 2001*, and the *Terrorism Act 2006* which regulate activities related to biological weapons are set out in the section above ('Prohibited activities connected with Biological Weapons'). However, ambiguity arises when considering the offences set out in UK terrorism legislation as to what constitutes bioterrorism. Although 'bioterrorism' is not a legal term the question remains. Terrorism legislation makes explicit links to the *Biological Weapons Act 1974*, making it an offence to:

¹²⁰ Various aspects of the terrorism legislation do not only represent an erosion of the definition of terrorism but more importantly, the terror legislation enacted since the *Terrorism Act 2000* is problematic, because it erodes human rights and civil liberties whilst failing to improve public protection. This point has been made by many commentators, most authoritatively by the former chairman of the Security Commission and Reviewer of terrorism legislation, Lord Lloyd of Berwick, who calls the constitutional implications 'sinister'. Gibb, F. (2006) *Anti-terror law 'sinister', says judge* The Times (London) 9 June 2006, p. 28

- giving or receiving instructions or training for the development, production, stockpiling, acquisition or retention of biological weapons;
- assisting in, inciting to, or commissioning of, the development, production, stockpiling, acquisition or retention of biological weapons;
- the transfer, or agreement to transfer, of biological weapons;
- the encouragement, and or glorification, of the use of biological weapons.¹²¹

What constitutes bioterrorism? Is the *engagement in these activities* 'bioterrorism'? Or, is a 'biological weapon' *used* for 'acts of terrorism' as defined in the *Biological Weapons Act 1974* and the *Terrorism Act 2000* respectively, bioterrorism? For the purposes of this dissertation the latter definition will be used – 'bioterrorism' is the use of a 'biological weapon'¹²² in acts of 'terrorism'¹²³.

Concept of Pandemic Influenza

Influenza pandemics are cyclical, reoccurring periodically, every ten to forty years. New influenza virus subtypes emerge as a result of virus re-assortment or antigenic shift; unlike seasonal influenza epidemics which are the result of continuous mutations resulting from antigenic drift.¹²⁴ Antigenic

¹²¹ See Terrorism Act 2000 (c.11); Anti-Terrorism Crime and Security Act 2001 (c.24); Terrorism Act 2006 (c.11)

¹²² 'Biological weapon' as defined by Section 1(1) and (2) *Biological Weapons Act 1974* (c.6); that is excluding the amendment of the *Anti-Terrorism Crime and Security Act 2001* concerning transfers of toxins and other biological agents.

¹²³ 'Terrorism' as defined by Section 1(1) of the *Terrorism Act 2000*. It is worth noting that this definition of terrorism includes "serious damage to property" (Section 1(2b)) which could be interpreted in the context of biological weapons use as infestations of crops and infection of livestock in anti-agricultural terrorist attacks. It is also conceivable, however unlikely, that use of anti-material biological agents falls into this category.

¹²⁴ Potter, C. W. (2001) A history of influenza. *Journal of Applied Microbiology*, 91(4), 572-579. Antigenic shift and drift refers to changes in virus surface protein – the antigenic

shift – prerequisite for an influenza pandemic – occurs when animal influenza viruses acquire the ability to cause sustained human to human transmission. Usually there is no, or little, immunity in human populations to these ‘shifted’ strains. Community wide *epidemics* can then lead to world wide *pandemics*. The emergence of a novel influenza virus strain does not necessarily lead to a pandemic, and in most cases it does not. Equally, a pandemic does not necessarily cause wide spread mortality; and a pandemic does not necessarily come from abroad, a domestic UK origin is plausible but considered remote.¹²⁵ Response and outbreak narratives found in, for example the UK pandemic contingency plans, suggest that pandemic influenza is seen as an external threat, and a Far Eastern origin is thought to be most likely.¹²⁶

Although influenza epidemics and pandemics have occurred since ancient times, it makes little sense talking about influenza – in terms of counter-

glycoprotein of the virus coat – especially changes in the hemagglutinin type (HA), but also the neuraminidase type (NA). Antigenic shift is genetic re-assortment, the mixing of human with animal gene; whereas antigenic drift is caused by genetic mutation accumulating over time within a virus strain itself. HA enables binding to target cells, whereas NA enables viral RNA release into the target cell. Influenza viruses are identified by their antigenic determinants (e.g. H1N1). NA is also the target for structure based enzyme (neuraminidase) inhibitors such as zanamivir (Relenza) and oseltamivir (Tamiflu). See: Cann, A. (2005) *Principles of molecular virology*. Amsterdam ; London: Elsevier Academic Press

¹²⁵ Evidence given to: House of Lords - Science and Technology Committee (2005) *Pandemic Influenza (Session 2005-06 HL Paper 88)*. London: The Stationery Office (16 December 2005) – Memorandum by the Department of Health (p. 82), and Royal Society (p. 148).

¹²⁶ Department of Health (1997) *Multiphase contingency Plan for Pandemic Influenza*. London: Department of Health, 1 March 1997 and Department of Health - Chief Medical Officer (2005) *Pandemic Flu: UK influenza pandemic contingency plan*. London: Department of Health, 1 March 2005.

The emergence of the *Mexican* or *Swine Flu* in 2009 thus came as somewhat of a surprise, not only due to its geographical but also its zoonotic origin – pigs rather than birds, although the possibility has variously been acknowledged, for example: “pandemic flu planning should be prepared for an H5N1-origin pandemic virus, but not at the cost of disregarding other potential sources” Cabinet Office - Civil Contingencies Secretariat (2007) *Overarching Government strategy to respond to pandemic influenza: analysis of the scientific evidence base*. London: Cabinet Office (22 November 2007), p. 21

measures against it and policies associated with it – prior to the formulation of the germ theory of disease by Snow, Pasteur, Lister, and Koch in the late nineteenth Century and the eventual discovery of the viral causative agent in 1933 by Smith and others.¹²⁷ Three notable human influenza pandemics occurred during the twentieth century; these provide a backdrop to the current concerns about a possible pandemic influenza – 1918 “Spanish Flu”, 1957 “Asian Flu”, and the 1968 “Hong Kong Flu”.¹²⁸

¹²⁷ Smith, W. & others (1933) A virus obtained from influenza patients. *Lancet*, 222(5732), 66-68. See also: Taubenberger, J. K. & others (1997) Initial genetic characterization of the 1918 “Spanish” influenza virus. *Science*, 275(5307), 1793-6; and on history: Potter, C. W. (2001) A history of influenza. *Journal of Applied Microbiology*, 91(4), 572-579.

Etymologically, the name ‘influenza’ is thought to have been introduced into English language between 1742-3, derived from Italian, coined during an outbreak in Italy in 1504, when the sudden and mysterious appearance of illness was thought to be caused by the occult influence (ital. ‘influenza’) of the stars, or other celestial bodies, or the cold (ital. ‘influenza di freddo’). Beveridge, W. I. B. (1977) *Influenza - The last great plague*. London: Heinemann; Crawford, G. E. (2000) Influenza (JAMA 100 years ago). *Journal of the American Medical Association*, 283(4), 449; & Oxford English Dictionary (2009) *OED (Online)*. Oxford University Press.

Definition and identification of a causative agent is indeed important to this discussion as a letter to the British Medical Journal from 1895, on the definition of influenza, shows: “Bacteriologists do not appear to have helped us much in our study of influenza, for Koch’s four postulates have not yet been satisfied [...] one of the old theories of influenza is possibly true – that influenza is not a specific disease, but is a climactic influence producing an intensification of the toxic power of some microbes which are commonly and universally present.” Causative understanding is critical to intervention strategies. Brit, G. (1895) Influenza: Wanted a definition (Correspondence). *British Medical Journal*, (30 November, 1895), 1391.

¹²⁸ Balfour cites descriptions of influenza-like disease affecting Roman and Carthaginian armies in 212 B.C., skipping almost two thousand years which had no record of influenza or influenza like illness, according to Balfour, to an influenza pandemic in 1781 which marks the beginning of a ten to forty year cycle of emergent influenza pandemics. Balfour, R. (2005) Influenza Virus. In: *Agents of bioterrorism: pathogens and their weaponization*, ed. Zubay, G. L., New York: Columbia University Press, 79-106 Beveridge pushes the history back to 412 B.C. and Potter fills in some gaps prior to 1700, although with caveats due to the sparseness of the recorded information, and elaborates on the period between the 18th and 20th Century: Beveridge, W. I. B. (1977) *Influenza - The last great plague*. London: Heinemann and Potter, C. W. (2001) A history of influenza. *Journal of Applied Microbiology*, 91(4), 572-579

1918 “Spanish Flu”

The first of these notable¹²⁹ twentieth century influenza pandemics, was the most devastating, the 1918 “Spanish Flu”. Despite the name, it is not clear where the disease originated.¹³⁰ In the summer of 1918 a mild first wave struck, resurging with a second, main wave during autumn 1918, a third wave continued until 1920. The second wave was characterised by high mortality and an unusual prevalence of mortality occurring in adults between the ages eighteen and thirty. Approximately one third of the world’s population, around 500 million, got infected, with about 50 million fatalities; one third of the deaths were caused by secondary bacterial infections.¹³¹ The 1918 Spanish Flu pandemic is important as is often referred to as a ‘benchmark’ for pandemics to come – attempting to answer “what if?” questions, drawing lessons from history and extrapolating historical data to the present. A number of commentators see an impending catastrophe if a pandemic emerged today on

¹²⁹ I use the word notable because there were more than three pandemics in the 20th Century, these were however relatively mild in terms of virulence (morbidity and mortality) and thus, impact on society, and policy, were negligible.

¹³⁰ The literature cites origins from different sources in Europe and Asia, the Caribbean, and the Americas. One recent and intriguing hypothesis can be found here: Oxford, J. S. & others (2005) A hypothesis: the conjunction of soldiers, gas, pigs, ducks, geese and horses in Northern France during the Great War provided the conditions for the emergence of the "Spanish" influenza pandemic of 1918-1919. *Vaccine*, 23(7), 940-945

¹³¹ Taubenberger, J. K. & D. M. Morens (2006) 1918 Influenza: the mother of all pandemics. *Emerging Infectious Diseases*, 12(1), 15-22. The WHO cites 40-50 million, but other estimates range widely, from 10-20 million up to a staggering 100 million, see, respectively: Balfour, R. (2005) Influenza Virus. In: *Agents of bioterrorism: pathogens and their weaponization*, ed. Zubay, G. L., New York: Columbia University Press, 79-106, and Johnson, N. P. & J. Mueller (2002) Updating the accounts: global mortality of the 1918-1920 "Spanish" influenza pandemic. *Bulletin of the History of Medicine*, 76(1), 105-15. See also: Beveridge, W. I. B. (1977) *Influenza - The last great plague*. London: Heinemann; Patterson, K. D. & G. F. Pyle (1991) The geography and mortality of the 1918 influenza pandemic. *Bulletin of the History of Medicine*, 65(1), 4-21; and Brasseur, J. W. (2007) Pandemic influenza: a brief history and primer. *Journal of the American Academy of Physician Assistants*, 20(1), 24-8.

the scale of 1918 – extrapolating estimates to 180-360 million deaths¹³², causing political instability in many countries, potential break down of economy and supply chains due to travel and trade restrictions, loss of productivity, and absenteeism.¹³³ Other commentators contend that a contemporary pandemic is not comparable with the pandemic experienced in 1918. Factors that might mitigate a pandemic of 1918 proportions include improved epidemiology and advanced warning systems, a global public health system, and the availability of medical countermeasures, such as anti-viral and anti-biotic medicine to control primary and secondary infections.¹³⁴ Social, political and technological developments – local as well as global – since 1918 make comparisons difficult, and results of extrapolations from 1918 to the present must be treated with caution. Factors that complicate comparisons include increased global movements of people and goods – the ability to circumnavigate the globe within the incubation period (1-3 days, for H5N1 the incubation period is thought to be 2-8 days, possibly as long as 17 days¹³⁵); dramatic increases in global population (from 1 billion to almost 7 billion) and urbanisation. Not just the numerical increase in global population size but also its distribution: density and changes in demography – including aging and changes in the make up of families, and working patterns. Working, and single

¹³² Osterholm, M. T. (2005) Preparing for the next pandemic. *Foreign Affairs*, 84(4), 24 pp. Again, these estimates range widely, others estimate 51-81 million, fatalities if strain with similar virulence emerged today: Murray, C. J. & others (2006) Estimation of potential global pandemic influenza mortality on the basis of vital registry data from the 1918-20 pandemic: a quantitative analysis. *Lancet*, 368(9554), 2211-8

¹³³ Garrett, L. (2005) The next pandemic? *Foreign Affairs*, 84(4), 3-23; Osterholm, M. T. (2007) Unprepared for a pandemic. *Foreign Affairs*, 86(2), 47-57; Burns, A. & others (2008) *Evaluating the Economic Consequences of Avian Influenza*. Washington, DC: World Bank, September 2008

¹³⁴ See for example: Koblenz, G. D. (2009) The threat of pandemic influenza: Why today is not 1918. *World Medical & Health Policy*, 1(1), 71-84

¹³⁵ Royal Society & Academy of Medical Sciences (2006) *Pandemic Influenza: science to policy*. London: Royal Society (November 2006)

parent households make non-medical interventions such as social distancing, especially school closures problematic in terms of either compliance or wider economic repercussions.¹³⁶

The virological era

Following the discovery of the causative agent of influenza in 1933, and thus entering the “virological era”,¹³⁷ two pandemics of note occurred, the “Asian Flu” in 1957, and “Hong Kong Flu” in 1968. These pandemics were comparatively mild, with two million and one million estimated world-wide fatalities, respectively.¹³⁸ The table below gives an overview of notable twentieth century influenza pandemics.

¹³⁶ For a brief review, see for example: Morse, S. S. (2007) Pandemic influenza: Studying the lessons of history. *Proceedings of the National Academy of Sciences*, 104, 7313-7314; & Department of Health - Chief Medical Officer (2005) *Pandemic Flu: UK influenza pandemic contingency plan*. London: Department of Health, 1 March 2005

¹³⁷ Beverige, W. I. B. (1977) *Influenza - The last great plague*. London: Heinemann, p. 33

¹³⁸ World Health Organization (2009) *Pandemic Influenza Preparedness and Response - A WHO guidance Document*. Geneva: WHO Press

Table of Notable Influenza Events (world-wide fatalities)					
Year	Common name	Subtype	Fatality rate percentage	Morbidity mortality worldwide.	UK population infected
1918	Spanish Flu	H1N1	2-3%	50 million fatalities, ~500 million cases	23%
1957	Asian Flu	H2N2	<0.2%	1-4 million fatalities	17%
1968	Hong Kong Flu	H3N2	<0.2%	1-4 million fatalities	8%
1997	Avian Flu	H5N1	n/a	262 fatalities, ~ 442 cases	n/a ¹³⁹

Table 1: Notable Influenza Pandemics in the 19th Century. Table adapted from (World Health Organization, 2009), p. 13. Percentage of UK population infected taken from (Department of Health, 1997).¹⁴⁰

Public Policy

Following the discussion of biological weapons, terrorism and pandemic influenza I now turn to the theoretical framework of this dissertation. The framework conceptualises the political process of government and in particular policy-formation processes. Because of the width and breadth of the available literature on policy analysis and political processes the guiding principle for this discussion is a focus on the relevance to the processes pertinent to the formation of policies for the management of technological and security related risks; especially in terms of terrorism and biological

¹³⁹ The 1997 Avian Flu (H5N1) data is taken from WHO Global Outbreak and Alert Response Network (GOARN), as of 24 September 2009. It is worth noting that the 1997 H5N1 virus changed ('drifted') substantially over time, part of the problem with manufacturing an effective vaccine response is pinning down the pandemic influenza strain. See, for example: Horimoto, T. & others (2004) Antigenic differences between H5N1 human influenza viruses isolated in 1997 and 2003. *Journal of Veterinary Medical Science*, 66(3), 303-5

¹⁴⁰ World Health Organization (2009) *Pandemic Influenza Preparedness and Response - A WHO guidance Document*. Geneva: WHO Press, & Department of Health (1997) *Multiphase contingency Plan for Pandemic Influenza*. London: Department of Health, 1 March 1997

related risks. The discussion starts with general observations on the nature of the political system before narrowing down to a discussion of policy-formation in technically complex areas.

The process of policy-making is conceptualised within two theoretical, or conceptual, frameworks: '*institutions*', and '*narratives*'. These two frameworks provide two layers of conceptualisation of the process: The 'institutional' approach provides an insight into the structural backbone of the policy environment – that is: the organization of actors in the policy environment, and the institutional set-up in a specific field of policy. Policy actors operate in a dynamic and inter-dependent network. The networked aspect of the institutions is an important feature here. The approach conceptualises how the separate but inter-dependent actors in the policy-making process relate to one another, interact and are organized around interests. However, the institutional approach has shortcomings in this particular field of study as substantial parts of the network are not open to scrutiny and available data is limited. Nonetheless, the institutional approach holds some explanatory power which warrants its examination in some detail. Emphasis is placed upon the role of institutions in policy formation, bearing in mind that the institutional network approach can offer only a partial explanation in the absence of a clear and full picture of the network as a whole.

The 'ideas'-based, or narrative approach, in contrast to the institutional approach looks at the structural components, provides the cognitive and discursive part of the policy-formation process. Narratives structure discourse, shape beliefs and actions by providing a logic and rationale. Narratives weave ideas and information together into a story line, thereby abstracting, organising and simplifying complex information. An emphasis is placed upon the role of dominant narratives in policy formation.

These two frameworks, the institutional approach and the policy narrative model, provide the context and vehicle within which, and through which, bioterrorism policies have evolved. Of central interest to this study is how different narratives have shaped policy. The role of narratives and ideas in explaining policy formation will be examined in greater detail below.

Before delving into the aforementioned concepts in detail it is useful to take a step back to briefly examine some broader aspects of policy, government and governance.

Policy, Government and Governance

The traditional model to view the British governmental system and political tradition is the 'Westminster Model'. The Westminster Model describes the British government as comprised of the rules, procedures and formal organization of government. At the heart of the model is the Prime Minister, cabinet, and the civil service, who are guided and governed by: parliamentary sovereignty, accountability through elections, and majority party control. In the Westminster Model of government the executive and legislative are merged. This contrasts with other democratic traditions, such as Germany, where there is a strict separation of the two.

An alternative and more elaborate approach to the Westminster Model is offered by Rhodes. His 'differentiated polity' model is "characterized by functional and institutional specialization and the fragmentation of policies and politics"¹⁴¹ and is a good starting point for the following discussion. The

¹⁴¹ Rhodes, R. A. W. (1997) *Understanding Governance: Policy Networks, Governance, Reflexivity and Accountability*. Maidenhead: Open University Press, p.7

model highlights key themes, such as the networked and transient nature of government. It is also specific to the British government and takes its history into account. The model is therefore briefly described below.

The 'differentiated polity model' conceives policy-making as a process where the locus of decision making is fragmentary but inter-dependent; the model encompasses following: 'interdependence', a 'segmented executive', 'policy networks', 'governance' and 'hollowing out'.¹⁴²

'*Interdependence*' denotes intergovernmental relations between government units and institutions at all levels – that is local-regional governments, national governments, and supra-national governments which interact with each other by either promoting or inhibiting activities. The '*segmented executive*' is the recognition of dispersed sovereignty and decision making, away from the Prime Minister and political leaders where the executive authority of policy decisions is traditionally thought to reside, to a 'core executive territory'. This core executive territory still includes the Prime Minister and the political leaders, but also includes institutions, agencies, committees, and policy networks. The core executive territory decision making process is guided by 'bureaucratic co-ordination', through, for example, the Treasury, Cabinet Office and occasional intervention by the Prime Minister. The core executive territory does not have a fixed membership but is characterised by changing membership caused by the dynamic nature of policy networks.¹⁴³

¹⁴² Ibid.

¹⁴³ Ibid. p.8-18

A ‘*Policy Network*’ is the group of actors influencing the policy process: individuals, agencies, organizations and institutions, with a specific interest in a given policy issue – constituting what Rhodes calls “the oligopoly of the political market-place”¹⁴⁴. Policy networks serve as constraints in the policy-formation process in terms of limiting participation, privileging certain policy outcomes, and setting the agenda for the policy process. Inter-dependencies in a networked structure diffuse accountability in the policy-formation process because of a diminished transparency of the decision making process and lack of individual ownership.¹⁴⁵

‘*Governance*’, in the Rhodes model, refers to the shift of power away from government to the process of governance. This process is the ‘asymmetric interdependence’ of the central government with other actors in the policy network. Although, central government has more power to intervene in the policy process than other actors in the policy network, government is constrained by a dependence on compliance by the actors in the policy network.¹⁴⁶ Thus ‘governance’ is the process of negotiation and bargaining of policy in a pluralistic decision-making process, rather than an authoritative assertion of policy decisions from a single source.

‘*Hollowing out*’ refers to the diffusion of power through administrative and institutional reform. Three types of loss of control or diffusion of power can be distinguished: upwards, sideways and downwards. All three processes

¹⁴⁴ Ibid. p.9

¹⁴⁵ See: Rhodes, R. A. W. & D. Marsh (1992) New directions in the study of policy networks. *European Journal of Political Research*, 21, 181-205; Marsh, D. & M. Smith (2000) Understanding policy networks: towards a dialectical approach. *Political Studies*, 48, 4-21; and Börzel, T. A. (1998) Organizing Babylon - on the different conceptions of policy networks. *Public Administration*, 76(Summer), 253-273

¹⁴⁶ Rhodes, R. A. W. (1997) *Understanding Governance: Policy Networks, Governance, Reflexivity and Accountability*. Maidenhead: Open University Press

are characterised by divesting, or relinquishing activities, which were previously managed centrally, to other parties. 'Upwards' is the loss of functions and responsibilities to supra-national organizations, such as the European Union (Europeanization) and the United Nations (Globalisation). 'Sideways' loss of control refers to redistributing power and functions away from government departments to semi-autonomous agencies during institutional reforms, thus creating distance to central government. 'Downward' is the relinquishing of functions to the private sector in privatisations. The process of 'hollowing out' has the consequence that central authority becomes fragmented; control over and management of the divested parts becomes more difficult with increasing numbers functions residing in semi-autonomous organizations; transparency of the organizations decreases; barriers to communication are created due to increasing incentives found in distorting information and blame avoidance; and accountability is shifted away from central government.¹⁴⁷

The 'differentiated polity model' highlights the complexity in the political landscape of British government and thus in decision making and the policy-formation process. The next section looks at policy networks in more detail.

Institutions – “Interdependence confounds centrality”¹⁴⁸

Policy-formation involves the interaction of various actors.¹⁴⁹ It is a social-political process, which means that the decision-makers in government

¹⁴⁷ Ibid. p.17 & 87-103

¹⁴⁸ Ibid. p.3

¹⁴⁹ The term actor is used to denote a component or agent of the policy network which declares an interest, and thus can be an individual, a group, an institution, or an organization.

are not the central element but part of a complex dynamic between state, market and civil society, which operate in an international environment.¹⁵⁰

Formal institutions, such as government departments, are the most visible actors in these networks. Other actors in the policy arena are important in shaping decisions, due to the networked nature of the system. These other actors are, however, less visible from the outside. Institutions are the locus of decision making and thus the focus in this dissertation.

Policy, which is essentially decisions and actions taken, has three basic components: goal setting, information gathering, and behaviour modification.¹⁵¹ However, these three components do not necessarily happen sequentially. The process of policy-formation is complex and dynamic, involving a number of actors who shape policy: though decisions are made within government, they are shaped by individuals, groups and organizations within and outside the government who participate in the policy process. The forces which shape policy decisions include bargaining of resources and interests between the actors of the policy network. Other factors affecting the policy-formation process are: economic considerations,¹⁵² international obligations (such as EU directives), legal defensibility of policies to avoid or diffuse blame, and dealing with uncertainty and incomplete knowledge.

The actors involved in a specific policy issue are linked to one another by interaction and dependencies, they can thus be conceptualised as a network.

¹⁵⁰ Kooiman, J. (2003) *Governing as Governance*. London: Sage

¹⁵¹ Hood, C. & others (2001) *The government of risk - understanding risk regulation regimes*. Oxford: Oxford University Press

¹⁵² 'Bargaining of resources' refers to the use of political capital: power, status, credibility and trust; this is distinct from 'economic considerations' which may include the economic feasibility of preferred policy options.

The nature and structure of a policy network depends on the how the separate (but inter-dependent) actors of the network co-ordinate their actions over time. In other words the network structure depends on the distribution of power, composition, the intensity of the linkages, and frequency of interaction between the actors residing in the network.¹⁵³ Consequently, policy networks differ from one policy issue to another, because the identity of actors participating in the policy-formation process, the intensity of linkages between them, the distribution of power amongst them, the frequency and mode of interaction, and the cohesiveness of the network, are specific to each policy issue. Furthermore, history plays an important role. The network, and the actors within it, evolve over time in response to pressures, and opportunities.

The key characteristic of the institutional approach is that it recognises different actors who are interacting in the process of policy-formation rather than seeing the government as an undifferentiated whole. The concept can thus aid in revealing the complexities involved in policy-formation processes.

The institutional approach can only provide a partial explanation, or interpretation of the policy-formation process. It can provide a structural explanation of the institutional set-up. However, it does not sufficiently explain how the structure of a policy network links to the outcome of a policy process.¹⁵⁴ Moreover, in this policy area some of the network of actors operates behind closed doors and is not open to scrutiny.

¹⁵³ Börzel, T. A. (1998) Organizing Babylon - on the different conceptions of policy networks. *Public Administration*, 76(Summer), 253-273

¹⁵⁴ See: Marsh, D. & M. Smith (2000) Understanding policy networks: towards a dialectical approach. *Political Studies*, 48, 4-21; Börzel, T. A. (1998) Organizing Babylon - on the different conceptions of policy networks. *Public Administration*, 76(Summer), 253-273; John, P. (1998) *Analysing public policy*. London: Pinter

The next section will look at what and how policy formation processes are shaped and influenced.

Models of Policy-formation

The above discussion describes and outlines the structural composition of the environment within which policy formation takes place. This section looks at models of policy formation. A particular focus is placed upon the discursive and cognitive elements which shape and influence the policy formation process.

A number of different approaches have been put forward to explain policy-formation processes. These approaches can be divided into five main traditions:

1. **'institutional approaches'** - argue that policy decisions are the product of political organizations; paramount policy shaping influence is exerted by institutional interests, and norms, which are deeply embedded in the institutional framework and internalized by decision makers.¹⁵⁵
2. **'socio-economic approaches'** - argue that policy decisions are shaped by economic and social pressures on officials and institutions; resource dependencies are stressed, and thus policy decisions are a function of minimising cost and maximising benefit.¹⁵⁶
3. **'rational choice approaches'** - emphasise the rationality of actors in policy decisions. The bargaining between actors is a game where each actor seeks the

¹⁵⁵ Weaver, R. K. & B. A. Rockman (1993) *Do institutions matter?* Washington D.C.: Brookings Institute

¹⁵⁶ Stone, D. A. (2001) *Policy Paradox - the art of political decision making (revised edition)*. New York: W.W. Norton & Company; & Hutton, W. (1995) *The State We Are In*. London: Jonathan Cape

best possible outcome to satisfy their institutional and personal preferences.¹⁵⁷

4. **'group and network approaches'** - emphasise the relationships and interactions between individuals, groups within and outside of institutions.¹⁵⁸

5. **'ideas based approaches'** - centre around the notion of epistemic communities, groups that share and maintain ideas. Furthermore, ideas circulate and gain or lose momentum in a policy community and thus influence decisions.¹⁵⁹

These approaches are ways to model policy formation processes. Each approach uses, to a greater or lesser extent, discrete elements which are involved in the policy-formation process: institutions, social and economic factors, actors' agency, ideas, interests, and groups and networks. Further, history and culture, and the wider context (events outside of the policy-formation process) are also recognised as factors in the process. It is important to stress that all of these elements are involved in the policy-formation process, and that all of these elements interact with each other.

John proposes an evolutionary approach¹⁶⁰, drawing together components of the five approaches to address the failure of the individual approaches to deal with policy change and variation. The evolutionary

¹⁵⁷ Hardin, G. (1968) The Tragedy of the Commons. *Science*, 162(5364), 1243-8; Ward, H. (1995) Rational Choice Theory. In: *Theory and Methods in Political Science*, eds. Marsh, D. & G. Stocker, Basingstoke: Macmillan; Taylor, M. (1987) *The Possibility of Cooperation*. Cambridge: Cambridge University Press; Axelrod, R. & W. D. Hamilton (1981) The evolution of co-operation. *Science*, 211(4489), 1390-1396

¹⁵⁸ See: Marsh, D. & M. Smith (2000) Understanding policy networks: towards a dialectical approach. *Political Studies*, 48, 4-21; Rhodes, R. A. W. & D. Marsh (1992) New directions in the study of policy networks. *European Journal of Political Research*, 21, 181-205; especially: Dowding, K. (2001) There must be an end to confusion: policy networks, intellectual fatigue, and the need for political science methods courses in British universities. *Political Studies*, 49, 89-105

¹⁵⁹ Stone, D. A. (2001) *Policy Paradox - the art of political decision making (revised edition)*. New York: W.W. Norton & Company

¹⁶⁰ John, P. (1998) *Analysing public policy*. London: Pinter, p.167-195

approach highlights the role of ideas and interests interacting with institutions, groups and networks, and socio-economic factors to provide an account of adaptation and variation of policy decisions. The evolutionary approach emphasises that the elements (institutions, socio-economic factors, interests and ideas, groups and networks) interact continuously.¹⁶¹ This approach, rather than a pure ideas-based approach, provides a useful stepping stone into a discussion of narratives as factors that influence and shape policy. It is useful insofar as recognising a continuous interaction of these various elements. Narratives, which are implicit in John's framework as ideas, are only part of the story as they are subject to interactions with other elements.

Policy formation processes happen on the backdrop of a dynamic network of actors who are involved in and interact with the policy process. Both institutional networks, and narratives, which capture and frame knowledge, are useful frameworks to account for influences which shape policy over time.

Narratives – making sense of complexity

A narrative approach to understanding policy is closely linked to the 'ideas-based approach'. Ideas-based approaches are predicated around the notion of shared ideas which are maintained and diffused by groups.¹⁶² Ideas

¹⁶¹ Dowding, K. (2000) How not to use evolutionary theory in politics: a critique of Peter John. *British Journal of Politics and International Relations*, 2(1), 72-80 John acknowledges that evolution is not necessarily positive progress. His evolutionary approach provides a causal explanation of policy selection. Dowding criticizes the use of evolutionary theory in politics as an approach because John does not provide a mechanism for the selection of ideas, nor a distinction of 'intentional' learning.

¹⁶² This is akin to the concept of "epistemic community". Here, groups of experts (the epistemic communities) verify, maintain and transmit particular forms of knowledge. This privileged knowledge diffuses and influences policy. Haas, P. M. (1992) Introduction: Epistemic Communities and International Policy Coordination. *International Organization*, 46(1), 1-35

gain and lose momentum as they circulate within a community.¹⁶³ In the early 20th Century Weber observed the effect of ideas on actions, describing ideas as part of a broader interplay between various factors. The notion of 'world images' is akin to narratives as they are used here:

“Not ideas, but material and ideal interests, directly govern men’s conduct. Yet very frequently the ‘world images’ that have been created by ‘ideas’ have, like switchmen, determined the tracks along which action has been pushed by the dynamic of interest.”¹⁶⁴

The role of ideas and their impact on beliefs, actions, and biases is subject to study in a number of academic fields, for example communication, neuroscience, marketing, and psychology.¹⁶⁵

Narrative approaches view ideas as part of a story. The idea is embedded within a storyline and dominant narratives can inhibit or promote new ideas, and frame solutions to problems. Thus, narratives are stories within which problems are framed.

A narrative can be defined as a “story with a temporal sequence of events [...with] an unfolding plot [...which] is populated by dramatic moments,

¹⁶³ Stone, D. A. (2001) *Policy Paradox - the art of political decision making (revised edition)*. New York: W.W. Norton & Company; & John, P. (1998) *Analysing public policy*. London: Pinter

¹⁶⁴ Weber, M. (1946) The Social Psychology of World Religions. In: *From Max Weber: Essays in Sociology*, eds. Gerth, H. H. & C. Wright Mills, New York: Oxford University Press, cited by: John, P. (1998) *Analysing public policy*. London: Pinter, p. 144

¹⁶⁵ Jones, M. D. & M. K. McBeth (2010) A Narrative Policy Framework: Clear Enough to Be Wrong? *Policy Studies Journal*, 38(2), 329-353

symbols and archetypal characters”¹⁶⁶ and can “be both a particular category of communication and a method of cognitive organization.”¹⁶⁷

Narratives, as a *method of cognitive organisation*, are fundamental to the way humans think and make sense of the world around them. Empirical evidence from cognitive psychology and neuroscience points towards the fundamental role of narratives in processing and organising information.¹⁶⁸ Narration, as a cognitive function, can be neurally located in the brain. Pathologies (injury or disease) which have led to the loss of narrative ability have allowed insights into the role of narration in human cognition and communication.¹⁶⁹

On an individual level narratives help to make sense of, and organize, complex information. Narratives are used to aid understanding of, and represent complex social phenomena in simple, more accessible terms. First, by abstracting themes and gathering together disparate information; and second, by weaving information into a coherent and ordered story line,

¹⁶⁶ Ibid. p. 329. This definition relates to Jones & McBeth’s own, elaborate, framework, which is not used here. However, this particular definition encapsulates core elements of narratives, which take the concept beyond simple ideas.

¹⁶⁷ Ibid. pp.329

¹⁶⁸ Without narrative capacities patients are unable to make sense of complex information despite having the ability to recall the information. See, for example: Klein, K. (2003) Narrative construction, cognitive processing, and health. In: *Narrative theory and the cognitive sciences*, ed. Herman, D., Stanford: CSLI, 56-84; & Gerrig, R. J. & G. Egidi (2003) Cognitive psychological foundations of narrative experiences. In: *Narrative theory and the cognitive sciences*, ed. Herman, D., Stanford: CSLI, 33-55

¹⁶⁹ Davis, G. A. & C. A. Coelho (2004) Referential cohesion and logical coherence of narration after closed head injury. *Brain and Language*, 89(3), 508-523; Ash, S. & others (2007) The decline of narrative discourse in Alzheimer’s disease. *Brain and Language*, 103(1-2), 181-182

privileging information which suits the narrative and discarding information which does not.¹⁷⁰

On a social level a narrative is a *category of communication*. The notion of socially transmitted concepts in the form of stories and ideas is pervasive. Dawkins likens the transmission of ideas and concepts within society to the transmission of genetic traits in biological evolution with his notion of the 'meme', a self replicating unit of cultural evolution.¹⁷¹ Stone describes metaphors as 'narrative framings' of ideas which are prevalent in policy discourses.¹⁷² Hall posits that different ideas, embedded in institutions, are key factors in policy change and stability.¹⁷³

A number of frameworks have been proposed with an emphasis on narratives. Jones and McBeth divide the use of the narratives in policy research into two camps: positivist and post-positivist.¹⁷⁴ The positivist narrative research agenda is characterised by taking "a specifically deductive

¹⁷⁰ Unless the conflicting information undermines the prevailing narrative to such an extent that the narrative needs to be adapted, or is superseded by a new narrative. Hajer, M. A. (1995) *The politics of environmental discourse : ecological modernization and the policy process*. Oxford: Oxford University Press, p.55

¹⁷¹ Dawkins, R. (1989) *The Selfish Gene*. Oxford: Oxford Paperbacks

¹⁷² For example, 'slippery slopes' have to be avoided or climbed in '12 steps'; and the notion of 'breeding grounds' or the 'spread' of dangerous ideas which have to be 'stamped out'. Especially 'disease' and 'war' metaphors are used in reference to terrorism. Radical ideas 'infect'; universities are characterised as 'breeding grounds'; and the 'war on terrorism' is fought to 'cure' the 'ills' of society. Stone, D. A. (2001) *Policy Paradox - the art of political decision making (revised edition)*. New York: W.W. Norton & Company, p.148-156.

¹⁷³ Hall, P. A. (1993) Policy paradigms, social learning, and the state: the case of economic policymaking in Britain. *Comparative Politics*, 25(3), 275-295

¹⁷⁴ They define these terms as follows: "positivism asserts that there is an objective reality that can be measured"; whereas post-positivism (used interchangeably with interpretivism and constructivism) is "inductive, resistant to hypotheses testing, and qualitative in design, and would be difficult to replicate and falsify". Jones, M. D. & M. K. McBeth (2010) A Narrative Policy Framework: Clear Enough to Be Wrong? *Policy Studies Journal*, 38(2), 329-353, p. 332 & 333, respectively.

approach where narrative is clearly defined and some attempt is made to operationalize narrative structure and/or content to test clearly stated hypotheses [...] many of these studies tend toward quantification and frequently apply statistical techniques.”¹⁷⁵ Post-positivist narrative studies “place discourse and symbolism and the role these concepts play in persuading, manipulating, and generating meaning at the core of their methodologies.”¹⁷⁶ The emphasis is on the identification of underlying assumptions which are used to construct the stories under investigation. These studies are, according to Jones and McBeth inductive, qualitative, difficult to test and replicate.

Jones and McBeth contend that the concept of narrative

...remains a mysterious and elusive concept in policy theory [...] too superfluous to underpin theory building, and too nebulous to facilitate the empirical investigation of policy processes and outcomes¹⁷⁷

In this dissertation I use the concept of policy narratives as dominant explanations or framings which are persistent over time. A narrative is “a

¹⁷⁵ Ibid. p. 337. Examples include: Morrill, C. & others (2000) Telling Tales in School: Youth Culture and Conflict Narratives. *Law and Society Review*, 34(3), 521-566; Sabatier, P. A. & H. C. Jenkins-Smith (1993) *Policy change and learning: an advocacy coalition approach*. Oxford: Westview Press; & McBeth, M. K. & others (2007) The intersection of narrative policy analysis and policy change theory. *Policy Studies Journal*, 35(1), 87-108

¹⁷⁶ Jones, M. D. & M. K. McBeth (2010) A Narrative Policy Framework: Clear Enough to Be Wrong? *Policy Studies Journal*, 38(2), 329-353, p. 334. Examples include: Hajer, M. A. (1993) Discourse coalitions and the institutionalization of practice: The case of acid rain in Britain. In: *The argumentative turn*, eds. Fischer, F. & J. Forester, Durham, NC: Duke University Press; Roe, E. (1994) *Narrative policy analysis*. Durham, CT: Duke University Press; & Stone, D. A. (2001) *Policy Paradox - the art of political decision making (revised edition)*. New York: W.W. Norton & Company

¹⁷⁷ Jones, M. D. & M. K. McBeth (2010) A Narrative Policy Framework: Clear Enough to Be Wrong? *Policy Studies Journal*, 38(2), 329-353, pp. 330. For this reason they propose a framework which satisfies

simple, unifying, easily expressed story or explanation that organizes people's experience and provides a framework for understanding events."¹⁷⁸ Policy narratives here are specific, shared understandings; they are necessarily abstractions and simplifications of complex phenomena. I am aligning the concept with the post-positivist or constructivist perspective. The contention here is that narratives are indeed indicative of underlying assumptions. Moreover, they provide a lens, a mental shortcut or heuristic, through which phenomena are framed. Established narratives aid in the interpretation and communication of events. To paraphrase Weber, narratives determine the paths along which action is taken.¹⁷⁹ A dominant narrative is difficult to dislodge because they become stabilised by lock-in processes that lead to path dependent developments. In other words, over time a particular narrative becomes embedded in an institutional context, it aids in framing responses, and can form the basis of institutional memory. The responses in turn reflect and vindicate the narratives and the narrative may thus become further entrenched.¹⁸⁰ Thus narratives build and influence their environment. By stabilising certain framings or interpretations over alternative framings, narratives can lead to "organisational and conceptual blind spots."¹⁸¹

¹⁷⁸ This definition is taken from: US Department of the Army (2006) *Counterinsurgency Field Manual (FM 3-24/MCWP 3-33.5)*. Washington, DC: Marine Corps, p. A-7; cited in Mackinlay, J. (2009) *The insurgent archipelago: from Mao to bin Laden*. London: C. Hurst, p. 132

¹⁷⁹ Paraphrasing the Weber quote at the beginning of this section.

¹⁸⁰ Intractable policy narratives can fade over time or be overtaken by more current narratives which are constituted of competing and contending accounts.

¹⁸¹ Dry, S. (2008) *Epidemics for all? Governing health in a global age. STEPS Working Paper 9*, Brighton: STEPS Centre, p. 4

Expert Advice in Policy-formation

The policy context of bioterrorism is that the facts are uncertain, the stakes are high, and the public and pressure groups, although interested, concerned and with a voice, are almost excluded from the policy-formation process. Expert advice is an integral part of the process, either scientific or intelligence based advice is sought to assess risks and to subsequently inform decisions. This intersection of risk, uncertainty, and the necessary solicitation of expert advice places this area of policy firmly in the realm of 'science policy'.

This characterisation of the policy area does not conflict with the other concepts discussed above. Rather, the different characterisations are complementary and constitute different levels of abstraction. The institutional network provides the structural environment; the narrative is the vehicle; the expert groups in this notion of 'science policy' drive the vehicle. However, before this analogy becomes muddled it is important to note that these concepts are used analytically to help explain "how coherence and linearity can emerge in multi-actor, multi-level processes, without any one actor specifically being responsible for it."¹⁸²

The term 'science policy' refers to the area of policy making where scientific, or expert, advice is central to the decision making process. Scientific experts have been instrumental in terms of characterising the threat of biological warfare in the UK and thus they have also been influential in terms of the biological warfare policy. Balmer points out that during the First World

¹⁸² Deuten, J. J. & A. Rip (2000) The Narrative Shaping of a Product Creation Process. In: *Contested Futures: A Sociology of Prospective Techno-Science*, eds. Brown, N., B. Rappert & A. Webster, Burlington: Ashgate, 65-86, p. 67

War military and scientific institutions became linked.¹⁸³ The origins of scientific advice on matters of biological warfare can be found during the inter-war period and moved through various stages of different conceptions of threat. Initially biological warfare was seen as unlikely to be employed and disease outbreaks following conventional bombing (for example, due to disruption of water supply) was thought to be the main threat to public health. During the Second World War, and the launch of a British offensive biological warfare research and development programme the dominant narrative of threat shifted to retaliation in case of a German attack. In the 1950s the dominant narrative of the threat shifted into a defensive posture, as “scientists began to agitate about the horrible possibilities of biological agents spread as an aerosol across large tracts of land”.¹⁸⁴

Importantly for the discussion of bioterrorism policy formation in the UK is the involvement of the scientific community in the process of identifying the threat and giving policy advice. In the UK,

the answers to the ‘scientific’ question ‘what is the nature of biological warfare?’ were inextricably bound up with the answers to the ‘policy’ question ‘what shall we do with biological warfare’ [...] international matters, particularly the supposed intentions of Germany and the Soviet Union, and the United States and Canada, were extremely important in shaping policy.¹⁸⁵

Scientific questions about the threat were inextricably linked to policy questions. Moreover, the assessment of threat was framed as a matter for

¹⁸³ Balmer, B. (2001) *Britain and Biological Warfare: Expert Advice and Science Policy, 1930-65*. Basingstoke: Palgrave Macmillan

¹⁸⁴ Ibid.p.9

¹⁸⁵ Ibid.p.9-10

scientific inquiry. The assessment of threat was linked to scientific possibilities of the use of biological agents as weapons.¹⁸⁶

The idea that policy can be, and should be based on correct and precise knowledge has a long history. The industrial revolution started to introduce the world to more and more technological complexity and policy makers became more reliant on technical and scientific advice to make decisions. This position is echoed in Beck's 'risk society' in which increasingly man-made unnatural risks need to be regulated.¹⁸⁷

Risk, threat and policy

A substantial school of thought in the social sciences recognizes that risk has transformed society. The beginning of twentieth century coincided with the advent of what Beck calls the "risk society".¹⁸⁸ In the risk society the production of wealth is inextricably linked to the production of risks – conflicts and problems associated with the distribution of wealth in Marx's "capital society" have, in the risk society, been superseded by conflicts associated with the production, definition and distribution of techno-scientifically produced risks. In Weber's industrial "class society" the question was how socially produced wealth could be distributed inequitably but, at the same time, legitimately. Whereas in Beck's "risk society" the question is how risks, which are produced in tandem with the progressing modernisation, can be mitigated and distributed so that these risks neither hinder the progress of

¹⁸⁶ Ibid.

¹⁸⁷ Beck, U. (1986) *Risikogesellschaft: auf dem Weg in eine andere Moderne*. Frankfurt: Suhrkamp Verlag, p.25

¹⁸⁸ Ibid. p.25-26

modernisation, nor exceed a tolerable level.¹⁸⁹ According to the “risk society” view risk has become the primary ordering principle of society.¹⁹⁰ According to Beck, the ‘risk society’ thesis does not supplant the thesis of Weber or Marx but reframes it; the production of wealth in the advanced modernity goes hand in hand with the production of risks, the logic of wealth distribution is replaced by the logic of risk distribution, which in Beck’s formulation is dissociated from class hierarchy: need (of resources) is hierarchical, risk is democratic (Beck’s examples include smog and radioactivity). Beck’s sociological analysis might over-reach itself by claiming that risk is the ordering principle of modern society, rather than that society’s antennae have become more attuned to risks, so that they appear more abundant.¹⁹¹

However, risk is the central concept and an ordering principle of policy formulation in a wide range of policy areas, such as health, finance, and security. Policy formulation in respect to security risks is in essence about risk management – the mitigation and management of potential losses, dangers, challenges, or hazards. The following discussion focuses on expert risk management and risk assessment strategies relevant to policy.

To have a useful discussion about risk it is necessary to define the key terms used here: Risk, and threat.¹⁹² Both terms are substantially overlapping

¹⁸⁹ Ibid.

¹⁹⁰ Lupton, D. (1999) *Risk*. London: Routledge; & Mythen, G. (2004) *Ulrich Beck - a critical introduction to the risk society*. London & Sterling, Virginia: Pluto Press

¹⁹¹ Martin, B. (2009) *Why science policy research?* University of Sussex, 3 March 2009

¹⁹² Oxford English Dictionary (1989) *Oxford English Dictionary - 2nd Edition (Online)*. Oxford: Oxford University Press; The Oxford English Dictionary defines these terms as: Risk, n.: Hazard, danger; exposure to mischance or peril. Threat, n.: a declaration of hostile determination or of loss, pain, punishment, or damage to be inflicted in retribution for or conditionally upon some course; a menace. Hazard, n.: Risk of loss or harm; peril, jeopardy. Danger, n.: Liability or exposure to harm or injury; the condition of being exposed to the chance of evil; risk, peril. Harm, n.: Evil (physical or otherwise) as done

in meaning, use, and definition. One distinguishing feature of threat is that it involves agency. The Oxford English Dictionary describes ‘threat’ as “a declaration of hostile determination” which is “to be inflicted”¹⁹³ upon someone or something. In terms of formal assessments, threats are often described as a function of ‘capability multiplied by intent’¹⁹⁴; whereas risk is often described as a function of ‘potential loss or harm multiplied by the likelihood of occurrence’.¹⁹⁵

For the purposes of this dissertation the difference between risk and threat is agency, more accurately hostile intent. A threat is something hostile, whereas a risk is a quality of a system, or inherent in activities and choices.

Risk and threat are such similar concepts, not least in everyday parlance, making a neat separation difficult. The substantial overlap of both concepts is evident when considering the difference between two statements: “we are at risk from terrorists”, and “we are threatened by terrorists”. Both statements

to or suffered by some person or thing; hurt, injury, damage, mischief.

¹⁹³ Ibid.

¹⁹⁴ For a recent example see: Home Office (2006) *Threat Levels: The system to assess the threat from international terrorism*. London: The Stationery Office. This document explains the factors that need to be taken into account to judge a terrorist threat, amongst these are: ‘terrorist capability’ and ‘terrorist intention’. See also: Ackerman, G. A. & K. S. Moran (2004) *Bioterrorism and Threat Assessment*. Stockholm: WMDC, the threat assessment in this paper describes the bioterrorist threat as a function of the ‘consequences of attack’ times the ‘likelihood of attack’.

¹⁹⁵ For definitions see, amongst others: National Research Council; Committee on the Institutional Means for Assessment of Risks to Public Health (1983) *Risk Assessment in the Federal Government: Managing the Process*. Washington: National Academy Press; Royal Society (1983) *Risk Assessment, Report of a Royal Society Study Group*. London: The Royal Society, and the follow up report, Royal Society (1992) *Risk: Analysis, Perception and Management, Report of a Royal Society Study Group*. London: The Royal Society; Fischhoff, B. & others (1984) Defining Risk. *Policy Sciences*, (17), 123-139. For further examples on the history of risk in society and as a concept: Adams, J. (1995) *Risk*. Oxon: Routledge; Bernstein, P. L. (1996) *Against the Gods - The remarkable Story of Risk*. New York: John Wiley & Sons, Inc.

are semantically equivalent; both statements involve the agency of an actor who intends to inflict harm. The difference, between risk and threat, emerges when considering tolerability of each condition: there is an acceptable or tolerable level of being at risk from terrorist attacks, because the risk of terrorism is an inherent quality of the world we live in; being threatened, on the other hand, is not acceptable or tolerable.

When considering the difference between threat and risk in formal assessments a substantial difference emerges. Threat is conceptualised as the function of intent and capability; risk is conceptualised as the function of impact and likelihood. In these conceptualisations threat is solely defined and assessed as a function of the perpetrator – their willingness to inflict harm and their ability to do so. Risk, on the other hand, is wider ranging; a function of likelihood and consequence.

Risk and threat can therefore be said to be hierarchical concepts: risk is something omnipresent, threat is something acute. The risk of falling victim to an attack is always given (to greater or lesser extent, given circumstances), the threat of an attack only materialises when potential perpetrators present themselves or declare intent. Threat will therefore be treated here as a concept that exists ‘beneath’ that of risk. The following section discusses the concept of risk, bearing these distinctions in mind.

Risk

Risk is a concept of the developed modernity, replacing fate or fortune, and is used to harness uncertainty.¹⁹⁶ A common analogy used to illustrate risk

¹⁹⁶ Beck, U. (1986) *Risikogesellschaft: auf dem Weg in eine andere Moderne*. Frankfurt:

continued...

is the rolling of dice. In the case of dice the outcome is well defined with an equal distribution of probability for each possible outcome. However, rolling a die is a misleading analogy. Probabilities of outcomes in risk situations are rarely equally distributed, some outcomes are more likely to occur than others. Further, the probabilities change depending on the way we look at a specific risk. This peculiarity of risk arises from a variety of sources. One of these is futurity: risk describes something that may or may not happen in the future. Risk is inextricably linked to uncertainty - the incomplete knowledge of future events. The power of risk resides in the anticipation of harm. It therefore follows that as well as the factors involved in causing harm, it is the state of knowledge about these factors which is an important determinant of risk. In other words, risk is constructed not only from the possibility (or probability) of harm occurring and its magnitude but also depends on which factors are considered when assessing a course of action, or anticipated events. Assumptions have to be made when assessing a risk. Risk, therefore, depends on what factors are taken into account – judgement and subjectivity are inherent in risk assessment. Slovic points out: “risk does not exist ‘out there’, independent of our minds and cultures, waiting to be measured [...] although these dangers are real, there is no such thing as ‘real risk’ or objective risk”¹⁹⁷. Wildavsky and Douglas approach the problem of subjectivity

Suhrkamp Verlag; Giddens, A. (1990) *The consequences of modernity*. Cambridge: Polity Press; Bernstein, P. L. (1996) *Against the Gods - The remarkable Story of Risk*. New York: John Wiley & Sons, Inc.

¹⁹⁷ Slovic, P. (2000) Trust, Emotion, Sex, Politics and Science: Surveying the Risk-Assessment Battlefield. In: *The Perception of Risk*, ed. Slovic, P., London: Earthscan Publications Ltd, 390-412, p.392. The Royal Society distinguished between “objective risk” as analysed by experts and “subjective risk” as perceived by lay people – individuals and lay people respond to objective risks in subjective ways. Royal Society (1992) *Risk: analysis, perception, management*. London: Royal Society. Psychologists have attempted to map the way lay people perceive risk by trying to identify mental strategies and heuristics (see for example: Slovic, P. (1987) Perception of Risk. *Science*, 236(17 April 1987), 280-285). Deborah Lupton criticises the distinction between lay and expert risk assessment

continued...

and uncertainty of risks by asking: “Can we know the risks we face, now or in the future?” The answer they give is: “No, we cannot; but yes, we must act as if we do.”¹⁹⁸

It should be noted, at this point, that *possibility* of occurrence does not equate with *inevitability* of occurrence. The often repeated dictum “not if but when” is not helpful, as it presupposes the inevitability of an event occurring. ‘When’ is an important question in risk estimates, since risk estimates are often expressed as statistical averages and probabilities. If an event occurs on average every five years, does not mean that it will re-occur again after five years.

Risk assessments are, more often than not, built upon past experiences; they are retrospectives of things to come. Taleb points out that building general rules from observed events is fraught with danger. He uses the example of a ‘black swan’ – which, before discovered in Australia, was thought not to exist, and all swans were thought to be white. The black swan is a metaphor for general rules built from past experiences, which fail to predict rare or hard-to-predict events.¹⁹⁹ Taleb specifically deals with rare high impact events and the problem of induction: “how can we logically make claims about the unseen based on the seen?”²⁰⁰ The problem of black swans is compounded when the historical record, of a specific event, does not offer a sufficient database which can be drawn upon to extrapolate to the future. That is, if the

as “an ill-masked contempt for lay people’s lack of what is deemed to be ‘appropriate’ or ‘correct’ knowledge about risk” Lupton, D. (1999) *Risk*. London: Routledge, p.19.

¹⁹⁸ Douglas, M. & A. Wildavsky (1982) *Risk and Culture*. Berkley and London: University of California Press p. 1

¹⁹⁹ Taleb, N. (2007) *The Black Swan: The Impact of the Highly Improbable*. London: Allen Lane

²⁰⁰ Taleb, N. & A. Pilpel (2007) Epistemology and risk management. *Risk and Regulation*, (Summer), 6-7, p. 6

event is rare it is more difficult to make reliable predictions about the event occurring in the future. Further complicating the picture is that “the severity of [a given negative] event, will be in almost all cases inversely proportional to its frequency: the ten year flood will be more frequent than the 100 year flood – the 100 year flood will be more devastating.”²⁰¹ The dilemma is that rare events offer little data (because they are rare) to predict their occurrence, but the high impact, catastrophic nature demands a reliable prediction.

Risk Assessment Strategies - Knowledge and Uncertainty

A range of risk assessment strategies is used to evaluate possible mitigation strategies. Traditional risk assessment strategies include, amongst others: modelling, probability and statistical methods, game theory, scenarios, cost-and-benefit analysis.²⁰² In terms of security risks quantitative elements are supplemented with intelligence and qualitative expert assessment. The assessment can then be used as a basis for ranking risks or threats and informing policy decisions.

However, using risk assessments as the basis for policy decisions presents problems, especially the quantitative side of the assessment as it treats risk as an objectively determinate quantity. Quantitative problems arise, for example, in assigning values to impacts (these values may be monetary or cardinal) – how many sick people equal a fatality or a disability?, how to value the severity of consequences which evade simple monetary terms such as

²⁰¹ Ibid. pp. 6.

²⁰² Stirling cites a number of examples of “disciplines and techniques [which] compete for a niche in the market place of methods” for “the practical business of characterising and prioritising different types and sources of risk.” Stirling, A. (1998) Risk at a Turning Point? *Journal of Risk Research*, 1(2), 97-109, pp. 97

reduction in life expectancy, political will attrition, or loss of trust?²⁰³ Consequences and impacts which are problematic to capture numerically in quantitative assessments present the problem of commensurability – comparing apples with oranges.

Risk assessments are models of the ‘real world’, and necessarily abstractions and simplifications. These models are contingent on the information fed into them – the state of knowledge of the risk is the limiting factor of any risk assessment model. The state of knowledge, the input into the model, is subject to judgements and assumptions, and most importantly, the knowledge is unavoidably incomplete.

Conventionally two types of (incomplete) knowledge characterise any given risk, as discussed above: knowledge about *outcomes* and knowledge about *probabilities*. Stirling differentiates both of these factors of the risk function further (see figure 3). The state of knowledge for either factor can be unproblematic (relatively well known) or problematic (little known). Stirling slices the spectrum of incomplete knowledge into four, logically possible, states of knowledge: risk, ambiguity, uncertainty and ignorance.²⁰⁴

According to this classification (figure 3) ‘risk’ is formally defined as relatively familiar, with both, the outcome and likelihood well characterised. Traditional quantitative risk assessment techniques can be used and confidence in assessments can be high. In circumstances where ‘uncertainty’

²⁰³ Slovic, P. (2000) Trust, Emotion, Sex, Politics and Science: Surveying the Risk-Assessment Battlefield. In: *The Perception of Risk*, ed. Slovic, P., London: Earthscan Publications Ltd, 390-412

²⁰⁴ Stirling, A. (2007) Science, Precaution and Risk Assessment: towards more measured and constructive policy debate. *European Molecular Biology Organisation Reports*, 8(April), 308-315

prevails, knowledge of the likelihood of occurrence is incomplete, but the outcome of the event is relatively well characterized. ‘Ambiguity’ means that the likelihood of occurrence can be estimated, but the outcome of the event is not known. In the case of ‘ignorance’ neither the probability of the event occurring, nor its effect, is known.²⁰⁵

“Risk assessment offers a powerful suite of methods *under a strict state of risk*. However, these are not applicable under conditions of uncertainty, ambiguity and ignorance. Contrary to the impression given in calls for ‘science-based’ risk assessment, persistent *adherence to these reductive methods, under conditions other than the strict state of risk, are irrational, unscientific and potentially misleading.*” (Emphasis added)²⁰⁶

The purpose of this categorisation of ‘incertitude’ into four discreet states of knowledge is to suggest different risk assessment approaches for different states of incertitude. Stirling suggests that it is only in the case of ‘risk’ (according to figure 3) that conventional risk assessment techniques offer a scientifically rigorous approach. In conditions where knowledge about either probabilities, or outcomes, or both is less complete subjective judgements are needed to supplement empirical data as a basis for systematic analysis. These “judgements might take several different – yet equally plausible – forms.”²⁰⁷

²⁰⁵ Donald Rumsfeld, then US Secretary of Defence, alluded to three of the four logically possible states of knowledge: “there are known knowns; there are things we know we know. We also know there are known unknowns; that is to say we know there are some things we do not know. But there are also unknown unknowns - the ones we don't know we don't know” US Secretary of Defence Donald Rumsfeld, 14th February 2002, Press Briefing.

²⁰⁶ Stirling, A. (2007) Science, Precaution and Risk Assessment: towards more measured and constructive policy debate. *European Molecular Biology Organisation Reports*, 8(April), 308-315, p. 311

²⁰⁷ Ibid. p. 310.

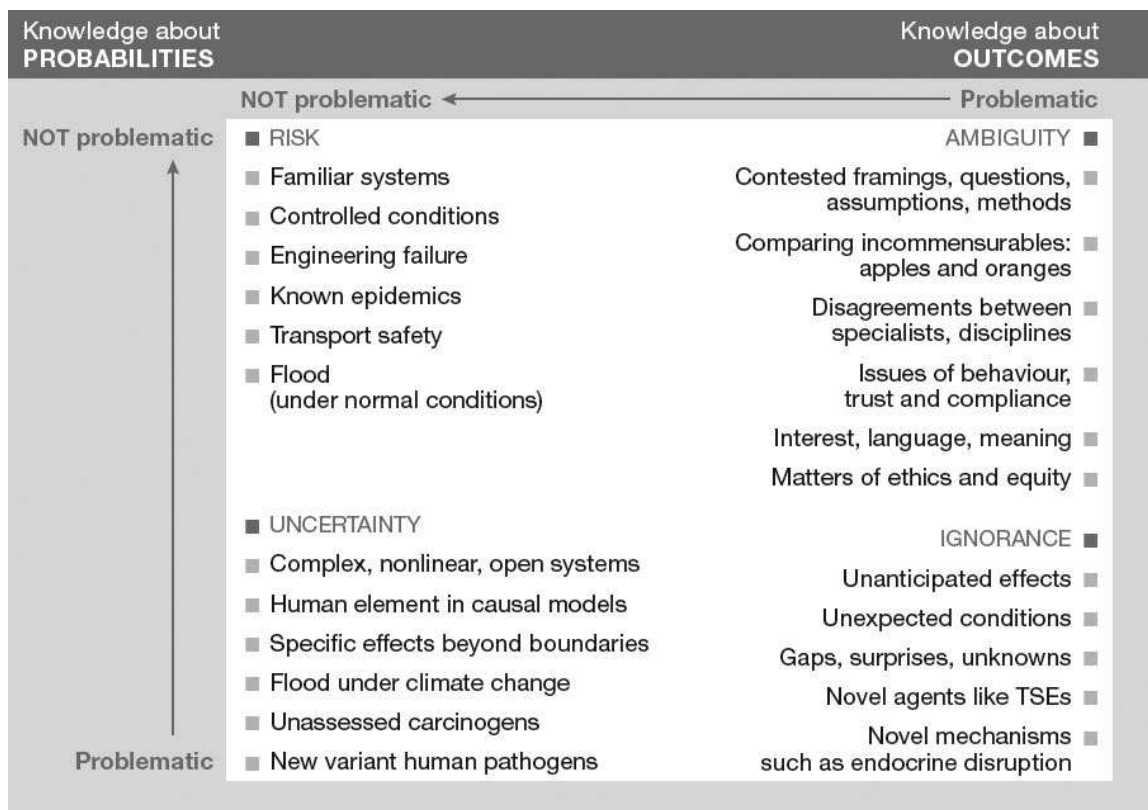


Figure 1: Possible states of incertitude. Knowledge about the probability of occurrence is on the vertical axis, knowledge about the outcomes is on the horizontal axis. Possible areas of applicability in a policy context are suggested for each state of incertitude. Source: (Stirling, 2007), p. 310.

Biological terrorism, or the deliberate release of pathogens, is necessarily situated in the area of 'ignorance' – both the knowledge about outcomes and knowledge about the probability are problematic and contested. The intention of an actor to use a pathogen is difficult to identify; the ability to acquire, produce and disseminate pathogens can at best be approximated. Even if intention is present; acquisition and dissemination are achieved, a wide range of different pathogens can be used in a number of different ways, for a number of different purposes. Further, the outcome, or impact, of an intentional release ranges from localised nuisance by just causing a scare, to catastrophic levels by causing numerous casualties and larger societal consequences.

In other words, the threat of bioterrorism is rife with uncertainty and the basis for traditional, reductive, risk assessments is insufficient. Representation of the threat of bioterrorism as a 'risk', in the formal sense, and the application of traditional risk assessment techniques are neither scientific, nor robust or rational.

"From these fundamental issues of scientific rigour follow implications for the practical robustness of conventional reductive risk assessment in decision-making. In political terms, a quantitative expression of risk or a definitive expert judgement on safety is typically of great instrumental value; however, these have little to do with scientific rationality. Any robust policy must go beyond short-term institutional issues and address the efficacy of policy outcomes. As such, robustness is a function of the accuracy of assessment results, not of their professed precision."²⁰⁸

Stirling argues that under conditions other than the formal state of risk, where a firm position of "sound science" is not attainable, a broader range of non-reductive methods is required, "which avoid spurious promises to determine 'science-based' policy".²⁰⁹ He goes on to make the case for the application of the precautionary principle²¹⁰ in cases of ambiguity, uncertainty and ignorance.

It is important to acknowledge the context and premise of the precautionary principle. The precautionary principle is rooted in environmental protection and related policy areas. Although the concept is widely contested,

²⁰⁸ Ibid. p. 311

²⁰⁹ Ibid. p. 312

²¹⁰ The precautionary principle was most notably espoused in the in the 15th Principle of the Rio Declaration on Environment and Development. UN GA 12 August 1992, A/CONF.151/26 (Vol. I) "Report of the United Nations Conference on Environment and Development", Principle 15.

it is now being applied in an increasing number of countries and economic sectors as a principle for policy making.²¹¹

Principle of Precaution

The precautionary principle is a general principle for policy decision in circumstances where there is a lack of scientific certainty and the potential for serious damages. The modern precautionary principle grew out of the German “Vorsorgeprinzip” (lit.: pre-care principle, or principle of prophylaxis) and became an important concept in environmental protection and policy making. It was included in the drafting of German air pollution legislation in response to ‘acid rain’ in the 1970s.²¹²

The 1982 UN General Assembly Resolution on the World Charter for Nature, principle 11, states:

“...Activities which might have an impact on nature shall be controlled, and the best available technologies that minimize significant risks to nature or other adverse effects shall be used; in particular (a) Activities which are likely to cause irreversible damage to nature shall be avoided...”²¹³

²¹¹ Renn, O. (2007) Precaution and analysis: two sides of the same coin? *European Molecular Biology Organisation Reports*, 8(4), 303-304

²¹² Boehmer-Christiansen, S. (1991) *Acid politics: Environmental and energy policies in Britain and Germany* London: Belhaven Press. The principle rose to prominence in the environmental policy arena; during the 1980s the principle was adopted in an increasing number of environmental declarations and agreements, culminating in a wide uptake of the principle in international instruments, for example: Principle 11 of the UN GA Resolution on the World Charter for Nature, 28 October 1982, A/RES/37/7; and Principle 15 of the Rio Declaration UN GA 12 August 1992, A/CONF.151/26

²¹³ United Nations General Assembly World Charter for Nature, 28 October 1982, A/RES/37/7, Principle 11

The 1992 Rio Declaration on Environment and Development, principle 15, states:

“...the precautionary approach shall be widely applied by States according to their capabilities. Where there are threats of serious or irreversible damage, lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation.”²¹⁴

Moving away from these early articulations of the precautionary principle – which, as international instruments have been forged on consensus with constructive ambiguity (for example, what constitutes ‘serious’ damage, or at which point is ‘full’ scientific certainty attained?) – to a more concrete application for risk management. Stirling points out that the precautionary principle is not a decision rule or a specific methodology:

Instead, it points to a rich array of methods that reveal the intrinsically normative and contestable basis for decisions, and the ways in which our knowledge is incomplete. This is as good a ‘rule’ as we can reasonably get.²¹⁵

Renn²¹⁶ draws on Resnik’s work²¹⁷ by differentiating three mental framings of the precautionary principle: the risk analysis frame, the precautionary frame, and the deliberative frame. (See figure 4 below)

²¹⁴ UN GA Conference on Environment and Development, Rio de Janeiro, 12 August 1992, A/CONF.151/26 (Vol. I), Principle 15

²¹⁵ Stirling, A. (2007) Science, Precaution and Risk Assessment: towards more measured and constructive policy debate. *European Molecular Biology Organisation Reports*, 8(April), 308-315

²¹⁶ Renn, O. (2007) Precaution and analysis: two sides of the same coin? *European Molecular Biology Organisation Reports*, 8(4), 303-304

²¹⁷ Resnik, D. B. (2003) Is the precautionary principle unscientific? *Studies in History and Philosophy of Science Part C: Studies in History and Philosophy of Biological and*

The 'risk analysis frame' uses the traditional and reductive risk assessment tools, relying on 'scientific' estimates of probability and impact. Precaution applied here means that judgements of estimates are conservative, erring on the side of caution, in a 'better safe than sorry' fashion to avoid false negatives rather than false positives.²¹⁸

The 'precautionary frame' deals with the inherent uncertainty in risk as its main focus and "aims to ensure prudent decisions in situations where there is high incertitude about probabilities, outcomes or both, and a high vulnerability of the population at risk." This frame advocates the use of regulatory instruments such as: "minimization requirements, diversification of risk agents, containment in time and space, and close monitoring"²¹⁹ Renn contends that this frame does not necessarily entail the banning of "hazardous activities". The deliberative frame also focuses on uncertainty, ambiguity and ignorance; but, rather than advocating specific set of tools, this frame sees risk from the perspective of complementing purely analytical approaches with deliberative methods of stakeholder involvement. Seen through the second and, in particular, the third frame, the precautionary principle is a complementary addition to scientific analytical approaches, allowing and embracing incertitude rather than advocating the banning of substances and hazardous activities outright. The suggestion is that

"precaution offers a way to be more measured and rational about uncertainty, ambiguity and ignorance. [...]
What is not tenable is that these inherently political

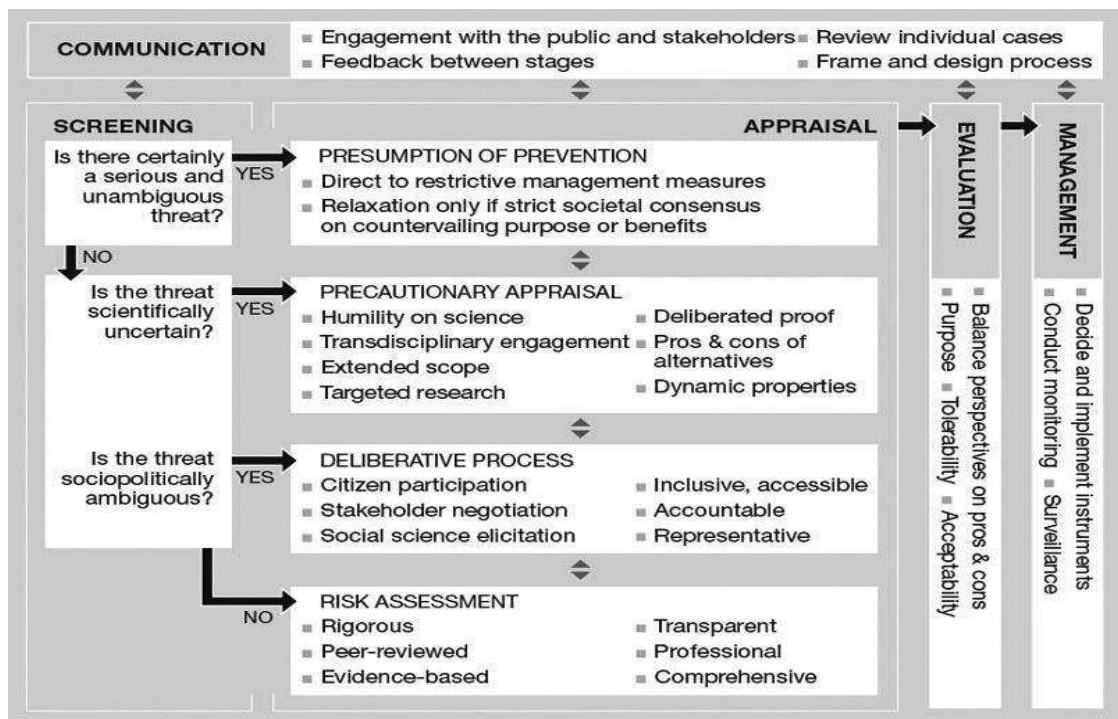
Biomedical Sciences, 34, 329-344

²¹⁸ Renn, O. (2007) Precaution and analysis: two sides of the same coin? *European Molecular Biology Organisation Reports*, 8(4), 303-304

²¹⁹ Ibid. p. 303, both quotes from this source

issues [are] concealed behind opaque, deterministic ideas of the role of science".²²⁰

²²⁰ Stirling, A. (2007) Science, Precaution and Risk Assessment: towards more measured and constructive policy debate. *European Molecular Biology Organisation Reports*, 8(April), 308-315, p. 314



Illustrative criteria of seriousness, uncertainty and ambiguity (after Stirling, 2007)

Criteria of seriousness

- Clear evidence of carcinogenicity, mutagenicity, or reprotoxicity in components/residues
- Clear evidence of virulent pathogens
- Clear violation of risk-based concentration thresholds or standards

Criteria of uncertainty and ignorance

- Scientifically founded doubts on theory
- Scientific doubts on model sufficiency or applicability
- Scientific doubts on data quality or applicability
- Novel, unprecedented features of the product

Criteria of sociopolitical ambiguity

- Divergent individual perceptions of risk
- Institutional conflict between different agencies
- Amplification effects in news media
- Social/ethical concerns, distributional issues or political mobilization

Figure 2: The precautionary approach. The precautionary approach starts with a screening stage, similar to the hazard characterization stage in formal risk assessment. Example criteria for the screening process are outlined in the flow diagram. The 'appraisal' box of the diagram, central section, corresponds to the three frames of precaution outlined, plus formal risk assessment. (Stirling, 2007)²²¹

²²¹ Ibid. p. 313

4

The Emergence of Policy Issues

Introduction

This chapter charts the rise of bioterrorism and pandemic influenza as salient policy issues in the UK. The aim is to set both cases into context and to illustrate and chart their path to becoming prominent policy issues. Therefore, specific attention is placed on “policy discourse”, which includes parliamentary discussion, publications by pertinent departments and agencies, as well as output from prominent institutions such as the Royal Society, academia and other non governmental organizations (NGOs).

Constructing these case study narratives in a methodologically rigorous way requires a measure of impact of certain events or publications on the policy discourse. A direct measure of impact or contribution to the policy discourse is sadly absent.²²² Thus, proxies have to be used to identify pertinent and salient events. Such proxies include references to events in

²²² Even quantitative measures such as expenditure and budgets are either fragmentary or not accessible at all; or where accessible are they are not disaggregated in sufficient or useful detail.

official documents and speeches, as well as events and documents highlighted during interviews.

In the case of bioterrorism secrecy is especially abundant. As discussed elsewhere in this dissertation much of the discussion, decision making process and general discourse of threat assessments and policy making are veiled in secrecy. This secrecy is not limited to discussion within government but extends to discussions outside of government, where mindfulness of possible adverse security implications – sometimes necessarily, sometimes habitually – curtails access and transparency.

A case of pandemic influenza has been included as a heuristic device to illuminate British approaches to bioterrorism policy. Rather than to look towards another type of agent, or mode of attack, within the CBRN grouping, the decision was made to include a case study on pandemic influenza in this dissertation. The case of pandemic influenza is used to illustrate the difficulties of risk assessment and the accompanying institutional complexity to shed light on the case of bioterrorism.

Both cases, the case of pandemic influenza and the case of bioterrorism, are, broadly speaking, similar in the approach taken by policy makers to confront the threat in terms of policy response. There are similarities in capabilities for surveillance, detection and mitigation work for both natural and man-made events. However, each case is idiosyncratic and thus each case attracts, and requires, a different mix of policy actors.²²³ The main difference

²²³ See Chapter 3, especially the sections on institutions and policy formation where it is noted that the institutional set-up and policy network differs from one policy issue to another, because the identity of actors participating in the policy-formation process, the intensity of linkages between them, the distribution of power amongst them, the

in the composition of the policy network is due to the intentional and criminal nature of bioterrorism, and thus the requirement for law enforcement and intelligence agencies to be involved.

Nonetheless, both cases overlap substantially, despite being idiosyncratic. Both cases share key features which make them suitable for comparison. The threat of disease is at the heart of both cases; both cases have the potential to cause a high level of morbidity, mortality and economic disruption; both are framed as security issues; and both cases are complex and the policy discourse is led by expert knowledge.²²⁴ Both cases are also characterised by an abundance of uncertainty about the likelihood of occurrence and severity of the impact, although the policy discourse, as well as the public discourse, focus on high impact scenarios.

The substantial overlap of shared key features of the two cases also extends to interactions between them, as well as their interaction with the wider policy context, neither case operates in isolation.²²⁵ Responsibilities are shared by the same departments and, in many instances, the same people.²²⁶

frequency and mode of interaction, and the cohesiveness of the network, is specific to each policy issue. Furthermore, the network, and the actors within it, evolve over time in response to pressures, and opportunities.

²²⁴ See discussion on expert advice and risk in Chapter 3.

²²⁵ Sometimes the overlap is explicit, even if speculative, see for example: Krug, R. M. (2003) The potential use of influenza virus as an agent for bioterrorism. *Antiviral Research*, 57, 147-150; & Madjid, M. & others (2003) Influenza as a bioweapon. *Journal of the Royal Society of Medicine*, 96(7), 345-6. These points of convergence between influenza and bioterrorism or biological weapons will be picked up again below.

²²⁶ Another example of the overlap of the two cases can be found in this excerpt from the ministerial statement from the fourth ministerial forum of the Global Health Security Initiative: "we recognize that preparedness for and response to bioterrorism have much in common with preparedness for and response to naturally occurring global health threats such as pandemic influenza" Global Health Security Initiative (2003) *Ministerial Communiqué*. Berlin: Fourth ministerial meeting on health security and bioterrorism, 7 November 2003

Policy making in the field of security is multi-layered and multi-causal, policy pathways are constantly constructed and reconstructed by an evolving context, internal and external pressures, interests, power relations, and shifting perceptions of threat and risk and their perceived significance. This complexity is conceptualised in this dissertation by the institutional model and the concept of narratives.²²⁷

The separation of the two cases into discreet narratives is somewhat arbitrary because both narratives include references to events pertinent to, but external of the case being treated. For example, reference to SARS or Food and Mouth Disease (FMD) could be made in either case study section. FMD and SARS have had important impacts on the framing of each case study. Moreover, changes in the policy environment in the UK in response to crises such as BSE are significant in framing policy narratives and shaping institutions. Some of these factors are thus briefly outlined in a separate section. First, I am going to outline some context before turning to the policy narrative.

4.1 Bioterrorism as a Policy Issue in the UK

The following section looks at bioterrorism policy related events with a special regard to the UK. In terms of statements and assessments it is difficult to look at bioterrorism in isolation, separately from, especially chemical, but also a neat separation from radiological and nuclear terrorism is sometimes difficult. For historical reasons, as discussed in Chapter 3 (“Concepts and Theory”), biological, chemical and nuclear warfare issues have been, and continue to be, conflated under the banner of WMD. More recently, a number

²²⁷ As discussed in Chapter 3.

of different collective abbreviations have entered the counter-terrorism literature: collections of, or variations on, two or three letters from the following collective abbreviation – CBRNE (chemical, biological, radiological, nuclear, and explosive; for example CB, RBC, NBC). Biological terrorism is rarely treated as a subject by and of itself. As well as the difficulty of separating the agents and means to attack, it is sometimes difficult to separate “terrorism” (subnational groups) from “warfare” (nation states). Many documentary sources and statements conflate these categories.

The threat of bioterrorism has been looming large for several decades. The threat has been, and still is, pervasive in media, popular culture, and political, as well as, academic discourse. However, despite the ubiquity of warnings, bioterrorism has rarely manifested itself. Historically, only a handful of authenticated episodes of deliberate release of pathogenic material by non-state actors have been documented. None of these episodes have caused large numbers of fatalities, if any at all.

A great number of terrorism chronologies have been assembled, for a wide variety of purposes. Writing a case study, or narrative, means that one has to discern which events count as terrorism, and which do not, which are important and which are not – value judgements have to be made. This is unavoidable, but it makes studies of this kind inherently political, subjective, and value laden. As described above in the introduction, the aim here is to chart events which have contributed to the rise of bioterrorism as a salient policy issue in the UK.

The way the UK government and its policy makers and shapers address, and frame, the problem of bioterrorism is inextricably linked to the history of use and development of biological weapons by states. Although state programmes are not of primary concern in this dissertation, it is important to bear in mind that the discussion and framing of the biological weapons

problem is informed by former state programmes – the UK’s own programme, but also those of the United States, France, Japan, Iraq, South Africa and the Soviet Union, to list some prominent examples.²²⁸ In addition to past programmes are continued and new concerns over current state programmes.

The focus here, however, is the threat posed by, and potential capability of, non-state groups, as outlined in the definitions in the preceding chapter. There are historical antecedents of bioterrorism, actual authenticated cases of deliberate releases of pathogenic biological material are, however, scant. As with (conventional) terrorism chronologies in general, constructing a chronology, or narrative, of biological terrorism is a matter of interpretation and definition, and thus subjectivity of the compiler. However, when disregarding individual assassinations, attempts at extortion, and hoaxes the number of actual and authenticated deliberate releases of pathogenic material is very small indeed

In Britain concerns over deliberate release of pathogenic material pre-dates the advent of the British biological warfare programme by some years and is closely linked to the experience of chemical warfare during the First World War which led to the British ratification of the *1925 Geneva Protocol* in April 1930.²²⁹ An institutional response in Britain started in the inter-war

²²⁸ State programmes are discussed elsewhere in greater detail. See for example: SIPRI (1973) *The problem of chemical and biological warfare: a study of the historical, technical, military, legal and political aspects of CBW, and possible disarmament measures*. - Vol. 2 : *CB weapons today*. Stockholm International Peace Research Institute. Stockholm: Almquist & Wiksell; Wheelis, M. & others (2006) *Deadly Cultures - Biological Weapons since 1945*. Cambridge, Massachusetts and London, England: Harvard University Press

²²⁹ The 1925 Geneva Protocol, more accurately the “Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare” was signed on 17 June 1925 and entered into force on 8 February 1928. It is a non-first use treaty and was ratified by the UK in April 1930. The Geneva Protocol prohibits “the use in war of asphyxiating, poisonous, or other gases and of all analogous

period with the solicitation of independent expert advice by the newly established Imperial Defence's Subcommittee on Bacteriological Warfare. Advice, on the nature of a possible threat was drawn from a group of scientists of the Medical Research Council (MRC) in the 1920s. Although this group initially dismissed the idea of deliberate release of biological agents as a weapon of war, a biological threat was recognised as a by-product of conventional bombings which may disrupt water supply systems and sanitary provisions causing diseases like typhoid. Thus, during the 1930s expert advice from the MRC framed the biological warfare threat as any threat to public health from conventional warfare.²³⁰ The growing threat of war and suspicions surrounding biological warfare programmes in other countries led to numerous responses, including the setting up of a BW programme for defensive and retaliatory purposes. The institutional embodiment of the independent expert assessment provided by the MRC took the shape of the Emergency Public Health Laboratory Service, established in 1939, to improve public health provisions.²³¹

During World War II the concern was sabotage, during the Cold War the emphasis was state (or bloc) centric – sabotage and assassinations were the main concern – terrorist use of biological weapons was not seen as a threat of significance.

liquids, materials or devices", and also bans "bacteriological methods of warfare". See: SIPRI (1971) *The problem of chemical and biological warfare: a study of the historical, technical, military, legal and political aspects of CBW, and possible disarmament measures*. - Vol. 1 : *The rise of CB weapons*. Stockholm International Peace Research Institute. Stockholm: Almqvist & Wiksell

²³⁰ Balmer, B. (2001) *Britain and Biological Warfare: Expert Advice and Science Policy, 1930-65*. Basingstoke: Palgrave Macmillan

²³¹ Ibid.

Although terrorism has a long history it became a regular feature of life in the 60s and 70s, with embassy hostage sieges, airline hijackings, and car bombings. In the UK, during a conflict which originated out of religious and ethno-nationalist tensions the IRA, and its off shoots, launched numerous bombing campaigns. The recent period of the ‘troubles’, fought mainly between Irish republicans, unionist paramilitaries and British security forces started in the 1960s and continued until the “Good Friday” Agreement of 1998. However, violence continued sporadically. During the conflict, between 1969 and 2001, more than 3500 people died.²³²

Concerns of state proliferation of chemical and biological weapons began to rise in the 1980s, following the confirmed use of chemical weapons by Iraq in 1984,²³³ the US started releasing previously secret documents at various times – gradually increasing the number of countries alleged to be in possession of chemical weapons from three (US, USSR, France) to at least thirty by the end of 1984.²³⁴ Amongst these countries was Libya. At the same time estimates of countries thought to be developing biological weapons was also increased – up to ten.²³⁵

The Lockerbie bombing on 21st December 1988 is seen by some observers as the advent of indiscriminate mass-casualty terrorism and the advent of the ‘new terrorism’ – the bombing of the Pan Am flight 103 over the Scottish town of Lockerbie by Libyan operatives, which cost 270 lives in total (243

²³² See for example: English, R. (2003) *Armed struggle: a history of the IRA*. London: Macmillan

²³³ Robinson, J. P. (1985) Chemical and biological warfare: developments in 1984. In: *SIRI Yearbook 1985*, ed. SIPRI, Stockholm: Taylor & Francis, 159-219, p.171

²³⁴ Ibid. p. 172

²³⁵ See for example: Webster, W. H. (1988) *Remarks at the World Affairs Council of Northern California by the Director of US Central Intelligence (Prepared Text)*. San Francisco, pp. pp 9-10, 19 September 1988

passengers, 16 crew, and 11 people on the ground).²³⁶ Some time before the Lockerbie bombing it had become clear that Libya was producing chemical weapons, including speculation that it might supply chemical weapons to terrorists.²³⁷ The day before the bombing, the US ambassador for counter-terrorism, Paul Bremer, said:

“There is no evidence that the Libyans have exercised any self-restraint on themselves. The fact you’ve got the Libyans with a chemical weapons capability, the historic ties and the propensity to turn heavy-duty stuff over to terrorists makes it a concern-raising situation”²³⁸

The proliferation and possession of CBW capabilities by countries with ties to terrorist organizations, such as Libya and Iraq, gave rise to the spectre of state-sponsored terrorism, including the possible transfer of chemical and biological weapons. The possibility of terrorists using biological weapons, and non-conventional weapons in general, began to emerge as a topic of policy interest in the UK. At the end of the Cold War, rapid advances in science and technology, discovery of a massive covert biological warfare programme in the former Soviet Union²³⁹ strengthened this perception. The Lockerbie bombing

²³⁶ Wilkinson, P. (1989) *The lessons of Lockerbie: a special report on aviation security to mark the first anniversary of the air disaster*. Research Institute for the Study of Conflict and Terrorism; & Wilkinson, P. (2007) Enhancing UK aviation security post-9/11. In: *Homeland security in the UK: future preparedness for terrorist attack since 9/11*, ed. Wilkinson, P., London: Routledge, 256-273. The plane bombing is thought to have been in retaliation for UK support to US bombing raids of Libyan targets, which in turn were retaliatory. Silke, A. (2003) Retaliating against terrorism. In: *Terrorists, Victims and Society: psychological perspectives on terrorism and its consequences*, ed. Silke, A., Chichester: Wiley, 215-231, pp 217

²³⁷ For example: Ottaway, D. B. (1988) *Middle East weapons proliferate*. Washington Post, p. 1, 19 December 1988

²³⁸ Associated Press (1988) *US says Libya capable of making chemical weapons* Baltimore Sun (AP from Washington) 20 December 1988, p. 6

²³⁹ On 12th October 1989, or thereabout, Vladimir Pasechnik defected to the UK and gave evidence about the extent of Soviet biological warfare programme and non-compliance with the Biological Weapons Convention. Pasechnik’s evidence, together with secret

continued...

and the rise of mass casualty terrorism, coupled with the mantra that “terrorism is theatre”,²⁴⁰ may have led to the persistent belief that in order to make an impact terrorists have to ‘raise their game’ in terms of dramatic attacks – unconventional terrorism, primarily nuclear, but also chemical and biological terrorism were seen by some commentators as a possible next step to create the theatre necessary to deliver political messages.²⁴¹

Bioterrorism – policy discourse

Between September and October 1984 a religious commune caused 751 recorded cases of salmonellosis, in Oregon.²⁴² The Rajneesh group was testing a plan to sicken local population in order to prevent them from voting in an upcoming election in an attempt to influence the outcome in their favour. The source and nature of the outbreak was not recognised as a clandestine attack – or more accurately a field trial for an attack – until more than a year later,

intelligence strengthened US/UK allegations of Soviet non-compliance in a number of démarches, which eventually led to joint inspections of the Tri-Lateral Process. In January 1991 on site inspections of biological research facilities in the USSR were undertaken and completed to mutual satisfaction – the UK-US team reports evidence of massive violations, whereas the USSR claims that no proof had been found. Following the collapse of the USSR and admission of violations serious concerns are raised over potential knowledge transfer to terrorist groups. See, for example: Adams, J. (1994) *The new spies: exploring the frontiers of espionage*. London: Hutchinson; Mangold, T. & J. Goldberg (1999) *Plague wars: a true story of biological warfare*. London: Macmillan; Alibek, K. & S. Handelman (1999) *Biohazard*. London: Arrow, 2000; and Kelly, D. C. (2002) The Trilateral Agreement: lessons for biological weapons verification. In: *Verification Yearbook 2002*, eds. Findlay, T. & O. Meier, London: VERTIC, 93-109

²⁴⁰ Jenkins, B. M. (1975) Will terrorists go nuclear? *RAND paper series*, (P-5541), p.4.

²⁴¹ See, for example: Laqueur, W. (1999) *The New Terrorism: Fanaticism and the Arms of Mass Destruction*. Oxford: Oxford University Press, Jenkins, B. M. (1985) Future trends in international terrorism. *RAND paper series*, (P-7176), & Jenkins, B. M. (1975) Will terrorists go nuclear? *RAND paper series*, (P-5541)

²⁴² Probably many more have been affected, Wheelis speculates that “as few as 1 percent of cases [of salmonellosis] may be reported.” Wheelis, M. & M. Sugishima (2006) Terrorist use of biological weapons. In: *Deadly Cultures - Biological Weapons since 1945*, eds. Wheelis, M., L. Rózsa & M. Dando, Cambridge, Massachusetts and London, England: Harvard University Press, 284-303, p. 287

despite intensive investigation of the unusual outbreak by the US Centers for Disease Control and Prevention (CDC). Although the investigators considered terrorism, or intentional contamination, as a hypothetical cause it was rejected on the grounds of no apparent motive, no one claimed responsibility, or issued any demands.²⁴³ The investigators stated that:

“We assumed that if the motive was either extortion or terrorism, a public statement would have been issued to intimidate or create widespread fear. In fact, the incident was planned as a covert tactical strike [...] On the basis of our experience in other investigations, we believed that other hypotheses, although more complicated, appeared more likely”²⁴⁴

Informants, who came forward thirteen months after the outbreak, which was at the time seen as a natural food borne outbreak, testified which led to the indictment of two commune members in March 1986; these two pleaded guilty (April 1986), and were subsequently sentenced to prison (July 1986). This episode received little attention at the time, but became more recognised as time went on, the event, although a significant marker in the history of bioterrorism had no real impact on policy.²⁴⁵

The 2004 Review of Intelligence on Weapons of Mass Destruction, chaired by Lord Butler, and known as the “Butler Report”, sheds some light on

²⁴³ Török, T. J. & others (1997) A large community outbreak of Salmonellosis caused by intentional contamination of Restaurants salad bars. *Journal of the American Medical Association*, 278(5), 389-395; & Carus, S. (2000) The Rajneeshees (1984). In: *Toxic Terror: assessing the terrorist use of chemical and biological weapons*, ed. Tucker, J. B., Cambridge, Ma. and London: MIT Press

²⁴⁴ It is worth noting that this account of the events in Oregon was written more than 10 years after the intentional contamination: Török, T. J. & others (1997) A large community outbreak of Salmonellosis caused by intentional contamination of Restaurants salad bars. *Journal of the American Medical Association*, 278(5), 389-395, p. 394

²⁴⁵ Interview, Eileen Choffnes, 5th October 2006.

the evolution of the perceived threat from bioterrorism within the British intelligence community by examining the intelligence assessments of the Joint Intelligence Committee (JIC).²⁴⁶

In 1989 JIC considered the possibility as unlikely:

“We have no intelligence that any terrorist group makes CBW agents, possesses any such agents or is currently contemplating attacks using CBW agents or other toxic chemicals. The use of CBW agents by terrorists would generate widespread fear and could cause large numbers of casualties. The mere threat of such use could be sufficient to cause panic. [...] We believe that terrorist organisations could also readily obtain and handle without insurmountable difficulty, suitable bacteria, viruses and certain toxins. Although CBW proliferation undoubtedly increases the risk that CBW agents could be stolen by or even supplied to terrorists by state sponsors [...] this prospect must be viewed against a background where many suitable agents can be manufactured in small quantities using easily available materials. So as far as terrorism is concerned, proliferation (if it comes about) may not necessarily be

²⁴⁶ It is important to bear in mind that the Butler report looks specifically at threat assessments from the JIC in terms of the report’s remit which limits the review to “WMD programmes in countries of concern and on the global trade of WMD”. Terrorism is not specifically in its remit, although the report includes a chapter dedicated to terrorism. The terms of reference of the Butler inquiry were: “to investigate the intelligence coverage available in respect of WMD programmes in countries of concern and on the global trade in WMD, taking into account what is now known about these programmes; as part of this work, to investigate the accuracy of intelligence on Iraqi WMD up to March 2003, and to examine any discrepancies between the intelligence gathered, evaluated and used by the Government before the conflict, and between that intelligence and what has been discovered by the Iraq survey group since the end of the conflict; and to make recommendations to the Prime Minister for the future on the gathering, evaluation and use of intelligence on WMD, in the light of the difficulties of operating in countries of concern.” Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004) p. 1

much affected by the actions of States with the relevant capability.”²⁴⁷

The Butler Report states that the intelligence community did not consider the possession of CBRN by states to influence the risk of terrorist use at this time.²⁴⁸ The JIC assessment follows a few years after the only known bioterrorist attack that caused an outbreak of disease at the time – a politically motivated and deliberate contamination of at least ten food outlets with the bacterium *Salmonella* Typhimurium in the US.

Following JIC’s 1989 assessment that there was no intelligence indicating that terrorist groups were possessing, making, or contemplating to make CBW agents the JIC issued its first specific assessment of terrorist use of CBRN in April 1992. In this assessment the JIC considered that terrorists may be deterred by “the danger to their own members, or by the risk of alienating the public and especially their own supporters.”²⁴⁹ This assessment, that terrorists are unwilling to use biological weapons, would prevail for some time.²⁵⁰ The focus was, first and foremost, on proliferation from states. Heightened awareness of groups with fanatical religious zeal gradually changed this position.²⁵¹ First and foremost, however, remained a technocratic explanation. This explanation holds that with rapid advances in the biological sciences methods of acquisition and use become diffused and more accessible. The

²⁴⁷ JIC, 26 June 1989, cited in Ibid. pp.29

²⁴⁸ Ibid. p.30

²⁴⁹ JIC, 23 April 1992, cited in Ibid. p.30

²⁵⁰ Jenkins in 1975 states this logic thus: “Mass casualties simply may not serve the terrorists’ goals and could alienate the population. You don’t poison the city’s water supply in the name of the popular front” Jenkins, B. M. (1975) Will terrorists go nuclear? *RAND paper series*, (P-5541), p.4

²⁵¹ The Aum Shinrikyo Tokyo Subway attack in March 1995 was a another watershed moment in the logic that terrorists do not seek mass casualties – after Lockerbie and this time with unconventional means – although religiously and or ethnically motivated terrorism was presumed to have a lower inhibition to using chemical and biological terrorism.

technological barrier to obtain a biological weapon is thus lowered; and therefore the possibility of bioterrorism increased. So the threat was seen, at the time, as increasingly technologically possible but the motivation and intent to use was inhibited by a rational, goal oriented nature of terrorists.

In 1994 the UK 'Government' confidentially urged a group drawn from the Public Health Laboratory Service (PHLS), the Security Service (MI5) and the Metropolitan Police to think about, and prepare for bioterrorism. Zoonotic diseases were seen as the main concern and thus the schedule from *The Specified Animal Pathogens Order 1993* (SAPO) was initially used to frame the thinking about bioterrorism.²⁵² Initially expertise was drafted in from the Ministry of Defence and the Chemical and Biological Defence Establishment (CBDE). The early bioterrorism assessment exercises were framed with a bottom up approach based on battlefield scenarios – the assessments were practical with emergency preparedness and consequence management in mind.²⁵³

In July 1994 the Royal Society published a report on the "*Scientific Aspects of Control of Biological Weapons*".²⁵⁴ Although primarily concerned

²⁵² *The Specified Animal Pathogens Order 1993* (No. 3250), made 24th December 1993, came into force 1st January 1994. This Order implements the provisions relating to pathogens of European Council Directive 92/118/EEC. Interview, Senior HPA Official, 9th October 2008, London.

²⁵³ Interview, Senior HPA Official, 9th October 2008, London.

²⁵⁴ The Royal Society's Group on Scientific Aspects of International Security set up a working group on biological weapons (BW) in 1992. Members include: Prof Harry Smith (Chair), Peter Biggs, Arnold Burgen, Michael J Crumpton, and Alec Jeffreys. Experts in microbiology, genetics and other disciplines pertaining to BW, most of whom had no previous knowledge of BW, or BW control. Five aspects of the Biological Weapons Convention (BWC) which might benefit from the input were identified: compass (definition of agents and hosts); compliance and confidence-building measures (CBMs); verification; technology transfer; and international scientific co-operation. Prof Harry Smith (Chair) worked at Porton Down on *Bacillus anthracis*.

with aspects of “effective control through international agreement” the report refers specifically to the threat from terrorism:

“The potential danger from BW has increased in the past two decades for two main reasons. First, the advent and rapid progress of genetic manipulation has made it possible to produce new agents. Second BW are particularly attractive to some developing countries and terrorists because they can be produced cheaply and used for covert operations. The Gulf War raised public awareness of this particular aspect. The rapidly escalating danger must be controlled.”²⁵⁵

The report goes on to state that:

“Side by side with the advances in science, the international political situation has increased the possibility of covert use of BW either by terrorists or by small nations in pre-conflict situations. The oral route of administration, i.e. water contamination and food poisoning does not need the sophisticated means of delivery demanded by the aerosol route. It could, therefore, be especially attractive to small groups seeking to disrupt strategic centres.”²⁵⁶

The report stresses the lack of an international control regime confronting biological terrorism. In the context of discussing the desirability of possible restrictions of technology transfer (intangible and tangible) the report mentions terrorism in terms of the potential production of agents on a small scale, in e.g. glassware:

“a determined aggressor bent on terrorist activity would, if necessary, produce BW agents by a relatively

²⁵⁵ Royal Society (1994) *Scientific Aspects of Control of Biological Weapons*. London: Royal Society p. 1

²⁵⁶ Ibid. p.6

small scale glassware operation without sophisticated safety measures.”²⁵⁷

Further, stating that:

“a determined aggressor could obtain what he needed from third parties or would produce the BW he required using unsophisticated equipment without stringent safety precautions, the delay achieved by the above restrictions [of transfer of seed cultures, large scale production equipment and containment units] would probably be only months for small scale terrorist operations where production of the agent could occur for example in a university laboratory”²⁵⁸

The 1994 Royal Society report thus framed the threat of terrorists using biological weapons as an increased possibility, an “escalating danger” due to three factors: international political climate, cheap production value, and ease of production of rudimentary agents. Around this time concerns were raised about citizens of certain countries working with pathogens in the UK. The Foreign and Commonwealth Office (FCO) started to involve the Royal Society to engage with University Vice Chancellors to find out how many individuals (students) from so called “countries of concern” were working with pathogens in university laboratories. This marks the beginning of the Voluntary Vetting Scheme.²⁵⁹

²⁵⁷ Ibid. p.45

²⁵⁸ Ibid. p.46

²⁵⁹ Interview, Senior HPA Official, 9th October 2008, London & Personal communication with Sir Paul Lever, 25th June 2008 at RUSI conference, London. Lever, who was Assistant Under Secretary for Defence and Security Matters in the Foreign and Commonwealth Office in 1994, initiated VVS. Initially conceived as a non-proliferation tool, preventing the transfer of technology related to weapons of mass destruction and was replaced with the Academic Technology Approval Scheme (Atas), in 2008.

At the same time, in 1994, two features were to become a cornerstone of JIC assessments of the terrorist CBRN threat: for most terrorist purposes conventional weapons are better, and the danger of alienating support. This attitude persisted to the mid 1990s, writing in October 1994 the JIC stated:

“Attacks involving chemical or biological agents are also unlikely, though use of toxic chemical substances (for which there are some limited precedents) remains a possibility.”²⁶⁰

The October 1994 assessment followed a few months after a release of what is said to be Sarin gas in Matsumoto, Japan by the Aum Shinrikyo cult (27 June 1994). Seven people died, and 144 were injured, after Aum cultists vapourized Sarin in a residential area in an attempt to kill three judges who were expected to rule against the cult.²⁶¹ The event received relatively little media attention outside of Japan; it is unclear if the JIC was aware of the release at the time of writing the October 1994 assessment.²⁶² Although the release of Sarin does not constitute biological terrorism, the subsequent Sarin attack on the Tokyo subway by the Aum group on 20th March 1995 had a significant impact on the discourse and perception of unconventional terrorism.²⁶³

²⁶⁰ JIC, 13-19 October 1994, cited in Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004) p.31

²⁶¹ Tucker, J. B. (2000) *Toxic terror: assessing the terrorist use of chemical and biological weapons*. Cambridge, Ma. and London: MIT Press

²⁶² The Butler report only offers a blinkered view into the otherwise classified assessments.

²⁶³ As noted in the introductory chapter of this dissertation, it was later discovered that the Aum cult had attempted to cultivate and use biological agents. These attempts, including the attempted procurement of botulinum toxin and the spraying of *Bacillus anthracis* slurry were however, unsuccessful. See: Wheelis, M. & others (2006) *Deadly Cultures - Biological Weapons since 1945*. Cambridge, Massachusetts and London, England: Harvard University Press; and Leitenberg, M. (2005) *Assessing the Biological Weapons and Bioterrorism threat*. US Army War College

A Shift in Threat Perception – Sarin Attack in Tokyo

The 20th March 1995 Aum Shinrikyo attack on the Tokyo subway system caused a shift in the way unconventional terrorism was perceived. On that day five Aum cultists released a Sarin dilution during the morning rush hour on three major commuter lines in central Tokyo. 11 people died as a direct consequence of the attack, a twelfth later died of the injuries sustained during the attack. Japanese prosecutors put the official number of casualties at 3,938. More than 5,000 people presented themselves to the emergency services – most showed no real symptoms of Sarin poisoning.²⁶⁴

A potential desire of certain groups to cause mass casualties, and a willingness to use unconventional means was recognised. Tucker puts the newly recognised magnitude of threat into stark words:

“The Tokyo subway incident has demonstrated the devastating potential of C/B terrorism. Aum Shinrikyo broke the monopoly that the nation-state has previously held over the most powerful means of organized violence [...] the diffusion of mass destructive power to subnational groups undermines the ability of the nation-state to protect the security of its citizens – the fundamental source of its political legitimacy”²⁶⁵

In the United States of America President Clinton issued a classified directive which states that the United States should “deter, defeat and

²⁶⁴ Tucker, J. B. (2000) *Toxic terror: assessing the terrorist use of chemical and biological weapons*. Cambridge, Ma. and London: MIT Press; and World Health Organization (2004) *Public Health Response to Biological and Chemical Weapons - WHO Guidance (2nd Edition)*. Geneva: World Health Organization. According to the WHO there were 12 fatalities, 54 severely injured, and circa 980 with mild or moderate symptoms, most of the 5000 had psychosomatic symptoms.

²⁶⁵ Tucker, J. B. (1996) Chemical/Biological Terrorism: Coping with a New Threat. *Politics and the Life Sciences*, 15(2), 167-184 p. 175

respond vigorously to all terrorist attacks on [US] territory and against our citizens".²⁶⁶ The 9-11 Commission reported that:

"alarmed by the [Sarin] incident in Tokyo, President Clinton made it the highest priority for his own staff and for all agencies to prepare to detect and respond to terrorism that involved chemical, biological, or nuclear weapons"²⁶⁷

Following this prioritisation of NBC terrorism by the US, the Australia Group²⁶⁸ "agreed to a United States proposal to ensure the AG export controls and information-sharing adequately address the threat of CBW terrorism",

²⁶⁶ Presidential Decision Directive/NSC-39 "U.S. Policy on Counterterrorism" 21 July 1995. This is by no means the first time the issue of CB or unconventional terrorism is raised in the US. The issue of CB terrorism has been publically raised in earnest by the US administration since, at least, the late 1980s, for example, in January 1989 US Secretary of State George Schultz raised the issue of terrorists with chemical and biological weapons being a growing threat at a Conference of the States Parties to the 1925 Geneva Protocol. Feakes, D. (2007) *The Chemical Weapons Convention and the Biological Weapons Convention: Confronting the threat of international terrorism*. In: *Terrorism and weapons of mass destruction : responding to the challenge*, ed. Bellamy, I., London: Routledge

²⁶⁷ 9-11 Commission (2004) *The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States* New York: W.W. Norton & Company p. 101; Richard Clarke, who was the chief counter-terrorism adviser on the U.S. National Security Council at the time, wrote in an autobiographical narrative that, following the Tokyo Sarin incident, President Clinton read "fictional accounts like *Rainbow Six* and *The Cobra Event* in which terrorists wield chemical and biological weapons [...] The books just reinforced what he had already decided: we need to do more to prevent terrorists from getting their hands on these weapons and we need to be ready if they did". Clarke, R. A. (2004) *Against all Enemies*. London: Simon & Schuster, p. 162-3.

²⁶⁸ The Australia Group (AG) originated in the mid 1980s in response to Iraqi chemical weapon precursor procurement through legitimate trade channels and subsequent violation of the 1925 Geneva Protocol by use in the Iran-Iraq war. The AG was formed by fifteen countries plus the European Commission (EC) in order to harmonise export controls on certain chemicals to prevent similar acquisitions by other countries. The AG's remit has expanded to include biological agents in the 1990s, its membership stands at forty countries plus the EC in 2009. <http://www.australiagroup.net>

adding: “This US initiative was the AG’s first policy-level action on CBW terrorism”²⁶⁹

In November 1995, the UK staged a large scale bioterrorism emergency planning exercise in Manchester, involving senior police officers from several regional authorities, military figures, and personnel from Chemical Biological Defence Establishment (CBDE) Porton Down. The exercise, named Firestorm, was the largest of its kind since WWII.²⁷⁰

In December 1995, the G7 Ministerial Meeting²⁷¹ issued a communiqué on countering terrorism after a meeting in Ottawa noting an increase in “indiscriminate violence by religious extremists and apocalyptic groups which practice terrorism”, further noting that:

“developments have been accompanied by a continuing use of conventional weapons, in particular those designed for massive explosions, and by a new and worrying use of non-conventional, for example chemical, weapons”²⁷²

The communiqué referred to the Tokyo incident “with deep concern” and urged all Governments:

“to take the strongest measures to prevent toxic chemicals and biological agents from getting into the hands of terrorists and to adopt appropriate national legislation and controls in line with the Chemical

²⁶⁹ President Clinton, message to Congress on International Emergency Economic Powers Act, 8 November 1995, as published on US Newswire, 9 Nov 1995

²⁷⁰ Millward, D. & others (1998) *Tories held top-secret 'anthrax' exercise*. Daily Telegraph (London), p. 9, 25 March 1998

²⁷¹ G7 (1995) *Ottawa Ministerial Declaration on Countering Terrorism*. Ottawa: G7, 12 December 1995

²⁷² Ibid.

Weapons and Biological and Toxin Weapons
Conventions”²⁷³

In March 1996, a year after the Tokyo incident, the House of Commons Defence Committee made the following recommendation:

“If chemical and biological weapon proliferation cannot be controlled – and production is not particularly difficult – the current low risk of attack may increase substantially in future years. We recommend that NATO countries should pay close attention to the long term threat of terrorist use of biological and chemical weapons and should develop appropriate counter measures”²⁷⁴

In July 1996, responding to a G7 declaration on terrorism which stated that: “Special attention should be paid to the threat of utilization of nuclear, biological and chemical materials, as well as toxic substances, for terrorist purposes”²⁷⁵, the JIC assessment thus included the following statement:

“There is no indication of any terrorist or other group showing interest in the use of nuclear, biological or chemical (NBC) materials against the UK. For a number of reasons, conventional weapons are likely to remain more attractive for terrorist purposes. But last year’s nerve agent attack in Tokyo will have heightened interest and, with ever more NBC information publicly

²⁷³ Ibid.

²⁷⁴ House of Commons Defence Committee (1996) *NATO's Southern Flank (Third report - Session 1995-96)*. London: The Stationery Office (28 March 1996)

²⁷⁵ G7 (1996) *Declaration on Terrorism*. Lyon, 27 June 1996. The G7 statement specifically mentions an attack on a Khobar Towers US military facility in Dhahran, Saudi Arabia. The Khobar Towers Bombing resulted in fatalities of 19 US military personnel, and wounded 515, including 240 US personnel. US Bureau of Public Affairs (2004) *Significant Terrorist Incidents: 1961-2003 A Brief Chronology*. Online source, no longer available, accessed October 2006

available, hoaxes threatening NBC use are likely to become more difficult to assess”²⁷⁶

Whilst the perception of threat increased substantially since the Tokyo Sarin attacks the JIC assessment shows that these concerns are mostly unfounded – or at least not based on evidence. Despite the possibly heightened interest in NBC agents, and ubiquitous information, there is no indication of interest from the side of known terrorist groups.

In March 1998 the Home Secretary Jack Straw made a statement in the House of Commons on biological terrorism, following questions over a plot to smuggle anthrax bacteria into the country by Iraqi agents.²⁷⁷ Straw’s statement in the Commons first dismisses the plot saying that “A number of countries have received intelligence about possible threats by Iraq to smuggle anthrax [...] [t]here is no evidence to suggest that any attempt has actually been made to smuggle anthrax into this country”²⁷⁸, but he goes on to outline, in vague terms, the governmental strategy on dealing with biological terrorism as a reassurance. In the absence of a published policy on strategy this allows a glimpse into the UK strategy at the time, however cursory it may be:

²⁷⁶ JIC, 4 July 1996, cited in: Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004)p. 31

²⁷⁷ Straw’s statement was provoked by reports that the UK government had received reports about the possibility of large quantities of *B. anthracis* being smuggled into the country by Iraqi agents and that the Government had released an intelligence bulletin; which was subsequently leaked. The bulletin, issued on the 18th March 1998 to police and customs authorities, stated: “Iraq may launch chemical and biological attack using materials disguised as harmless fluids. Could officers therefore be alert for any items which might contain harmful substances.” Intelligence bulletin cited in: The Sun (London), 24 Mar 1998, “Saddam’s anthrax in our duty frees”; the intelligence bulletin and threat alert was widely reported on in national and international media, however with varying degrees of alarm. Hartson, W. (1998) *What the papers said* The Independent (London) 29 March 1998

²⁷⁸ Straw, J. (1998) *Statement in the House of Commons*. 24 March 1998, col. 179: Hansard (Commons)

“we monitor the terrorist threat to the United Kingdom very closely, and we remain vigilant, taking all the necessary precautions. In doing so, we bear in mind the need both for prudence and for a measured, proportionate response that does not generate unnecessary public alarm”

“[the information about the anthrax plot] was assessed thoroughly alongside all other relevant information and our assessment of Iraqi intentions. In the light of all that, detailed guidance was subsequently given to operational staff at all our ports on the detection of any such attempted smuggling. Let me emphasise that this warning was a prudent, precautionary measure”²⁷⁹

He continues with the strategic priority: “[o]ur first aim must be to prevent terrorism, but, if necessary, we have the means to deal swiftly and expertly with its consequences.” Mr Straw stresses the review process of the plans:

“Our plans are well prepared and continually reviewed. They are tested often and at all levels. Our preparations cover all forms of terrorism, including chemical and biological threats.”²⁸⁰

Also drawing attention to the multilateral aspect of terrorism preparedness:

“As part of our European Union presidency, we organised an expert seminar on biological and chemical terrorism which, coincidentally, is being held in the south of England today.”²⁸¹

²⁷⁹ Ibid.

²⁸⁰ Ibid.

²⁸¹ Ibid. No further reference could be found to the expert seminar.

The Home Secretary's statement, despite being superficial and sweeping, allows some insight into the thinking on counter-terrorism. The statement indicates that prevention is a priority; that the plans are subject to continual review; and that preparations and responses to biological threats are treated as a subset of general counter-terrorism measures. It also appears that the terrorism threat is seen as an external threat – “we monitor the terrorist threat to the United Kingdom [...] guidance was subsequently given to operational staff at all our ports” – this, however, may be simply a function of the statement being prompted by possible Iraqi smuggling, rather than a domestic source.

In November 1998, following the US Embassy bombings in East Africa²⁸², the JIC assessment first mentions Osama bin Laden²⁸³ in relation to biological terrorism in:

“[Osama bin Laden] has a long-standing interest in the potential terrorist use of CBR [chemical, biological & radiological] materials, and recent intelligence suggests his ideas about using toxic materials are maturing and being developed in more detail [...] There is also secret

²⁸² On 7th August 1998 the US Embassies in Nairobi, Kenya and Dar es Salaam, Tanzania are attacked. The attacks kill 301, and injure more than 5000. Osama bin Laden is held responsible by the US Government for the attacks. US Bureau of Public Affairs (2004) *Significant Terrorist Incidents: 1961-2003 A Brief Chronology*. Online source, no longer available, accessed October 2006

²⁸³ The JIC specifically names Osama bin Laden (Usama bin Laden, UBL), but rather than meaning just the person the JIC often refers to him as a proxy for, or mastermind of, an organization – later to become known as Al-Qaeda – an ever changing network of groups, which fragments and fuses, and which follows a roughly similar ideology. See also: Sageman, M. (2008) *Leaderless jihad: terror networks in the twenty-first century*. Philadelphia: University of Pennsylvania Press; and Hoffman, B. (2008) The Myth of Grass-Roots Terrorism (Review of *Leaderless Jihad*). *Foreign Affairs*, 87(3), 133-138

reporting that he may have obtained some CB material”²⁸⁴

In an assessment from June 1999, the JIC reassesses the threat posed by Osama bin Laden’s organization (which remains nameless), stating that the organization:

“continues to seek chemical, biological, radiological and nuclear material and to develop a capability for its terrorist use. There is insufficient evidence to conclude that he has yet acquired radiological or nuclear material. In contrast, we now assess that his followers have access to some unspecified chemical or biological material. Some have received basic training in its use against individuals or in confined spaces. In April a leading Egyptian terrorist, apparently believing the information was already known to the authorities, told an Egyptian court that UBL [Osama bin Laden] had CB ‘weapons’ which he would use against US or Israeli targets”²⁸⁵

The JIC assessment refers to a court trial of one hundred and seven militants in the Egyptian Supreme Military Court. Amongst the defendants is the head of military operations of al-Jihad Ahmed Salama Mabruk. Mabruk told the London Al-Hayat newspaper, prior to his sentencing, that Jihad and/or the coalition of groups led by Osama bin Laden possessed chemical and biological weapons. The Jihad group “bought these chemical and biological weapons from eastern European countries and the former Soviet Union in the last two years”²⁸⁶. Egyptian security agencies report that defendants in the trial have confessed that:

²⁸⁴ JIC, 25 November 1998, cited in: Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004) p. 31

²⁸⁵ JIC, 9 June 1999, cited in Ibid. p. 32

²⁸⁶ AFP from Cairo, as in Arabia Online, 19 Apr 1999, “Islamic Jihad threatens chemical warfare”; DPA from Cairo, 1609 hrs CET 19 April 1999, “Egyptian militant says Bin

“elements loyal to Bin Ladin have obtained germ and biological weapons by post in return for a small sum [...] Factories in the former [Soviet bloc] eastern countries are supplying whoever wants them viruses causing deadly diseases, such as ebola and salmonella, without verifying the identity of the importer. Thus a member of the organization has managed to obtain an offer for the supply of samples of anthrax and other poisons from a factory in one of the East Asian countries”²⁸⁷

The information cited by the Egyptian security agencies from confessions of some of the trial defendants bears a striking resemblance to an undercover investigation by London Sunday Times reporters a year previously.²⁸⁸ The reporters claim to have had positive responses from two cell culture collections to requests for *Clostridium botulinum*, *Brucella spp.*, and *Bacillus anthracis*.²⁸⁹

The JIC summarises previous assessments on bioterrorism in July 1999, with an emerging emphasis on mass casualties and religious fundamentalism:

“Over the 1990s there has been a significant increase in the quantity and quality of intelligence that some terrorists are interested in CBRN – and particularly in chemical and biological – materials as weapons. The risk

Laden’s group possesses deadly weapons”, via Lexis-Nexis; AFP from Cairo, 0759 hrs GMT 20 April 1999, “Jihad obtained bio- chemical weapons from ex-Soviet bloc: Al-Hayat”, via Nexis.Buccianti Alexandre, Le Monde (Paris), 21 April 1999, “Des extrémistes musulmans deviendraient des armes chimiques et bactériologiques, selon un dirigeant islamiste”, via Lexis-Nexis.

²⁸⁷ Al-Sharq al-Awsat (London) website, 6 March 1999, translated from the Arabic in BBC-SWB (Summary of World Broadcasts), part 4, ME/D3477/MED, 8 March 1999, “Bin Ladin followers have ‘biological weapons’ capability, Egyptian court hears”, via Lexis-Nexis. The report quoted from parts of a 20,000-page report of investigations by Egyptian security agencies.

²⁸⁸ CBW Conventions Bulletin, June 1999, Issue 44, “News Chronology February-May 1999” p. 39

²⁸⁹ Leppard, D.& others (1998) *Insight: Need a biological war? Labs sell anthrax germs by mail order* Sunday Times (London) 22 November 1998, pp. p. 1, 8. The claim is not substantiated in so far as they did not receive any samples.

of a CBRN terrorist incident has risen, albeit from a low base. In part this increase reflects the rise of Islamic extremism and ethnic hatred as terrorist motivations: some of the terrorists thus motivated are less constrained by considerations such as public support, casualties among innocent bystanders, or the prospect of retaliation. It may also reflect the increasing availability of information about making and using CB materials, and the publicity attracted by major incidents and hoaxes. Whether the attacker's aim is political or economic blackmail, or severe disruption, society's vulnerability to terrorist attack from CB or radiological materials is high, exacerbated by the lack of a tried and tested CB counter-terrorist response in some countries."²⁹⁰

The JIC goes on to say that:

"There have been important developments in (Islamist extremist) terrorism. It has become clear that Usama Bin Laden has been seeking CBRN materials [...] His wealth permits him to fund procurement, training and experimentation to an extent unmatched by other terrorists [...] Given the quality and quantity of intelligence about his interest in CB materials, the length of time he has sought them, and the relative ease with which they can be made, we assess that he has by now acquired or made at least modest quantities of CB materials – even if their exact nature and effectiveness are unclear. The significance of his possession of CB materials is that, in contrast to other terrorists interested in CB, he wishes to target US, British and other interests worldwide. [...] That said, Bin Laden's attacks remain more likely to employ conventional weapons than CB materials".²⁹¹

Adding that for terrorism in general the situation has not changed significantly, and that these judgements will have to be validated by evidence:

²⁹⁰ JIC, 15 July 1999, cited in: Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004) p. 32

²⁹¹ JIC, 15 July 1999, cited in: Ibid. pp. 32

“[...] the indications of terrorist interest in CBRN materials have yet to be matched by a comparable amount of evidence about possession and intent to use CBRN. Most terrorists continue to favour conventional weapons, as easier to use, more reliable, safer and more controllable than CBRN materials”.²⁹²

The JIC assessment appears to increasingly lean towards mass casualties and “Islamic extremism”, in which Osama bin Laden’s aspirations feature prominently, although other threat sources were considered. Thus stating in January 2000: “Our assessment remains that [Osama bin Laden] has some toxic chemical or biological materials, and an understanding of their utility as terrorist weapons”²⁹³. Although assessments have ascribed possession, however vague, of CB materials to terrorists – mainly Osama bin Laden, but also others – the emphasis is on “interest” in CB materials.²⁹⁴

The Royal Society published a second report on biological weapons, entitled *Measures for controlling the threat from biological weapons*. This report is the result of a two day expert meeting held in May 1999 with the National Academy of Sciences (US), and the Académie des Sciences (France). The report, authored by 12 members of the Royal Society’s working group on BW, addresses the UK perspective of the biological weapons threat, albeit in less technical detail than the 1994 report (see above). The report notes that: “there is increasing concern about the possible use of BW because terrorists

²⁹² JIC, 15 July 1999, cited in: Ibid. p. 33

²⁹³ JIC, 12 January 2000, cited in Ibid. p. 33

²⁹⁴ An assessment from August 2000 states: “Some [Islamist extremist groups] are interested in exploring the use of chemical or biological materials as weapons. In the forefront is [Osama bin Laden]” JIC, 9 August 2000, cited in Ibid. p. 33

and poor nations seeking an alternative to nuclear arms may find them attractive”²⁹⁵ however,

“BW are potentially a serious threat, but mercifully the scale of their effectiveness against human populations in war and by terrorist attack has not been proven in practice. Observations from natural infectious disease indicate that BW are unlikely to have as devastating an effect on human populations as nuclear weapons”²⁹⁶ and “the main deleterious effect of a BW attack may be panic with consequent disruption of civilian services”²⁹⁷

The report advised that “a scientifically sound and realistic assessment of these effects should be made by a panel of government and independent scientists”²⁹⁸ the report goes on to explain what such an assessment should entail:

“[...] the number of different BW agents likely to be deployed by a particular perpetrator is not infinite, nor are the circumstances in which each might be deployed. Risk assessment should aim to determine:

- the agents that are most likely to be used by each probable aggressor country or known terrorist group;
- the means of delivery each might use;
- the probable effects of an attack with these agents and of the measures applied in response, even though, in the absence of hard data, estimates of the effects may be subject to uncertainty; and
- the probable intent of the attackers.

Such analyses might show that, in contrast to the many theoretical BW agents that could be listed, the number likely to be deployed in practice by each potential

²⁹⁵ Royal Society (2000) *Measures for controlling the threat from biological weapons*. London: Royal Society p.1

²⁹⁶ Ibid. p.1

²⁹⁷ Ibid. p.4

²⁹⁸ Ibid. p.4

aggressor would be sufficiently small to make the preparation of tailored contingency plans feasible.”²⁹⁹

The House of Commons Foreign Affairs Committee in a report on weapons of mass destruction³⁰⁰ describes the use of biological weapons by terrorists as being of “utmost concern” with “horrific potential” and illustrates this with the example that: “one hundred kilograms of anthrax released from the top of a tall building in a densely populated area could kill up to three million people.”³⁰¹

In July 2000 a cross government exercise is held over two days. Exercise Trump Card simulates nerve agent releases, one during festivities and a following one in the Underground system. The exercise is designed to test the response to a terrorist chemical attack in the capital – and involves 1,500 people from the Metropolitan Police, London Ambulance Service, Fire Brigade, Health Authorities, Hospital Trusts, Local Authorities, Chemical Incident Response Service, the Defence Evaluation and Research Agency (DERA) Porton Down and others take part.³⁰² Redacted evidence from the House of Commons Defence Committee suggests that the police tends to lead, but “A range of

²⁹⁹ Ibid. p.6

³⁰⁰ House of Commons - Foreign Affairs Committee (2000) *Eight Report: Weapons of Mass Destruction (Session 1999-2000 HC 407)*. London: The Stationery Office (2 August 2000)

³⁰¹ Ibid. This often repeated worst case scenario originates in a 1993 US Congressional Technology Assessment study. The scenario involved the release of 100kg of anthrax aerosol upwind of the Washington DC area, estimating that this would cause at least 130,000 deaths and possibly as many as 3 million. The report cites the FCO paper “UN Special Commission (UNSCOM)” issued on 4 February 1998 as source, but it does only cite the upper figure of 3 million fatalities, not the much lower figure from this worst case scenario.

³⁰² Martin, C. & B. Walsh (2000) The role of the health authority in responding to a deliberate release of a chemical agent. *Chemical Incident Report*, 18(October), pp 17-18

government agencies appropriate to particular scenarios [for which they have] have statutory responsibilities”³⁰³

The JIC is explicit about its assessment of threat from bioterrorism in January 2001 cautioning, in similar fashion to the Royal Society³⁰⁴, against exaggerating the threat:

“The actual threat does not match the media hype. Almost all the available intelligence refers to terrorist interest in CB materials, rather than to specific attack plans. [...] Terrorists interested in CB are generally those least constrained by public opinion or their members’ or supporters’ sensitivities. Their resources and targets tend to be abroad rather than in Britain, so the risk of attacks using toxic materials has always been greater overseas.

[Osama bin Laden] has sought CBRN materials for use as terrorist weapons [...] From his public statements and interviews it is clear that he believes it is legitimate to use them as weapons and his wealth has allowed him to fund procurement, experimentation and training. There is plentiful intelligence that this interest is sustained, mostly relating to toxic materials.

In 1999 he sought equipment for a chemical weapons lab in Afghanistan, and claimed already to have [...] experts working there”³⁰⁵

³⁰³ House of Commons - Defence Committee (2002) *Defence and Security in the UK (Sixth Report, Session 2001-02 HC 518-II)*. London: The Stationery Office (17 July 2002), Question 480-499, Brigadier Nick Houghton, 6 March 2002

³⁰⁴ “the threat from biological weapons must be taken seriously, but it is equally important not to cause undue alarm by exaggerating it.” Royal Society (2000) *Measures for controlling the threat from biological weapons*. London: Royal Society, p. v (Foreword)

³⁰⁵ JIC, 10 January 2001, cited in Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction, HC 898*. London: The Stationery Office (14 July 2004) p. 34

The Chief Medical Officer, writing about combating infectious disease and aspects of public health in 2005, states that prior to 11th September 2001 most RBC preparedness:

“included consideration of the use of such agents in warfare which could affect both troops and civilians; assessed the challenge of creating an infectious agent for deliberate release as an aerosol as technically very difficult; acknowledged the possibility of an attempt to infect or poison large numbers of people by the deliberate release of such agents but considered it unlikely to be successful.”³⁰⁶

The CMO continues by stating that the terrorist attacks in 11th September 2001 and the anthrax letters that followed that autumn “have led to revisiting of these assumptions”. According to the CMO the possibility of more extensive operations, absence of warnings, the terrorists’ disregard for personal safety or survival and possible multiple simultaneous releases “must now form part of the planning for countermeasures”

A Shock to the System – 11 September 2001

The events of 11 September 2001³⁰⁷ represent a major turning point in thinking about terrorism³⁰⁸; it “changed the calculus of the threat”³⁰⁹. Former

³⁰⁶ Department of Health - Chief Medical Officer (2002) *Getting ahead of the curve: a strategy for combating infectious diseases (including other aspects of health protection)*. London: Crown, 10 January 2002, pp.52

³⁰⁷ 2,985 people die after Al Qaeda operatives hijacked 4 planes; two were flown into the World Trade Center causing its collapse, 1 crashed into the Pentagon, and 1 crashed in a field in Shanksville, Pennsylvania. 9-11 Commission (2004) *The 9/11 Commission Report: Final Report of the National Commission on Terrorist Attacks Upon the United States* New York: W.W. Norton & Company

³⁰⁸ In addition to a whole raft of legislation enacted in the UK, organizational and institutional reconfigurations, research output on terrorism exploded, more than 150 books alone on terrorism were published in the first 12 months following 11 September

Prime Minister Tony Blair described the effect of 11 September in the following way:

“Straight after 9/11 [...] this is what really changed my perception of risk, the calculus of risk for me: if those people, inspired by this religious fanaticism could have killed 30,000, they would have. For those of us who dealt with terrorism from the IRA [...] [what] an organisation like the IRA were engaged in was terrorism directed towards a political purpose, maybe unjustified, but it was within a certain framework that you could understand. [...] after that time, my view was you could not take risks with this issue at all, and one dimension of it, because we were advised, obviously, that these people would use chemical or biological weapons or a nuclear device, if they could get hold of them – that completely changed our assessment of where the risks for security lay, and just so that we make this absolutely clear, this was not an American position, this was my position and the British position, very, very clearly, and so, from September 11 onwards...”³¹⁰

Following the attacks on the World Trade Center and the Pentagon, letters containing anthrax spores were sent to individuals in the US media and US Senate. Between 4th October 2001 and 21st November 2001 twenty two people were diagnosed with anthrax, half of them contracted the cutaneous form of the disease, the other half contracted the inhalational form of the disease, five of whom died, all others recovered. The powdered agent is said to be of “extraordinarily high quality”³¹¹, the perpetrator(s) remain unknown.³¹²

2001, roughly three books a week – a trend which has largely continued. Silke, A. (2004) *Research on terrorism: trends, achievements & failures*. London: Frank Cass, citing: Alexander, Y. (2002) *September 11: US Reactions and Responses*. Paper given at: ESRC Conference of the St Andrews/Southampton Research Project on the Domestic Management of Terrorist Attacks; Southampton, UK, 19-20 September 2002

³⁰⁹ Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004) p.34

³¹⁰ Blair, T. (2010) *Evidence given to Iraq Inquiry*. London: Iraq Inquiry, 29 January 2010

³¹¹ Matsumoto, G. (2003) Bioterrorism. Anthrax powder: state of the art? *Science*, 302(5650),

continued...

Approximately 32,000 persons started prophylactic treatment with antibiotics following potential exposure to *B. anthracis*, 5,000 of whom were advised to take a 60-day course of antibiotics.³¹³ In addition to the 22 victims, a further 45 people tested positive, but remained asymptomatic, and a further case was reported in a CDC lab technician who became infected during the investigation.³¹⁴ Parts of the US Senate building was closed and vacated for a number of months and the US postal system severely disrupted during decontamination. The anthrax letters – although their origin has not been unambiguously established nine years after their sending, and their actual consequences in terms of morbidity and mortality have been low – in

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³¹² It is widely held that the anthrax preparations have originated from within the US bio-defence programme, although the identity of the perpetrator is disputed and inconclusive. FBI investigations led to the indictment of Dr Bruce E Ivins, a research biologist at the US Army Medical Research Institute of Infectious Diseases, Fort Detrick. Ivins, about to be charged with sending the anthrax letters, apparently committed suicide. On 6 August 2008, the US Department of Justice announced that an indictment against Ivins had been prepared and that, with his death, the case was now in the process of being closed. See: CBW Conventions Bulletin (2008) *News Chronology*, 29 July 2008, Issue 81, December 2008; Hull, A. & others (2008) *Two Portraits of a Bioterror Suspect*. Washington Post, 28 September 2008; US Department of Justice (2008) *Transcript of Amerithrax Investigation Press Conference*. Washington, DC, 6 August 2008, posted at: <http://www.usdoj.gov/>; Court documents released to the press during the conference by the Department of Justice are posted at www.usdoj.gov/amerithrax. All accessed: July 2009.

³¹³ Wheelis, M. & M. Sugishima (2006) Terrorist use of biological weapons. In: *Deadly Cultures - Biological Weapons since 1945*, eds. Wheelis, M., L. Rózsa & M. Dando, Cambridge, Massachusetts and London, England: Harvard University Press, 284-303; Cole, L. A. (2003) *The anthrax letters: a medical detective story*. Washington, D.C.: Joseph Henry Press; and CDC (2001) From the Centers for Disease Control and Prevention. Investigation of bioterrorism-related anthrax and adverse events from antimicrobial prophylaxis. *Journal of the American Medical Association*, 286(20), 2536-7. Only a fraction of those who received the recommended sixty day course of antibiotics completed the post exposure treatment, because of unpleasant side effects of the treatment, since no reinfections occurred there was probably no infection in the first place. Interview with Stephen Morse, New York, 25th September 2006 & Eileen Choffnes, 5th October 2006.

³¹⁴ Cymet, T. C. & G. J. Kerkvliet (2004) Letters - What is the True Number of Victims of the Postal Anthrax Attack of 2001? *Journal of the American Osteopathic Association*, 104(11), 452

conjunction with the massive and seemingly random nature of the attacks of September 11 have had a dramatic impact on the policy discourse. The combined magnitude and novelty together with the close temporal association of the two events lead to a shift in the way terrorism was, and still is, perceived.

In October 2001 the Security Service (MI5) established a Counter-Terrorist Analysis Centre to handle and disseminate the increasing volume of terrorist intelligence in the aftermath of September 11. The centre includes representatives from relevant departments to co-ordinate intelligence gathering and sharing across Whitehall.³¹⁵ The centre provides regular risk assessments to departmental “customers”, who use the assessments to make strategic spending decisions.³¹⁶ The centre thus leads the multi agency response to CBRN attacks on a strategic level. This cross departmental centre was formally established as the Joint Terrorism Analysis Centre (JTAC) in June 2005.³¹⁷

³¹⁵ HM Government (2003) *Government Response to the Intelligence and Security Committee Inquiry into Intelligence, Assessments and Advice prior to the Terrorist Bombings on Bali 12 October 2002 (Cm 5765)*. London: The Stationery Office (February 2003)

³¹⁶ The risk assessment is conceptualised as consisting of a threat assessment of terrorist intent and capability, and a vulnerability assessment which entails a vague notion of vulnerability, resilience and impact. Cabinet Office (2004) *Government Reply to the Eighth Report From the House of Commons Science & Technology Select Committee, Session 2002-2003 HC 415-I (Cm 6108)*. London: The Stationery Office (January 2004)

³¹⁷ Intelligence and Security Committee (2003) *Annual Report 2002-2003 (Cm 5837)*. London: The Stationery Office (June 2003). The Director General of the Security Service comments: “a major structural development took place within the intelligence community with the creation of the Joint Terrorism Analysis Centre. This is a multi-agency body, for which I am responsible, established to bring together those involved across government in assessing and reporting threat intelligence. This is a positive example of the Agencies and Government’s response to the post-9/11 challenges.” Manningham-Buller, E. (2003) *Countering Terrorism: An international blueprint*. Lecture By The Director General Of The Security Service, Eliza Manningham-Buller, At The Royal United Services Institute (Rusi) Conference On “The Oversight Of Intelligence And

The Home Office set up a police training unit. The Police National CBRN Centre (PNCBRNC) was established in October 2001 at the Defence Nuclear Biological Chemical Centre, Winterbourne Gunner, Salisbury. The PNCBRNC delivers command training to ensure that police officers are trained in CBRN responses.³¹⁸ The centre leads the multi-agency preparations for responses to CBRN attacks on an operational and tactical level.

In November 2001 the Parliamentary Office on Science and Technology (POST) published a briefing note on bioterrorism.³¹⁹ The note cites two worst case scenarios. The first, taken from the 1970 WHO guidance *Health aspects of chemical and biological weapons*, outlines the expected casualties following a theoretical release of 50kg of anthrax spores from an aircraft over an urban population of 5 million people – 250,000 casualties, of which 100,000 would die without proper treatment. The second, taken from the 1993 US Congressional Technology Assessment study, a scenario involving release of 100kg of anthrax aerosol upwind of the Washington DC area, estimating that this would cause at least 130,000 deaths and possibly as many as 3 million. However, in conclusion the Briefing Note states:

“While the deliberate release of BW agents is a frightening prospect, it is important to keep the likely consequences in perspective. So far, the attacks in the US [anthrax letters] have led to few deaths, and only a handful of confirmed cases of infection. But they have led to disruption of the US Congress and postal service, and caused widespread alarm around the globe. While the prospect of a large scale release of a highly

Security", 17 June 2003

³¹⁸ House of Commons - Science and Technology Committee (2003) *The Scientific Response to Terrorism (Session 2002-03 HC 415-I & II Government's Response)*. London: The Stationery Office (6 November 2003)

³¹⁹ UK Parliamentary Office of Science and Technology (2001) *Bioterrorism (POSTnote 166)*. London: The Parliamentary Office of Science and Technology

contagious pathogen cannot be discounted, the evidence to date suggests that continued small-scale anthrax attacks targeted at individuals are unlikely to cause significant numbers of fatalities.”³²⁰

This briefing note is cited in a House of Commons Defence Committee report of 12 December 2001.³²¹ On the nature of the threat, and terrorism in general, the report states: “The position continues to be that there remains no intelligence of any specific threat to the UK at present”, qualifying this position:

“But the absence of intelligence about a specific threat is not the same as the absence of a threat. The government clearly believes that the general level of threat has increased.”³²²

The report’s authors conclude:

“although the government may not have intelligence of a specific threat, they are persuaded that the general level of threat to the UK is substantially greater than it was perceived to be prior to 11 September.”³²³

On examining biological weapons, citing Graham Pearson’s³²⁴ evidence:

“it is clear that biological weapons present the greatest danger today [...] as they are the easiest to acquire, have

³²⁰ Ibid.

³²¹ House of Commons - Defence Committee (2001) *The Threat from Terrorism (Session 2001-02 HC 348-1)*. London: The Stationery Office (18 December 2001)

³²² Ibid.

³²³ Ibid.

³²⁴ Professor Pearson was Director of the Ministry of Defence Chemical and Biological Defence Establishment at Porton Down from 1984 to 1995.

the weakest regimes [controlling them] and yet have effects comparable to nuclear weapons.”³²⁵

However, after briefly considering low casualties from historical episodes – accidental anthrax release in Sverdlovsk: 65,000 exposed, 68 reported deaths;³²⁶ US anthrax letters resulting in “just a handful deaths” – the report considers the evidence again:

“There seems little doubt that terrorist organisations could obtain the necessary materials for chemical, biological or radiological weapons [...] Biological agents may be more difficult to obtain or grow, but the international controls over them are weak.”³²⁷

Concluding on the possible use of biological weapons the report states:

“Although we have seen no evidence that either al Qaeda or other terrorist groups are actively planning to use chemical, biological and radiological weapons, we can see no reason to believe that people who are prepared to fly passenger planes into tower blocks would balk at using such weapons. The risk that they will do so cannot be ignored.”³²⁸

The same month, December 2001, in direct response to September 11 sees the rushed enactment of terrorism legislation to update and extend previous Acts.³²⁹ The *Anti-terrorism, Crime and Security Act 2001* (ATCSA)

³²⁵ House of Commons - Defence Committee (2001) *The Threat from Terrorism (Session 2001-02 HC 348-1)*. London: The Stationery Office (18 December 2001)

³²⁶ For further information about the release of aerosolised B. anthracis spores from a Soviet BW facility in Sverdlovsk (Ekaterinburg today), see: Guillemin, J. (1999) *Anthrax: The Investigation of a Deadly Outbreak*. London: University of California Press

³²⁷ House of Commons - Defence Committee (2001) *The Threat from Terrorism (Session 2001-02 HC 348-1)*. London: The Stationery Office (18 December 2001)

³²⁸ Ibid.

³²⁹ Most notably the *Terrorism Act 2000* (c.11), which includes the current definition of terrorism; it also amends the *Biological Weapons Act 1974* (c. 6), *Chemical Weapons Act 1996* (c. 6)

includes provisions on biosafety and biosecurity³³⁰ including an extensive list of pathogens and toxins – Schedule 5.³³¹ The list of pathogens and toxins contained in Schedule 5 comes under scrutiny during a House of Commons Science and Technology Committee inquiry into the Scientific Response to Terrorism. From the inquiry it emerged that the list of substances controlled under the ATCSA was originally taken from the Australia Group’s list of biological agents for export control³³²; however police counter terrorism officers³³³ who liaise with universities and commercial laboratories to implement the provisions of the ATCSA distribute a second, more extensive list, the so called “Salisbury list”. The Salisbury list was drawn up “by a group of experts involving the Security Service, DSTL (Porton Down), public health experts and HSE staff”.³³⁴ The list, although confidential, was distributed widely amongst laboratory health and safety officers. The use of two lists

³³⁰ Although there are no agreed definitions, biosafety and biosecurity can be summarised as is keeping people *safe* from pathogens (biosafety measures are concerned with unintentional exposures), and keeping pathogens *secure* from people (biosecurity measures are concerned with prevention of unauthorised access). House of Commons - Innovation, U., Science and Skills Committee, (2008) *Biosecurity in UK research laboratories (Session 2007-08 HC 360-1)*. London: The Stationery Office (16 June 2008)

³³¹ See also Chapter 3 “Concepts and Theory” *Anti-terrorism, Crime and Security Act 2001* (c. 24), as noted in that chapter the *Anti-terrorism, Crime and Security Act 2001* includes a definition of “Weapons of Mass Destruction” by proxy; Part 6 of the ATCS Act is entitled “Weapons of Mass Destruction”, underneath which amendments to the *Biological Weapons Act 1974* (c. 6), *Chemical Weapons Act 1996* (c. 6), as well as provisions relating to nuclear weapons are found. This is the first mention of the term “Weapons of Mass Destruction” in UK law, and may reflect the hasty drafting of the Act.

³³² For more information on the AG lists see: Mathews, R. J. (2004) The Development of the Australia Group Export Control Lists of Biological Pathogens, Toxins and Dual-use Equipment. *The CBW Conventions Bulletin*, (66), 1-4

³³³ The police unit liaising with laboratories to implement ATCSA 2001 is the National Counter Terrorism Security Office (NaCTSO), co-located with the Centre for the Protection of the National Infrastructure (CPNI), is funded by and reports to the Association of Chief Police Officers (ACPO).

³³⁴ House of Commons - Science and Technology Committee (2003) *The Scientific Response to Terrorism (Session 2002-03 HC 415-I & II Government's Response)*. London: The Stationery Office (6 November 2003), p.61. Citing written evidence from the Health and Safety Executive (HSE).

caused confusion. The Australia list, contained in Schedule 5, is a legal requirement; whilst the Salisbury list, distributed by police officers carries an expectation to be implemented in the laboratories. The Committee notes:

“The confusion over the emergence of a second list of agents not covered under the Act is unfortunate, however. The Government seems to be under the impression that it can have one list of agents laid down in the Act, yet enforce another list which is beyond the scrutiny of Parliament. We recommend that the Government decide which organisms it wishes to control and amend the Act accordingly”³³⁵

The government responds:

“When the Anti-Terrorism, Crime and Security Act 2001 (ATCSA) was drawn up it was decided to use the Australia Group List as the basis of Schedule 5. This was a familiar and logical starting point for this piece of UK counterterrorism legislation, and used in the absence of any other considered criteria. The Australia Group List primarily addressed State proliferation of chemical and biological weapons. A second list of agents (known internally as the Salisbury List) sought to identify those substances that were not captured by the Act but might be applicable in a terrorist context. The Salisbury List is currently not subject to enforcement under ATCSA, but a strengthening of protective security measures at sites handling substances on this List was taken forward effectively on a purely voluntary basis. The present situation in relation to the Anti-Terrorism Crime and Security Act is unsatisfactory and the Government is considering recommendations for extending the range of organisms that should be included in the legislation.”³³⁶

³³⁵ Ibid. p.61

³³⁶ Cabinet Office (2004) *Government Reply to the Eighth Report From the House of Commons Science & Technology Select Committee, Session 2002-2003 HC 415-I (Cm 6108)*. London: The Stationery Office (January 2004), p.29

The Science and Technology Committee's view on the list is echoed by a judicial review of the ATCSA "Some aspects of Part 7, which was subject to only very limited consultation, need to be urgently addressed."³³⁷ Schedule 5 was not amended until 2007.³³⁸ The modification of the Schedule introduces the Salisbury list to the Act. As a consequence of the modification "influenza viruses (pandemic strains)" were also added to Schedule 5.³³⁹

In April 2002, the Foreign and Commonwealth Office published a Green Paper entitled "*Strengthening the Biological and Toxin Weapons Convention: Countering the threat from biological weapons*".³⁴⁰ The objective of the Green Paper was, inter alia, to outline the threat posed by BW to international security, and thus states:

"For several years, especially in the United States, there has been significant public discussion of the threat posed by the possible terrorist use of biological agents. The threat is no longer theoretical. Although there have been previous recorded attempts of BW terrorism, the anthrax attacks in the United States, coming in the wake of the 11 September events demonstrated the inherent potential of such material to have massive psychological, political and economic/financial effects, as well causing illness or death, for relatively limited effort."³⁴¹

³³⁷ Privy Counsellors Review Committee (2003) *Anti-Terrorism, Crime and Security Act 2001 Review: Report (HC 100)*. London: The Stationery Office (18 December 2003), p. 75

³³⁸ The Part 7 of the Anti-terrorism, Crime and Security Act 2001 (Extension to Animal Pathogens) Order 2007 (No. 926), made 19 March 2007, entered into force 19 May 2007.

³³⁹ The Schedule 5 to the Anti-terrorism, Crime and Security Act 2001 (Modification) Order 2007 (No. 929), made 19 March 2007, entered into force 2 April 2007.

³⁴⁰ Foreign and Commonwealth Office (2002) *Strengthening the Biological and Toxin Weapons Convention: Countering the Threat from Biological Weapons (Cm 5484)*. London: The Stationery Office (April 2002)

³⁴¹ Ibid. p. 7

In June 2002, at the G8 Kananaskis Summit in Canada, the G8 launched the *Global Partnership Against the Spread of Weapons and Materials of Mass Destruction*. The G8 leaders' statement contains the following:

“the attacks of September 11 demonstrated that terrorists are prepared to use any means to cause terror and inflict appalling casualties on innocent people. We commit ourselves to prevent terrorists, or those that harbour them, from acquiring or developing nuclear, chemical, radiological and biological weapons; missiles; and related materials, equipment and technology.”³⁴²

This included six principles “to prevent terrorists, or those that harbour them, from gaining access to weapons or materials of mass destruction” and “Guidelines for New or Expanded Cooperation Projects”. The Chair’s statement includes the commitment “to raise up to US\$ 20 billion to support such projects over the next ten years.”³⁴³

On 24 September 2002, the UK Government publishes the controversial *Iraq’s Weapons of Mass Destruction: The Assessment of the British Government* dossier. This assessment builds the case for military action against Iraq, the dossier alleges, among other things, Iraq’s possession of biological and chemical weapons. The claims within the dossier turned out to be untrue, and thought to have been manipulated for political reasons, significantly harming the Government. The Butler report states unequivocally that the dossier was not explicitly intended to make a case for war. Butler is of the view that this broad document could support a range of policy options, and not intended to make the case for any particular course of action. The dossier does however, in

³⁴² G8 Leaders (2002) *Statement: The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction*. G8 Kananaskis Summit, 06 June, 2002

³⁴³ Ibid.

Butler's view, lack important caveats and warnings which should alert the reader to the limitations of the assessment. Butler comes to the conclusion that the dossier is a fair reflection of the judgements of past Joint Intelligence Committee assessments, with the exception of the 45 minute claim.³⁴⁴ Although the document itself does not make the case for military intervention it was still used as part of the justification – illustrating the threat posed – the document remains controversial.

In October 2002, the House of Commons Defence Committee published a special report on aspects of defence and security. The report requested: "Now there is a real threat of a CBRN attack on a scale not previously planned for, the Government must provide the additional resources needed [for ambulance and fire crews]." ³⁴⁵

The Government response is revealing in terms of not only the investment in personal protective equipment but also the attitude to the threat of CBRN:

"Additional resources have been made available for this purpose. DH [Department of Health] made available £5 million for procurement of personal protective equipment (PPE) and training in its use, and decontamination units for Ambulance Trusts and major accident and emergency hospitals throughout the UK. For large-scale incidents, DH has agreed a Memorandum of Understanding with the Fire Service to provide a decontamination service. DH has also been developing education and training programmes to improve

³⁴⁴ Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004)

³⁴⁵ House of Commons - Defence Committee (2002) *Seventh Special Report - Defence and Security in the UK, including Appendix (Session 2001-02, HC 1230)*. London: The Stationery Office (16 October 2002)

capability of NHS staff to respond to CBRN incidents. The Committee will be aware that a Home Office Police Training Unit has been established, co-located with the Defence NBC Centre at Winterbourne Gunner. Personnel from all the emergency services attend courses at this centre.

As part of the work to improve the UK's resilience to a range of threats, including CBRN related incidents, a cross-government decontamination strategy is being prepared. One of the work streams within the strategy is to produce agreed high level guidance on procedures for decontamination. The guidance will specify the roles and responsibilities of the emergency services, local authorities and others and is intended to provide a common set of principles, establish common terminology, and a shared and agreed understanding of stakeholders' roles and responsibilities.

The Government does not accept that there is 'a real threat of a CBRN attack on a scale not previously planned for'. But the Government is equally aware that there is always room for improvement in the state of preparedness and a great deal of work has already been undertaken to enhance the existing mechanisms. This work will continue."³⁴⁶

In December 2002 the House of Commons Foreign Affairs Committee published a report entitled *The Biological Weapons Green Paper*³⁴⁷ in response to a Foreign and Commonwealth Office Green Paper published in April of the same year.³⁴⁸ The FAC's paper contains an indication of government's position on the biological weapons threat:

³⁴⁶ Ibid.

³⁴⁷ House of Commons - Foreign Affairs Committee (2002) *Biological Weapons Green Paper (Session 2001-02 HC 150 & HC 1248-I)*. London: The Stationery Office (11 December 2002)

³⁴⁸ Foreign and Commonwealth Office (2002) *Strengthening the Biological and Toxin Weapons Convention: Countering the Threat from Biological Weapons (Cm 5484)*. London: The Stationery Office (April 2002)

“Although none of the mass casualty terrorist attacks of the recent past has involved biological weapons, and although the Government assesses that none of the terrorist groups threatening the United Kingdom has in fact succeeded in obtaining biological weapons, bio-terrorism remains a possibility which must be addressed with the utmost seriousness”³⁴⁹

The report continues with repeating an assessment from the earlier Foreign and Commonwealth Office Green Paper:

“the anthrax attacks which took place in the United States at the end of 2001 “demonstrated the inherent potential of such material to have massive psychological, political and economic/financial effects, as well as causing illness or death, for relatively little effort” ”³⁵⁰

From September 2002 onwards the UK government was engaged in drafting the national counter-terrorism strategy which came to be known as CONTEST. The preparation of CONTEST was headed by Sir David Omand, the outgoing Permanent Secretary in the Home Office, when he became the first Permanent Secretary and Security Intelligence Co-ordinator in the Cabinet Office. The purpose of CONTEST was set in the context of 9/11 and the ensuing ‘quick fixes’ in the UK and the realisation that an over-arching strategy was needed. CONTEST was launched sometime in early 2003, but made public only in July 2006. The strategy is law-enforcement driven, with an emphasis on Islamic fundamentalist ideologies, which later permuted to encompass concepts such as counter-radicalisation and preventing “terrorism by tackling its causes ... to diminish support for terrorists by influencing social and

³⁴⁹ House of Commons - Foreign Affairs Committee (2002) *Biological Weapons Green Paper (Session 2001-02 HC 150 & HC 1248-I)*. London: The Stationery Office (11 December 2002), paragraph 6, p. 8

³⁵⁰ Ibid. paragraph 6, p. 8 citing the Green Paper: Foreign and Commonwealth Office (2002) *Strengthening the Biological and Toxin Weapons Convention: Countering the Threat from Biological Weapons (Cm 5484)*. London: The Stationery Office (April 2002), paragraph 15

economic issues.”³⁵¹ The underlying logic is engendered in its four pillars, the four Ps – Prepare, Protect, Prevent, and Pursue. It aimed, and still aims, to ‘join up’ the counter-terrorism approach across government departments, and to change the mind set between law enforcement and the intelligence community from competition to co-operation.³⁵² The strategy recognises a long history of terrorism in the UK, but according to one senior law enforcement official its “greatest achievement is the recognition of a changed threat from the IRA – unconventional weaponry, mass-casualty and a lack of political motive” on behalf of the ‘terrorists’.³⁵³

Augmenting the perception of threat

On 5 January 2003, Police raid a flat in North Green in London.³⁵⁴ Police recovered castor beans, various solvents, crude recipes and apple and cherry

³⁵¹ Wintour, P. (2005) *Counter-terrorism strategy comes under fire* Guardian (London) 24 October 2005. This article describes a leaked government memorandum from which the quote is taken. The article describes a different origin and process of “project CONTEST” than that described here.

³⁵² International Institute for Strategic Studies (IISS), London, 8th July 2008. “CONTEST after 6 years” meeting held under Chatham House rule.

³⁵³ Ibid.

³⁵⁴ From written evidence provided by MI5 Director-General Elizabeth Manningham-Buller for the House of Lords hearing on the admissibility of evidence obtained through torture it emerged that information about the plot was obtained from so called “detainee reporting” of Mohammed Meguerba to an Algerian liaison who passed on information on 31st December 2002 to MI5. The DG reported that “they had arrested Meguerba and that he had told them of a plot to use a fatal poison in London within ‘the next few days’”. Twice more information about the plot was passed on, on 2nd January 2003 a “description of the plot and, importantly, a detailed description of where the flat was located in which Meguerba said the poison could be found.” On 8th January 2003, three days after the raid, with further information about the plot and the address was passed on. “Prior to the Meguerba reporting the plan to produce ricin had not been discovered [...] The reporting required urgent operational action and was also relied upon” The DG used this example to show that “detainee reporting [possibly involving torture] can be accurate and may enable lives to be saved”. The statement by the DG was obtained by Channel 4, available via the blog of Craig Murray (craigmurray.org.uk), and is widely reported on, for example: BBC News – Online (2005) *MI5's 'torture' evidence revealed* 21

pips, allegedly for the production of ricin, cyanide and several other poisons. Initial tests were positive for ricin. The Home Secretary later explained the situation in the House of Commons:

“Following the police raid on 5 January 2003, a pestle and mortar was found in the flat on 6 January 2003 and sent for analysis. An e-mail sent at 06:02 am on 7 January 2003 from the Terrorism and Protection Unit (TPU) to the Home Secretary’s Office confirmed a notification received earlier that morning (no time, medium, source or recipient recorded) that the powder found inside the mortar was ricin – enough for one lethal dose.”³⁵⁵

On 7 January 2003, in the immediate aftermath of the raid the Chief Medical Officer of the Department of Health, Pat Troop, circulated a letter nationally to health professionals, stating that:

“A quantity of material and items of equipment were found at a residential premises [sic] in Wood Green, North London where one of the men was arrested. This material has been analysed at the Defence Science and Technology Laboratories at Porton Down. A small amount of the material recovered from the Wood Green premises has tested positive for the presence of ricin poison.”³⁵⁶

Following this letter, Troop issued a joint statement with Metropolitan Police Assistant Commissioner David Veness repeating the announcement.³⁵⁷

October 2005.

³⁵⁵ Clarke, C. (2005) *Kamel Bourgass*. 31 October, vol. 438, part 56, col. 771W: Hansard (Commons)

³⁵⁶ Troop, P. (2003) *Concerns over ricin in the environment*. Deputy Chief Medical Officer, Department of Health, Ref: CEM/CMO/2003/1, 7 January 2003

³⁵⁷ Veness, D. & P. Troop (2003) *Bioterrorism Alert - Ricin poison in the environment*. Joint Statement Metropolitan Police & Deputy Chief Medical Officer, 7 January 2003;; this joint statement, also containing the section quoted from the previous communication, has been referred to weeks and months afterwards, despite DSTL at Porton Down found

continued...

Prime Minister Blair, on the day following the arrests, said that the threat of international terrorism is “present and real and with us now – and its potential is huge” and explicitly references the ricin plot.³⁵⁸ The ensuing weeks after the raid saw a total of 29 people arrested in connection with the ricin plot, 8 of whom were charged. In September 2004 five stand trial, only Kamal Bourgass is convicted of “conspiracy to cause a public nuisance by the use of poisons and/or explosives to cause disruption, fear or injury”.³⁵⁹ During the trial it transpired that the initial test during the raid was a false positive. After the trial, in September 2004, Duncan Campbell, an expert witness for the defence, wrote an account of the trial in the Guardian:

“It is true that when the team from Porton Down entered the Wood Green flat in January 2003, their field equipment registered the presence of ricin. [...] A few days later in the lab, Dr Martin Pearce, head of the Biological Weapons Identification Group, found that there was no ricin. But when this result was passed to London, the message reportedly said the opposite [...]”³⁶⁰

the initial field sample to be a false positive on this day, see for example: Prime Minister’s Official Spokesman (2003) *Press Briefing*. Number 10 Downing Street, 30 January 2003

³⁵⁸ The statement by the Prime Minister was made during a keynote address on foreign policy at an unusual conference of British Ambassadors. BBC News – Online (2003) *Blair warning over terror threat* 7 January 2003

³⁵⁹ A further two, Mouloud Sihali and David Aissa Khalef, were convicted of possessing false passports. All others were cleared after the Crown Prosecution Service (CPS) decided not to retrial defendants Samir Asli, Khalid Alwerfeli, Mouloud Bouhrama and Kamel Merzoug in a second ricin conspiracy trial. The CPS also decided not to retrial Bourgass on a charge of conspiracy to commit murder, Bourgass was already serving a life sentence for the murder of PC Stephen Oakes. BBC News – Online (2005) *The ricin case timeline* 13 April 2005; BBC News – Online (2005) *Questions over ricin conspiracy* 13 April 2005; Osborne, P. (2006) *The use and abuse of Terror*. London: Centre for Policy Studies; & Dodd, V. (2005) *Doubts grow over al-Qaida link in ricin plot* Guardian (London) 16 April 2005

³⁶⁰ Campbell, D. (2005) *The ricin ring that never was* Guardian (London) 14 April 2005

In the House of Commons, 7 June 2005, the Solicitor-General is asked why the Crown Prosecution Service withdrew charges against Bourgass and the other defendants of conspiring to make chemical and biological weapons and substituted conspiracy to cause a public nuisance. The Solicitor-General replied:

“I am advised that the initial charges of conspiracy to manufacture chemical weapons were based upon preliminary indications that traces of ricin were present on articles recovered during searches made of premises occupied by Mr Kamel Bourgass and others. However, it was later confirmed by scientists from Porton Down that the articles did not contain such traces. In any event, upon a full review of the case papers it was concluded that other offences properly reflected the totality of the alleged offending behaviour. Charges of conspiracy to murder and to cause a public nuisance were therefore substituted.”³⁶¹

On 27 June 2005, in the House of Commons, Home Secretary Charles Clarke was asked about the statements made about finding ricin in north London. He replied:

“An initial test conducted by Dstl Porton Down on 6 January 2003 on an exhibit taken by police from the flat occupied by Kamal Bourgass gave an apparent positive result for ricin. However, confirmatory tests which were conducted throughout the period from 7 January 2003 to 28 January 2003 failed to detect the presence of ricin [...]

The Prosecuting Counsel (Mr. Sweeney QC), Crown Prosecution Service, was verbally informed of the ricin test result at a case conference on 20 March, 2003 by Dstl. The Metropolitan Police Anti-Terrorist Branch was also represented at the meeting where the information

³⁶¹ Hansard (2005) *Solicitor-General Mike O'Brian: Kamel Bourgass*. 7 June, vol. 434, part 82, col. 458W: Hansard (Commons)

was provided. The result was also provided in a written statement which was made available to the Crown Prosecution Service and the metropolitan police at that time.

We do not have a record of the date this information was passed from the police to the Home Office and subsequently to Ministers.”³⁶²

A Ministry of Defence spokesperson said that the delay in relaying the information was caused by “a breakdown in communications” between Porton Down and the Home Office.³⁶³ This breakdown in communications and subsequent delay created the persistent image of a UK poison cell, with far reaching, international consequences. Three weeks after the raid, 2 February 2003, US Secretary of State Colin Powell refers to the “Ricin Plot” in a speech to the UN Security Council, whilst building the case for military action against Iraq.³⁶⁴ A day after Powell’s UN address, addressing parliament, Blair stated that in the context of Iraq:

³⁶² Clarke, C. (2005) *Kamel Bourgass*. 31 October, vol. 438, part 56, col. 771W: Hansard (Commons)

³⁶³ BBC News – Online (2005) *Ricin results not told to police* 15 September 2005

³⁶⁴ In a now infamous speech US Secretary of State Colin Powell addresses the Security Council with a presentation on Iraq’s alleged biological and chemical weapons programme. He states: “There can be no doubt that Saddam Hussein has biological weapons and the capability to rapidly produce more, many more. And he has the ability to dispense these lethal poisons and diseases in ways that can cause massive death and destruction.” Further, he links various groups and alleged plots to Iraq and Al-Qaeda operating in Iraq, he says: “what I want to bring to your attention today is the potentially much more sinister nexus between Iraq and the Al Qaida terrorist network, a nexus that combines classic terrorist organizations and modern methods of murder” [...] “Zarqawi, a Palestinian born in Jordan, fought in the Afghan war more than a decade ago. Returning to Afghanistan in 2000, he oversaw a terrorist training camp. One of his specialities and one of the specialties of this camp is poisons. When our coalition ousted the Taliban, the Zarqaqi network helped establish another poison and explosive training center camp. And this camp is located in north eastern Iraq [...] The network is teaching its operatives how to produce ricin and other poisons [...] We know these affiliates are connected to Zarqawi because they remain even today in regular contact with his direct subordinates, including the poison cell plotters [in the UK, Spain, France, and possibly

“Over the past few weeks, we have seen powerful evidence of the continuing terrorist threat: the suspected ricin plot in London and Manchester; al-Qaeda experiments in Afghanistan to develop chemical, biological and radiological weapons; the arrests of those linked to al-Qaeda in Spain and France; and further arrests just a few days ago in Italy.

What is more, many of these arrests show the terrorist groups actively seeking to use chemical or biological means to cause as much death and injury and suffering as they can. We know too from 11 September that these terrorists have no demands that could ever be negotiated upon, no constraint in terms of finance and numbers to carry out terrorist acts, and no compunction in taking human life.”³⁶⁵

The way the plot was initially perceived, and the way it slotted into the threat narrative “not if but when” may have augmented that position. Later correction of the information changed little, as the persistence of the “ricin plot” shows.³⁶⁶ Furthermore, despite the delusion of grandeur, small scale and

Italy]”. Four of his 45 slides featured the “UK Poison Cell”. Iraq was invaded on 20 March 2003. Most of Powell’s statements, amongst these are the mobile biological weapons labs and the UK ricin plot, have now been discredited and Powell himself has stated that he regretted making the speech. Powell, C. (2003) *Transcript of presentation to UN Security Council, 5 Feb 2003*. US Department of State, Office of the Spokesman, 5 February 2003, available at: <http://www.whitehouse.gov>; and Weisman, S. R. (2005) *Powell Calls His U.N. Speech a Lasting Blot on His Record* The New York Times 9 September 2005.

³⁶⁵ Blair, T. (2003) *Iraq*. 3 February, vol. 399, part 340, col. 22-3: Hansard (Commons). Blair mentions “the suspected ricin plot in London and Manchester” – some of the suspects were arrested in Manchester after the raid in North London. During the arrest in Manchester a tussle between police and suspects results in the fatal stabbing of PC Stephen Oakes by Bourgass.

³⁶⁶ For example: On 13 April 2005, following the court trial of the plotters, and two and a quarter years after the raid, Deputy Assistant Commissioner Peter Clarke, head of the Metropolitan Police Anti-Terrorist Branch said that “It would be hard to underestimate the fear and disruption this plot could have caused across the country. The public have been spared from a real and deadly threat.” Metropolitan Police Service News Bulletin (2005) *Man convicted of plotting to manufacture homemade poisons and explosives*. 13 April 2005. And, in January 2007, more than four years after the raid in North London, during a Westminster Hall Debate Conservative MP Greg Hands, talking about radicalisation, admissibility of intercept evidence and radical cleric Abu Hamza,

continued...

primitive nature of the plotter's operation, there was an interest in and intent to use unconventional weapons. This intent, aspirational rather than operational, does not equate capability but has kept this story alive.

On 17 June 2003, more than four months after the identification of the false positive sample, the head of MI5, Dame Eliza Manningham-Buller, says the following:

"we are faced with the realistic possibility of some form of unconventional attack. That could include a chemical, biological, radiological or nuclear attack. Sadly, given the widespread proliferation of the technical knowledge to construct these weapons, it will be only a matter of time before a crude version of a CBRN attack is launched at a major Western city.

The discovery of traces of ricin in the UK demonstrates that interest in unconventional weapons. But before we become unduly alarmist it would be worth noting that the bomb and the suicide bomber remain the most effective tool in the terrorist arsenal."³⁶⁷

2003 was a significant and turbulent year for all things WMD and events relating to, and impacting upon, bioterrorism policy in the UK. "Ricin plots" in London and Paris (findings of "ricin" in Paris at Gare de Lyon in March 2003 were linked to al Qaeda, Chechen rebels and Iraq. The find turned out to be ground barley and wheat);³⁶⁸ the US led invasion, and subsequent regime change, in Iraq justified by claims that Iraq operated a WMD programme and

mentions "the police killer and ricin poison plotter, Kamel Bourgass..." Hands, G. (2007) *Abu Hamza*. 31 January, vol. 456, part 37, col. 129 WH: Hansard (Commons)

³⁶⁷ Manningham-Buller, E "Countering terrorism: an international blueprint" Lecture at RUSI, 17 June 2003. Reprinted in Manningham-Buller, E. (2003) *The safety of the realm in retrospect and prospect*. *RUSI Journal*, 148(4), 8-12, p. 10

³⁶⁸ The CBW Conventions Bulletin, June 2003, Issue 60, "News Chronology February-April 2003", entry for 17 March 2003, p. 39

the possibility that Iraq may be supplying terrorists with CB material;³⁶⁹ the announcement of the Proliferation Security Initiative (PSI) by US President Bush in May to stem the flow of WMD material in response to the inability, under international law, to interdict a North Korean shipment of missiles to the Yemen, but which is more widely framed as a global effort to stop trafficking of WMD related materials to and from states and non-state actors of proliferation concern;³⁷⁰ and Libya's decision to rollback and renounce its weapons of mass destruction programme.³⁷¹

The House of Commons Science and Technology Select Committee published a report in November 2003 entitled *The Scientific Response to Terrorism*.³⁷² The committee set the following remit for the inquiry:

“to determine how science and technology can be harnessed to develop countermeasures to chemical, biological, radiological and nuclear (CBRN) devices employed by terrorists, how science and technology is

³⁶⁹ See, for example: House of Commons - Foreign Affairs Committee (2003) *The Decision to go to War in Iraq (Session 2002-03 HC 813-1)*. London: The Stationery Office (7 July 2003); & Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction, HC 898*. London: The Stationery Office (14 July 2004)

³⁷⁰ Bush, G. W. (2003) *Remarks by the President to the people of Poland*. Krakow, Poland: US, White House, Office of the Press Secretary, 31 May 2003; Weiner, R. (2003) *Proliferation Security Initiative to Stem Flow of WMD Material*. James Martin Center for Nonproliferation Studies (CNS), 16 July; see also: US Department of State – Proliferation Security Initiative <http://www.state.gov/t/isn/c10390.htm>; at its inception 11 countries participated in the PSI, as of October 2009 more than 90 countries support the initiative.

³⁷¹ BBC News – Online (2003) *Libya hailed for renouncing WMD* 20 December 2003; Tucker, J. B. (2009) The Rollback of Libya's Chemical Weapons Program. *Nonproliferation Review*, 16(3), 363-84

³⁷² The committee took evidence from February 2003 until June 2003, hearing oral evidence in six sessions, receiving 45 items of written evidence, including confidential memoranda and private sessions because some of the evidence was deemed to be sensitive. The committee sought to what extent science and technology was contributing to the UK terrorism response. The committee decided to focus on, curiously named area of “conventional attacks employing CBRN agents”. House of Commons - Science and Technology Committee (2003) *The Scientific Response to Terrorism (Session 2002-03 HC 415-I & II Government's Response)*. London: The Stationery Office (6 November 2003)

informing the response to terrorism and what measures are required to discourage the use of science and technology to develop such weapons.”³⁷³

The evidence gathered in six sessions covered: medical and health response; government research; research security and conduct of scientists; protection of food and water supplies, fire service response; and the response of the Home Office and the Department of Health.

The evidence gathering sessions of the committee led to sharp exchanges between the S&T Committee and the Government over access and approaches. The committee said that:

“The Home Secretary has been unnecessarily sensitive about this inquiry. It is perplexing and disappointing that he took steps, belatedly, to prevent us hearing from certain witnesses from his department and that he apparently sought to instil this uncooperative attitude in other Departments”³⁷⁴

The committee’s sharp tones led to the government rejecting a number of the recommendations outright. Responding to the S&T Committee report Home Office Minister Beverley Hughes said:

“The Government and the Home Secretary have a duty to protect secret material, a duty we take very seriously. We reject entirely the suggestion that the Government is being less open than it need be or that fear of alarming the public is putting a brake on improving protection. During the inquiry, a disagreement developed between several Government departments and the STC on the remit of this investigation and the access that the Committee should be given to sensitive material [...] an

³⁷³ Ibid. p. 3

³⁷⁴ Ibid. p. 83. The report explains specific instances of “problems with the Government during the course of the inquiry” (p. 70).

agreement was reached that the Committee would avoid straying beyond its remit in future [...] We remain of our view that the STC is not the appropriate select committee to take on a broad scrutiny role when it comes to access to top secret material.”³⁷⁵

During 2004 two prominent reports were published – the Hutton Report and the Butler Report, both investigate different aspects of the circumstances and evidence which led to the invasion of Iraq in 2003.³⁷⁶ What emerged from these inquiries, as well as the Chilcot Inquiry³⁷⁷, is that the war in Iraq was motivated by a number of factors: (i) a perceived threat from WMD, including biological weapons, (ii) a claimed potential propensity of the Iraqi regime to pass these weapons onto non-state actors, (iii) continuous defiance of the UN Security Council resolutions, and by extension of the international community. The threat of “weapons of mass destruction” and biological weapons in particular, as well as, to a certain extent, the potential transfer of weapon systems to terrorists, feature prominently in the justifications for military action against Iraq. Despite this apparent overlap with the subject under investigation here, there are incisive differences, the most notable being that the military intervention is a matter of foreign policy, on which grounds an in depth discussion of the military action against Iraq has been excluded here. However, the inquiries, the Butler report in particular, shed some light on the

³⁷⁵ Home Office (2003) *Press Release: Response To Science & Technology Committee Report: 'The Scientific Response To Terrorism'*. 6 November 2003

³⁷⁶ Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004), & Lord Hutton (2004) *Report of the Inquiry into the Circumstances Surrounding the Death of Dr David Kelly CMG* (HC 247). London: The Stationery Office (28 January 2004)

³⁷⁷ The Chilcot Inquiry, or Iraq Inquiry, was announced on 15th June 2009. This inquiry by a committee of Privy Counsellors considers the period from the summer of 2001 to the end of July 2009, including the run-up to the conflict in Iraq, the military action and its aftermath. The Inquiry is still on-going at the time of writing.

inner workings of the intelligence machinery and other aspects pertinent to this discussion, as noted in various parts of this dissertation.

The Butler report criticised the reliability of the intelligence used for making a case for the military action, including the 'high proportion' of human intelligence sources, weaknesses in the way MI6 carried out its checks on sources, and third hand reporting of information about Iraqi chemical and biological weapons. The report concluded that the decision to go to war was not so much intelligence led but a shift in the policy following 11th September 2001, rather than the pace of Iraq's weapons programmes. The report further states that:

“in translating material from JIC assessments into the dossier, warnings were lost about the limited intelligence base on which some aspects of these assessments were being made [...] judgements in the dossier went to (although not beyond) the outer limits of the intelligence available”³⁷⁸

It should be noted that the removal of cautionary language, which indicated the limitations of the provided analysis, may yield a different representation of a threat. However, the Butler inquiry found “that the original intelligence material was correctly reported in JIC assessments”, with the exception of the 45 minute claim and

“that the reliability of the original intelligence reports was fairly represented by the use of accompanying qualifications [and found] no evidence of deliberate distortion or of culpable negligence [...] in general that

³⁷⁸ Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004), p.128

the intelligence community made good use of the technical expertise available to the Government”³⁷⁹

However, Butler also took exception at the informal style of decision making process, especially for decisions on “vital matters of war and peace”: the inquiry committee stated that it was:

“concerned that the informality and circumscribed character of the Government’s procedures which we [the inquiry] saw in the context of policy-making towards Iraq risks reducing the scope for informed collective political judgement. Such risks are particularly significant in a field like the subject of our Review, where hard facts are inherently difficult to come by and the quality of judgement is accordingly all the more important.”³⁸⁰

The width and breadth of both inquiries into the use of intelligence, technical and scientific expertise and the workings of the government in terms of threat assessment make these inquiries significant documents. It is however unclear how much of the insight into these processes are generalizable to other areas of government, policy, procedures and intelligence – away from the peculiarities of the decision to go to war with Iraq in 2003, and in particular the difference between a foreign policy process and a domestic counter-terrorism policy process.

On 28th April 2004 the Security Council unanimously adopted Resolution 1540.³⁸¹ The resolution focuses on non-state actors as “sources of threat and as sources of technological capabilities”.³⁸² The resolution obliges states to:

³⁷⁹ Ibid. p.110

³⁸⁰ Ibid. p. 148

³⁸¹ UNSCR (2004) *Resolution 1540*. Adopted by the Security Council at its 4956th meeting:

“adopt and enforce appropriate effective laws which prohibit any non-state actor to manufacture, acquire, possess, develop, transport, transfer or use nuclear, chemical or biological weapons and their means of delivery, in particular for terrorist purposes”³⁸³

The resolution defines a non-State actor as an “individual or entity, not acting under the lawful authority of any State in conducting activities which come within the scope of this resolution.”³⁸⁴ The resolution imposes binding obligations on all states.

On 24 February 2004 CIA Director George Tenet presented the annual threat assessment to Congress. In his testimony before the Senate Select Committee on Intelligence he stated:

“I have consistently warned this committee of al-Qaida’s interest in chemical, biological, radiological and nuclear weapons. Acquiring these remains a ‘religious obligation’ in Bin Ladin’s eyes, and al-Qaida and more than two dozen other terrorist groups are pursuing CBRN materials. We particularly see a heightened risk of poison attacks. Contemplated delivery methods to date have been simple but this may change as non-al-Qaida groups share information on more sophisticated methods and tactics. Over the last year, we’ve also seen an increase in the threat of more sophisticated CBRN. For this reason we take very seriously the threat of a CBRN attack. Extremists have widely disseminated assembly instructions for an improvised chemical weapon using common materials that could cause a large numbers of casualties in a crowded, enclosed area.

S/RES/1540 (2004), 28 April 2004

³⁸² McLeish, C. & P. Nightingale (2007) Biosecurity, bioterrorism and the governance of science: The increasing convergence of science and security policy. *Research Policy*, 36, 1635-1654

³⁸³ UNSCR (2004) *Resolution 1540*. Adopted by the Security Council at its 4956th meeting: S/RES/1540 (2004), 28 April 2004

³⁸⁴ Ibid. & Kellman, B. (2004) Criminalization and control of WMD proliferation: The Security Council acts. *Nonproliferation Review*, 11(2), 142-161

Although gaps in our understanding remain, we see al-Qaida program to produce anthrax as one of the most immediate terrorist CBRN threats we are likely to face. Al-Qaida continues to pursue its strategic goal of obtaining a nuclear capability. It remains interested in dirty bombs. Terrorist documents contain accurate views of how such weapons would be used.”³⁸⁵

On 11th March 2004 ten bombs exploded on four commuter trains in a co-ordinated attack in Madrid. 191 were killed, 1800 injured. This is the first large scale terrorist attack since the 11th September 2001.³⁸⁶

Nineteen days later, on 30 March 2004, with heightened awareness of terrorism following the Madrid bombing seven men were arrested in West Sussex as part of Operation Crevise. Alleged to have plotted attacks on the Bluewater shopping centre in Kent and the Ministry of Sound nightclub in London they had sourced more than 600kg of ammonium nitrate fertilizer, the plot is thus known as the “Fertilizer bomb plot”. Five of the seven were convicted of terrorism offences in April 2007.³⁸⁷

³⁸⁵ Tenet, G. J. (2004) *Testimony of Director of Central Intelligence: The Worldwide Threat 2004: Challenges in a Changing Global Context*. Senate Select Committee on Intelligence (24 February 2004)

³⁸⁶ The Spanish government assigned responsibility to the Basque separatist organization Euskadi Ta Askatasuna (ETA) in the immediate aftermath of the attack, despite evidence of Islamist involvement. Blaming ETA was seen as a political move by the incumbent and, at the time, poll leading Partido Popular (PP). Islamist involvement would have been perceived as a consequence of the government’s involvement in military action in Iraq. Three days after the attack PP lost the general election, despite leading in the polls to the socialist and anti-war Partido Socialista Obrero Español (PSOE). The attacks and the handling by the government are thought to have influenced voters’ behaviour at the general election dramatically and changed the outcome of the election. The perpetrators were Moroccan nationals, with a fundamental islamist motive, but are thought not to have had direct links to Al-Qaeda. Hamilos, P. (2007) *Mass murderers jailed for 40 years as judge delivers verdicts on Spain's 9/11* Guardian (London) 1 November 2007; & Nash, E. (2006) *Madrid bombers 'were inspired by Bin Laden address'* The Independent (London) 7 November 2006

³⁸⁷ BBC News – Online (2007) *Fertiliser bomb plot: The story* (Chris Summers & Dominic

On the 22nd April 2004 Members of Parliament debated security measures in the House of Commons, mainly the permanent installation of a security screen between the chamber and the visitors' gallery in the House of Commons. A temporary screen had been installed a few weeks before the debate following advice given by MI5. This remarkable debate reveals a number of interesting perceptions about terrorism and biological weapons in parliament, although there are dissenting voices from the prevailing view. During the debate the Leader of the House, Peter Hain explained that the threat had evolved:

"In 1970, a CS gas canister was thrown into the Chamber, requiring evacuation. We have moved on, as I will explain shortly, to a different level of terrorist threat, which is not necessarily as visible as a CS gas canister."³⁸⁸

Hain said that the decision to install a temporary screen was based on "clear intelligence" from the Director-General of the Security Service who:

"made an unequivocal recommendation that the screen be installed [...] based on an analysis of the threat vulnerability and the impact of possible chemical or biological attack in the Strangers Gallery. In recent years

Casciani) 30 April 2007; & Anonymous (2007) *A clear and present danger* Guardian (London) 1 May 2007. In April 2004 the supposed Old Trafford bomb plot was uncovered in Manchester, after 400 officers raided homes and arrest eight men, one woman and a 16 year old for involvement in a plot to detonate bombs. It was widely reported and repeated that the group was plotting to attack a major target, a shopping centre or a football stadium, the claims turned out to have no substance whatsoever. Panja, T. & M. Bright (2004) *Man U bomb plot probe ends in farce*. London: The Observer, 2 May 2004

³⁸⁸ Hansard (2004) *Security Screen*. 22 April 2004, vol. 420, part 572, col. 462-507W: Hansard (Commons). The speaker refers to the 24th July 1970 when a protester threw two CS gas canisters from the Strangers' Gallery into the Chamber, shouting "How do you like that, you bastards? Now you know what it's like in Belfast" in protest against CS gas use in Northern Ireland. The Chamber was evacuated; three men were taken to hospital. Noyes, H. (1970) *CS gas thrown in Commons to 'cry' of Belfast* The Times (London) 24 July 1970, p. 1

there have been several indicators that al-Qaeda and associated networks have shown the intent and capability to mount attacks using toxic chemical and biological materials. Using such materials in confined spaces is a good way of maximising impact. [...]

If an al-Qaeda group managed to throw a phial of anthrax or ricin into the Chamber or, even worse, if a suicide agent released the substance without anybody noticing – we have been advised that that is quite feasible – the particles would immediately begin spreading throughout the Chamber. Because of the way in which air flows work, total contamination could occur within minutes.”³⁸⁹

The Shadow Commons Leader Oliver Heald added to the debate:

“let us bear in mind the fact that we were able to cross-examine the head of the Security Service at great length about these issues, as were many senior colleagues in this place. She convinced me that there was a very serious threat, and many colleagues reached the same view.”³⁹⁰

Conservative MP Angela Browning showed a make up item from her handbag, assured the House that it would not have been removed by even the most stringent security screening and added:

“it could contain anything sufficient to kill everybody in this Chamber and in the Galleries [...] it is its [the house’s] duty to listen to the expert advice that it is given and to implement it.”³⁹¹

Labour MP Stuart Bell sees the need for protection from “worldwide” terrorist attacks:

³⁸⁹ Hansard (2004) *Security Screen*. 22 April 2004, vol. 420, part 572, col. 462-507W: Hansard (Commons)

³⁹⁰ Ibid.

³⁹¹ Ibid.

“I could bring a map before you [...] which shows terrorism with its global reach in all the countries of the world [...] These terrorists are no respecters of persons. To attack and destroy this House would be a major gain for them and a massive blow to our democracy and to democracies around the world [...] We are talking about the threat of an imminent and serious attack”³⁹²

There were, however, also dissenting voices, for example Labour MP Colin Challen challenged Bell if he envisaged “that this siege-like situation will continue in perpetuity” and that it might “have been more appropriate for [the House] to consider these measures after the sarin gas attacks on the underground in Japan”. Labour MP Kate Hoey calls the screen a “pathetic knee-jerk reaction, which simply plays into the hands of terrorists.”³⁹³

Following the debate, the House voted in favour of the installation of a permanent screen, with 112 ayes to 76 noes.³⁹⁴ The screen was fitted in summer 2005 at a cost of £1.3 million. A month after the installation of the screen two protesters from ‘Fathers 4 Justice’ threw condoms filled with self-raising flour, stained with purple dye into the Chamber, hitting the Prime Minister with one of the missiles.³⁹⁵

In November 2004, the Director General of the Security Service, Dame Eliza Manningham-Buller gave a speech to the business community re-stating that:

³⁹² Ibid.

³⁹³ Ibid.

³⁹⁴ Ibid.

³⁹⁵ Siddique, H. (2008) *Security breach stirs memories of 2004* Guardian (London) 27 February 2008. The protesters had gained access to an area intended for members of the Lords and their guests, seated in front of the screen after they had bought tickets from Labour peer Lady Golding at a charity auction. During this time there were a number of security breaches in the Westminster Palace – including Greenpeace protesters on the roof of the building and several hunting ban protesters who stormed the Chamber.

“There is a serious and sustained threat of terrorist attacks against UK interests at home and abroad, including against the business community. There might be major attacks like Madrid earlier this year. They might be on a smaller scale. The terrorists are inventive, adaptable and patient; their planning includes a wide range of methods to attack us [...] the threat is current and real; it affects us all and you, supported by us, have a key role to play.”³⁹⁶

The Home Office stated that between 2003 and the end of 2004 six large-scale live exercises and 32 tabletop exercises were held within the Home Office national counter-terrorism exercise programme.³⁹⁷

In early 2005, between February and March the Prevention of Terrorism Bill was rushed through parliament and given royal assent after just eighteen days.³⁹⁸ In March Interpol held its first conference on bioterrorism, attended by more than 500 delegates from 155 countries, the conference aimed to improve co-operation between law enforcement agencies. To this end Interpol created a dedicated unit, created in June 2004, and programme on bioterrorism, which was launched at the conference.³⁹⁹ In the conference’s opening address, Secretary General Ronald K. Noble said:

³⁹⁶ Manningham-Buller, E. (2004) *Broadening the Business Security Agenda*. Speech By The Director General Of The Security Service, Dame Eliza Manningham-Buller, At The CBI Annual Conference 2004, Birmingham, 8 November 2004

³⁹⁷ Home Office (2009) *Exercise Atlantic Blue - Details of the Exercise (Overview)*. Home Office Website, 12 August 2009

³⁹⁸ The *Prevention of Terrorism Act 2005*, c.2, enacted 11th March 2005. The passing of the bill was accompanied by a backbench rebellion, and substantial disagreements within and between the Houses. The Act allows the Home Secretary to place “control orders” upon persons suspected of involvement in terrorism related activities. These orders include prohibitions and restriction on use or possession of certain articles and activities, including house arrests, and restrictions on access to information technologies.

³⁹⁹ Interpol (2010) *INTERPOL’s Bioterrorism Prevention Programme*. <https://www.interpol.int>

“there is no criminal threat with greater potential danger to all countries, regions and people in the world than the threat of bio-terrorism [...] What is the source of this threat? Highly motivated terrorists such as Al Qaeda, or groups that are like Al Qaeda or inspired by Al Qaeda [...] [Al Qaeda’s] public spokesperson has stated that it has the right to kill four million people using biological or chemical weapons. Al Qaeda has posted on its website instructions on how to make chemical weapons and biological weapons. Police and intelligence services in the UK have disrupted terrorist plots to use ricin as a biological weapon.”⁴⁰⁰

In April 2005 the Home Office took part in a counter-terrorism exercise – Atlantic Blue – together with the US and Canada, where the exercise was known as TopOff 3 and Triple Play, respectively. This command post exercises – involving the creation of a real incident control room to co-ordinate responses, but does not involve live action on the ground, simulated two terrorist attacks: the release of a biological agent and the collapse of a five storey building in the US attended by officials from both the UK and Canada, and involves 275 government and private organizations, and more than 10,000 people.⁴⁰¹

⁴⁰⁰ Noble, R. K. (2005) *Opening Address*. Paper given at: 1st Interpol Global Conference on Bio-Terrorism; Lyon, France, 1-2 March 2005. It is worthwhile noting that the Secretary General of Interpol is referring to the UK “ricin plot” as evidence that, in this case, “there is no criminal threat with greater potential danger to all countries, regions and people in the world than the threat of bio-terrorism”.

⁴⁰¹ Dumcius, G. (2005) *Drill will test emergency response to simulated terrorist attacks*. The Wall Street Journal, 4 April 2005, & Home Office (2009) *Exercise Atlantic Blue - Details of the Exercise (Overview)*. Home Office Website, 12 August 2009

London bombings

On 6th July 2005, 24 hours before four bombs detonated in London, Dame Eliza Manningham-Buller, Director-General of the Security Service assured senior Labour MPs at a private meeting at the House of Commons there was “no imminent terrorist threat to London or the rest of the country”.⁴⁰² During an interview on the BBC’s Today Programme on 7th July Sir Ian Blair, Commissioner of the Metropolitan Police Service, said, in response to a question about the likelihood of terrorist attacks in London: “It is difficult to calculate whether it is inevitable that [terrorists] will get through”⁴⁰³. Hewitt claims that: “in making these comments, the heads of two domestic security agencies reflected a wider institutional belief that the threat of terrorism has subsided by the summer of 2005.”⁴⁰⁴

Later that morning, on 7th July 2005, four home made explosive devices were detonated in a co-ordinated suicide attack on the public transport system during rush hour. Three bombs detonated at 8.50am in different locations on the London Underground system, and another, one an hour later, at 9.45, in a bus on Tavistock Square. Fifty-six people (including the bombers) were killed, more than 700 people injured.⁴⁰⁵ The attacks ensured that counter-terrorism remained a policy priority.

⁴⁰² Cobain, I. & others (2007) *M15 Told MPs on eve of 7/7: no imminent terror threat* Guardian (London) 9 January 2007

⁴⁰³ Quoted in Hewitt, S. (2008) *The British war on terror: terrorism and counter-terrorism on the home front since 9/11*. London: Continuum, p.86

⁴⁰⁴ Ibid. p. 86

⁴⁰⁵ Home Office (2006) *Report of the official account of the bombings in London on 7th July 2005 (HC 1087)*. London: The Stationery Office (11 May 2006). Interestingly, Appendix B to this volume mentions: “Kamel Bourgass, convicted of the Ricin plot ...” when examining radicalisation and the “home grown” threat.

A report by the Intelligence and Security Committee (ISC) into the attacks acknowledged with hindsight that the response prior to the attacks was too slow and that:

“better appreciation of the speed and scale with which the threat against the UK could develop might have led the [Security] Services to achieve a step change in capacity earlier despite the risks involved in rapid expansion. The story of what was known about the 7 July group prior to July indicates that if more resources had been in place sooner the chances of preventing the July attacks could have increased.”⁴⁰⁶

The lowering of the threat level prior to the attacks caused a rethink of the threat level system to develop a clearer and more useful threat system which enables better “risk-based decisions” with more transparency to better inform the public. The ISC’s report into the attacks states:

“The reduction is unlikely to have altered the alertness of responders (including the emergency services) or to have affected the chances of preventing the 7 July attacks. However, we question the usefulness of a system in which changes can be made to threat levels with little or no practical effect”⁴⁰⁷

⁴⁰⁶ Intelligence and Security Committee (2006) *Report into the London terrorist attacks on 7 July 2005 (Cm 6785)*. London: The Stationery Office (11 May 2006); quotes and citations are taken from Cabinet Office (2006) *Government Response to the Intelligence and Security Committee's Report into the London Terrorist Attacks on 7 July 2005 (Cm 6786)*. London: The Stationery Office (11 May 2006), this quote is on p.6

⁴⁰⁷ Cabinet Office (2006) *Government Response to the Intelligence and Security Committee's Report into the London Terrorist Attacks on 7 July 2005 (Cm 6786)*. London: The Stationery Office (11 May 2006), pp.2

The ISC further urges acknowledgement of the “limits of the intelligence on the threat” to “avoid the oversimplification of the UK threat picture and the potential for giving inappropriate reassurance about the threat.”⁴⁰⁸

4.2 Pandemic Influenza Case Study

“people have long since ceased to regard influenza as a joke; and the [medical] profession is coming to realise that it ranks among the more serious maladies with which we have to deal” G.E. Crawford, 27 January 1900⁴⁰⁹

The pandemic flu case study requires a similar approach to that used in the case of bioterrorism. The bounding in time follows roughly that of the bioterrorism case study – focussing on the time between 1990 and 2005. The starting point is, as is the case with bioterrorism, not hard and fast. Neither of the two case studies can have a well defined starting point because of the importance of historical linkages, institutional knowledge and memory, and the path dependencies of responses; nor can the case studies be comprehensive historical accounts. Rather than attempting to present comprehensive historical account the following discussion charts the peaks and troughs of the policy agenda in the UK.

Pandemics are, by definition, international events, here only the domestic response is considered. Technical aspects of the response to pandemic influenza is dominated and largely governed by international actors, first and foremost, the World Health Organization (WHO), the Food and Agricultural Organization (FAO), and the Organisation International des

⁴⁰⁸ Ibid.

⁴⁰⁹ Crawford, G. E. (2000) Influenza (JAMA 100 years ago). *Journal of the American Medical Association*, 283(4), 449

Epizooties (OIE) who advise states on response and preparedness. However, health security is a national prerogative and policy and responses vary between countries. China's repeated reluctance to share outbreak information, and Indonesia's and other countries' claims to 'viral sovereignty' are just two examples of how different conceptions, responses and political value judgements influence national responses.⁴¹⁰ The case study focuses on the policy response and the assessment process within the UK government in response to the risk of pandemic influenza. Risk is the key word here, as the case study considers public health preparations in terms of policy and institutional arrangement for the next pandemic. Responses to animal health are excluded here, although the likely zoonotic origin of pandemic influenza means that the human health responses are necessarily intertwined with veterinarian responses. No particular emphasis is placed on, or attention paid to, policy responses to pandemic influenza as a disease in animals, unless it impinges directly on human health responses. The culling of millions of fowl in Hong Kong in 1997 is an example of this, a veterinarian response to a potential public health problem. Another reason for not including animal health, which is in many ways central to the avian influenza story, is that the responses differ considerably. Although part of the picture and important to deal with, for example, animal reservoirs or wet markets, counter-measures differ considerably:

⁴¹⁰ See for example: Elbe, S. (2008) *Viral Sovereignty: Microbial Crises of Circulation and the Biopolitics of Security*. Paper given at: Contemporary Biopolitical Security ESRC Seminar Series on 'Securitising Mobilities and Circulations'; University of Keele - Claus Moser Research Centre 27-28 November 2008

“birds can be culled, movements can be restricted and treatment enforced, whereas for humans draconian interventions are all a bit more difficult”⁴¹¹

Pandemic Influenza as a Policy Issue in the UK

The pandemic influenza threat is, to a certain extent a known quantity – here, at least, the aphorism “not if but when” holds true.⁴¹² Influenza pandemics are cyclical, recurring periodically, every ten to forty years. But a quantitative estimate of the probability of a pandemic, or of any particular influenza virus causing a pandemic can not be made.⁴¹³ Seasonal flu, on the other hand, is quite predictable. Seasonal influenza strains infect ten to fifteen percent of the UK population and cause around twelve thousand annual fatalities, mainly in the risk groups – that is the elderly, young and already immunocompromised.⁴¹⁴

In March 1997 the Department of Health issued a document entitled: “*Multiphase contingency Plan for Pandemic Influenza*”.⁴¹⁵ Referencing the pandemics of 1918, 1957 and 1968, the document anticipates the Far East as a

⁴¹¹ Scoones, I. & P. Forster (2008) *The International Response to Highly Pathogenic Avian Influenza: Science, Policy and Politics (STEPS Working Paper 10)*. Brighton: STEPS Centre, p. 49

⁴¹² “not if but when” is repeated throughout the literature on pandemic influenza, for example the Chief Medical Officer Sir Liam Donaldson: “Most experts believe that it is not a question of whether there will be another severe influenza pandemic but when” Department of Health - Chief Medical Officer (2002) *Getting ahead of the curve: a strategy for combating infectious diseases (including other aspects of health protection)*. London: Crown, 10 January 2002, p.11

⁴¹³ Department of Health (2007) *Risk of a human influenza pandemic emerging from avian H5N1 viruses*. London: Department of Health, June 2007

⁴¹⁴ Department of Health - Chief Medical Officer (2005) *Explaining Pandemic Flu: A guide from the CMO*. London: Department of Health, 19 October 2005

⁴¹⁵ Department of Health (1997) *Multiphase contingency Plan for Pandemic Influenza*. London: Department of Health, 1 March 1997. The document received little or no public attention, possibly due to being published two weeks before the general election.

possible source of an influenza pandemic which may be caused by an unknown strain, which may spread more rapidly than the 1968 pandemic because of increased international movement of people, including more trade and tourism with China (assuming a Far Eastern origin). The estimated incidence of illness, as suggested by the WHO, was given as 25%, with a worst case scenario with 100% of the population infected. The contingency plan considers the effects on hospital admissions, absenteeism including health care workers, and effects on schools by looking at the impacts of pandemics in 1957 and 1968. The objectives of the contingency plan were set out thus:

to reduce the morbidity and mortality from influenza illness (immunisation, esp. priority groups as identified; anti viral drugs; pneumococcal vaccine; social interventions to slow spread)
 to be able to cope with large numbers of people ill, at home and in hospital, and dying (support for primary care by mobilising, conserving and reinforcing manpower; delay or suspension of non-urgent secondary care; triage; securing of drugs and equipment; plans for mortuary arrangements)
 to ensure that essential services are maintained (coping with absentees; etc)
 to provide timely, authoritative and up to date information for professionals, the public and the media at all stages (national and local level; telephone helplines; distribution of literature to public; avoiding unnecessary media scares)⁴¹⁶

The evidence-base used for the 1997 contingency plan is not available publically, and underlying assumptions are only tangentially mentioned in the text. However, the contents of the plan are public.⁴¹⁷ The six-part plan is outlined in the document as follows: **Phase 0:** inter-pandemic period -

⁴¹⁶ Ibid.

⁴¹⁷ Ibid.

watchful waiting. **Phase 1:** emergence of a new virus outside Britain. Actions include establishing an advisory committee and preparing strains for possible vaccine manufacture. **Phase 2:** outbreaks caused by the new virus outside Britain. Intensified monitoring of flu-like illnesses, vaccines ordered from manufacturers. **Phase 3:** new virus identified in Britain; pandemic imminent. Health authority and hospital plans to deal with patients activated, non-emergency admissions limited to keep beds clear, advice to public issued. **Phase 4:** pandemic flu in Britain. Plans to immunise and treat in full gear, pattern of epidemic followed, bacteria responsible for fatal infections as a result of flu identified and appropriate antibiotics selected, weekly death rates monitored. **Phase 5:** end of pandemic. Flu cases return to background levels, advisory committee reports on epidemic and lessons learnt, as do health authorities and trusts.

At the time of the emergence of H5N1 the UK was one of the few countries to have a national response plan in place and the plan was widely seen as a model to follow.⁴¹⁸

Highly Pathogenic Avian Influenza – Hong Kong 1997

Concerns over an impending influenza pandemic were raised two months after the publication of the contingency plan for pandemic influenza in May 1997 following the death of a three year old in Hong Kong due to a novel influenza virus strain – influenza A H5N1, previously only found in birds.⁴¹⁹ The

⁴¹⁸ House of Lords - Science and Technology Committee (2003) *Fighting Infection (Session 2002-03, HL Paper 138)*. London: The Stationery Office (2 July 2003)

⁴¹⁹ H5N1 was first identified in 1961 in terns, becoming widespread in Hong Kong's chicken population during the 1990s: Department of Health - Chief Medical Officer (2002) *Getting ahead of the curve: a strategy for combating infectious diseases (including other*

boy's fatality satisfied two of the three conditions set out in the Department of Health contingency plan to suggest that a pandemic is imminent – the emergence of a novel virus strain (with a marked antigenic shift); a high proportion of susceptible people in the population; and evidence that the novel virus strain is readily transmissible and can cause human disease.

In August 1997 Alan Hay, of the National Institute of Medical Research, which monitors flu strains for the World Health Organisation in London, said: "It is extremely unusual and has been of some concern to us"⁴²⁰ ... "Our concern was whether it was a one-off or representative of something more sinister. We were worried"⁴²¹. However during the weeks following the boy's death no new cases emerged, ameliorating fears over an imminent outbreak. In October 1997 a PHLS spokesman said about the emergence of H5N1 in Hong Kong: "We do not consider this a threat to any communities, especially in the West."⁴²²

In November 1997 three more cases were confirmed, one of these was the second fatality in this outbreak; in December a further three infections were identified.⁴²³ This prompted the Chief Medical Officer (CMO) to initiate phase 1 of the UK's pandemic influenza contingency plan's plan. A meeting of

aspects of health protection). London: Crown, 10 January 2002

⁴²⁰ Alan Hay quoted in: Anonymous (1997) *Boy's death linked to avian flu* The Times (London) 26 August 1997

⁴²¹ Alan Hay quoted in: Laurance, J. (1997) *HK death may spark world flu epidemic* The Independent (London) 28 August 1997, p.4

⁴²² Quoted in: Nuttall, N. (1997) *Experts discount deadly flu virus* The Times (London) 13 October 1997

⁴²³ McKie, R. (1997) *Hidden killer lies in wait for unsuspecting world*. Observer, London, 7 December 1997; Anonymous (1997) *More avian flu cases feared* The Times (London) 13 December 1997; Hawkes, N. (1997) *Health chief tries to ease fears after man dies of chicken flu* The Times (London) 8 December 1997; Vines, S. & K. Watson-Smyth (1997) *Doctors fear 'chicken flu' may have spread among humans* The Independent (London) 17 December 1997

the UK Health Departments' Influenza Advisory Committee resulted in informing all doctors and laboratories of the situation through the CMO, including leads to obtain further information, but no further precautions were advised.⁴²⁴

Over the course of the month, infections in Hong Kong rose to a total of 18, including a total of six fatalities, prompting the Chinese government to respond with the culling of Hong Kong's poultry population, 1.2 million chickens and 400,000 other birds, which appeared to stop further outbreaks.⁴²⁵

2003 - H5N1 returns

Following an apparent successful containment of avian influenza in 1997 H5N1 re-emerged in China in February 2003, for the first time since the 1997 Hong Kong outbreak when it killed six of the eighteen infected.⁴²⁶ Two human cases of avian influenza H5N1 infection (one fatal) were confirmed in a Hong Kong family, another family member died of severe respiratory disease while in mainland China, but no samples were taken, and the cause remains unidentified. In November 2003, the G7 Ministerial Forum of the Global Health Security Initiative (GHSI) met in Berlin. GHSI was established in the aftermath of 11 September 2001 and tasked with health preparedness for CBRN terrorism related issues. At the meeting the GHSI widened its remit to include pandemic

⁴²⁴ Calman, K. (1997) *Avian (H5N1) Influenza in Hong Kong*. Chief Medical Officer: Department of Health, Ref: PL/CMO/97/3, 16 December 1997

⁴²⁵ Higgins, A. (1997) *Hong Kong kills 1m chickens to halt flu* Guardian (London) 29 December 1997; Pringle, J. (1997) *Hong Kong kills its 1.25m chickens* The Times (London) 29 December 1997; and Department of Health - Chief Medical Officer (2002) *Getting ahead of the curve: a strategy for combating infectious diseases (including other aspects of health protection)*. London: Crown, 10 January 2002

⁴²⁶ Peiris, J. S. & others (2004) Re-emergence of fatal human influenza A subtype H5N1 disease. *Lancet*, 363(9409), 617-9

influenza as a health security issue and agreed to the establishment of the Technical Working Group on Pandemic Influenza Preparedness.⁴²⁷

Throughout 2003 and continuing into 2004 human avian influenza infections were confirmed in China, Thailand, and Vietnam. 46 Human cases were reported, resulting in 32 fatalities. The following year human cases were reported in Cambodia and Indonesia, 98 cases with a total of 43 fatalities.⁴²⁸ In 2005, H5N1 was endemic in bird populations, causing wide spread and re-occurring outbreaks and rising numbers of human cases in South East Asia were widely reported in the media. The Guardian newspaper, for example, reported on contingency plans being re-drafted to include inflatable mortuaries, quarantine facilities and the evacuation of big cities, and it cited a senior unidentified government source as stating that:

“People think terrorist attacks are the most serious threat to us but influenza is currently regarded as the most likely. Our statisticians say an epidemic is overdue. Some of the details are graphic [...] we started this with Sars in 2003 [...] The real plan is to prevent this getting into the country through border controls. That’s absolutely critical”⁴²⁹

As reported, the UK Government re-drafted and elaborated on its contingency plan and institutional response in response to lessons learned

⁴²⁷ Global Health Security Initiative (2003) *Ministerial Communiqué*. Berlin: Fourth ministerial meeting on health security and bioterrorism, 7 November 2003

⁴²⁸ World Health Organization (2008) *H5N1 avian influenza: timeline of major events*. 14 July 2008
http://www.who.int/csr/disease/avian_influenza/Timeline_08%2007%2014%20_2_.pdf ;
 & World Health Organization (2010) *Cumulative Number of Confirmed Human Cases of Avian Influenza A/(H5N1) Reported to WHO*. 4 March 2010
http://www.who.int/csr/disease/avian_influenza/country/cases_table_2010_03_04/en/index.html

⁴²⁹ Hall, S. & I. Sample (2005) *Flu feared more than terror attack* Guardian (London) 24 January 2005

from SARS, and as part of obligation under the International Health Regulations (IHR), with the guidance of the WHO.⁴³⁰

The influenza framework

In March 2005, the Department of Health published a series of documents. The revised *Influenza Contingency Plan* and an explanatory guide on pandemic influenza. The accompanying press release stated:⁴³¹

“the Department of Health is to procure 14.6 million courses of oseltamivir (Tamiflu), an antiviral drug, as part of the UK’s preparedness for an influenza pandemic. The move came as Sir Liam Donaldson, the Chief Medical Officer, published the Government’s Pandemic Influenza Contingency Plan, setting out the steps being taken to prepare for a flu pandemic.”⁴³²

⁴³⁰ The WHO maintained the Influenza Surveillance Network since 1948 to further understanding of influenza epidemiology and annually update vaccine formulations. WHO started a consultation on global priorities in influenza surveillance and control in July 2001 to raise awareness of the economic and public health significance, which led to the adoption of the “Global Agenda on influenza surveillance and control” by consensus at a meeting in Geneva in May 2002. Details on the development process as well as the Global Agenda can be found in: Stöhr, K. (2003) The global agenda on influenza surveillance and control. *Vaccine*, 21(16), 1744-8

⁴³¹ Department of Health - Chief Medical Officer (2005) *Pandemic Flu: UK influenza pandemic contingency plan*. London: Department of Health, 1 March 2005; & Department of Health - Chief Medical Officer (2005) *Explaining pandemic flu: A guide from the Chief Medical Officer*. London: Department of Health, 25 March 2005. Both these documents were superseded by further revisions published October 2005 which took into account the rapidly evolving international (e.g. IHR, the updating of WHO pandemic phases) and regional context (e.g. ECDC), revised modelling, and other comments received by the secretariat. UKNIIPC (2005) *Meeting Minutes of the UK National Influenza Pandemic Committee*. Department of Health, 18 July 2005

⁴³² Department of Health (2005) *Press Release: Improving preparedness for possible flu pandemic*. 1 March 2005

In July 2005 the Department of Health invited manufactures to tender for contracts to supply two million doses of H5N1 vaccine as part of assembling a strategic stockpile. Health Secretary Patricia Hewitt explained the decision:

“it would be prudent to purchase a limited quantity of H5N1 vaccine which could be used to help protect those that need it most, such as NHS workers [...] alongside the purchase of 14.6 million doses of antivirals and the other public health measures we have in place, will help ensure that the UK continues to be at the forefront of international preparedness for a possible flu pandemic”⁴³³

This invitation to tender for H5N1 vaccine contracts was followed two months later with the publication of the *UK operational framework for stockpiling, distributing and using antiviral medicines in the event of pandemic influenza*, stimulated, at least in part, by recommendations made in a House of Lords Science & Technology Select Committee report from 2003. The report urged the Government to:

“develop and publish a strategy to ensure that there is secure access to supplies of vaccines in the face of national outbreaks of infectious disease [...] given that there is little vaccine production capability in the United Kingdom”⁴³⁴

The decision to stockpile only one type of antiviral was questioned and drew criticism from the Royal Society and Academy of Medical Sciences, because of concerns over possible resistance and transparency in the sourcing

⁴³³ Department of Health (2005) *Press Release: Tender for contract for H5N1 vaccine*. 20 July 2005

⁴³⁴ House of Lords - Science and Technology Committee (2003) *Fighting Infection (Session 2002-03, HL Paper 138)*. London: The Stationery Office (2 July 2003), p. 9

of scientific advice. It was not certain how effective, if at all, this “pre-pandemic” vaccine would be.⁴³⁵

In October 2005, following consultations, input from the advisory bodies and testing of the March 2005 contingency plan the Chief Medical Officer, launched an updated version of the national contingency plan⁴³⁶, stating:

“We can’t prevent a flu pandemic, but we can reduce its impact. We are constantly reviewing and improving our pandemic plans. [...] Planning to combat pandemic flu is our number one priority. We regard pandemic flu as public health enemy number one and we are on the march against it.”⁴³⁷

The new influenza plan was brought in line with updated WHO pandemic phases, otherwise the document did not substantially change although most of the wording was re-drafted to aid clarity. The new influenza contingency plan was accompanied by guidance documents for professional users and explanatory documents for a more general reader.⁴³⁸

⁴³⁵ Royal Society & Academy of Medical Sciences (2006) *Pandemic Influenza: science to policy*. London: Royal Society (November 2006)

⁴³⁶ Department of Health - Chief Medical Officer (2005) *Pandemic Flu: UK influenza pandemic contingency plan*. London: Department of Health, 1 March 2005; Comments and suggestions for improvements of the contingency plan was item for discussion of the Influenza Pandemic Committee: UKNIPC (2005) *Meeting Minutes of the UK National Influenza Pandemic Committee*. Department of Health, 18 July 2005

⁴³⁷ Department of Health (2005) *Press Release: Chief Medical Officer steps up preparedness for a flu pandemic*. 19 October 2005

⁴³⁸ These accompanying documents were: Department of Health (2005) *Guidance for pandemic influenza: Infection control in hospitals and primary care settings*. London, 19 October 2005; Department of Health (2005) *Pandemic flu: important information for you and your family*. London, 19 October 2005; Department of Health (2005) *Pandemic flu: Key facts*. London, 19 October 2005; Department of Health - Chief Medical Officer (2005) *Explaining pandemic flu: A guide from the Chief Medical Officer*. London: Department of Health, 25 March 2005. The release of these documents was followed by an online training course for Doctors to help doctors identify pandemic influenza. These

continued...

At the time of the publication of the new influenza plan, the Chief Medical Officer invited manufacturers to tender for pandemic influenza vaccine contracts to produce 120 million doses of pandemic flu vaccine once the pandemic strain is known.⁴³⁹

The first appearance of highly pathogenic H5N1 in the UK was reported in imported parrots four days after the publication of the updated contingency plans in October 2005. The animals died three days prior and were held in quarantine.⁴⁴⁰ The spread via migratory routes as well as imported birds was a concern at the time – the European Union imposed a ban on imported captive live birds in October. DEFRA and the Department of Health considered the vaccination of poultry workers with seasonal influenza vaccine to reduce the potential for reassortment of the viruses.⁴⁴¹

By late 2005, with avian influenza rapidly spreading to Eastern Europe and Turkey in wild and domestic birds, increasing human fatalities in the Far East, frequent and repeated reports of a possible pandemic human influenza in the media and its potential impacts led to heightened public awareness of avian influenza. Press reports of alleged delays and shortages in seasonal influenza vaccine supply prompted the Department of Health to instigate an

documents were superseded in 2007.

⁴³⁹ Department of Health - Chief Medical Officer (2005) *Pandemic Flu: UK influenza pandemic contingency plan*. London: Department of Health, 1 March 2005. UK Government purchased 3.5 million doses of a vaccine against the H5N1 strain of bird flu for the vaccination of healthcare workers in the event of a pandemic. On 24 February 2006, it awarded two contracts to Chiron Corporation and Baxter Healthcare Corporation.

⁴⁴⁰ The United Kingdom reported the birds on 23 October 2005. World Health Organization (2008) *H5N1 avian influenza: timeline of major events*. 14 July 2008
http://www.who.int/csr/disease/avian_influenza/Timeline_08%2007%2014%20_2_.pdf

⁴⁴¹ UKNIPC (2005) *Meeting Minutes of the UK National Influenza Pandemic Committee*. Department of Health, 18 July 2005

independent investigation into the arrangements for the seasonal influenza programme.⁴⁴²

Despite a delay in supply, sufficient seasonal influenza vaccine was available to “match or exceed usual attainment levels”.⁴⁴³ The panel reviewing the arrangements for the seasonal influenza programme concluded that a number of factors were responsible for perceived shortages, among them local variation in supply and availability being misconstrued as a general shortage.⁴⁴⁴

In November 2005, the Global Health Security Initiative (GHSI) met in Rome to agree actions to ensure a co-ordinated global response to health security issues, and to discuss the international response to deliberate actions, such as terrorism, and naturally occurring threats to global health, such as pandemic influenza. The GHSI has, from its inception, drifted further towards generic health care problems. Its initial focus was on bioterrorism, as well as chemical, radiological, and nuclear threats but by late 2005 the remit expanded to include natural as well as unnatural outbreaks of disease.

⁴⁴² Spencer, I. & J. Kennedy (2007) *Review of the arrangements for the Seasonal Influenza Programme in England - Report of an independent panel*. London: Department of Health (March 2007), p.5. The report appears to mix up timings of the avian flu spread and progression – it states that interviewees identified factors which contributed to the perception of supply problems, one of which was the identification of H5N1 in a dead swan in Scotland (p. 29), this however happened a few months after the period under investigation, in April 2006 not in November 2005.

⁴⁴³ Ibid. p.41

⁴⁴⁴ Ibid. The report further stated that: “members of the public appeared to confuse elements of seasonal influenza, avian influenza and pandemic influenza and erroneously believed that seasonal influenza vaccination would give some degree of protection against avian and pandemic strains. The media interest seems to have at least accelerated patient demand so that patients proactively requested their vaccinations earlier in the season rather than waiting for a scheduled call from their practices.”(p. 5)

The following month, in December, under the chairmanship of the UK the EU Health Council of Health Ministers met to discuss human health aspects of pandemic flu and to develop thinking on how the member states can work together to prepare for a pandemic following the EU-wide exercise Common Ground involving all 25 member countries, run by the HPA. The policy discussion on the human health aspects of pandemic flu focused on areas of EU co-operation in risk communication, the issue of increasing production capacity for both anti-viral drugs and vaccines and that the first and most vital step is the completion of national contingency plans in all member states.⁴⁴⁵

At the end of 2005 in December the House of Lords Select Committee on Science and Technology published its report on pandemic influenza. The committee found that:

“Our witnesses generally agree that the United Kingdom remains among the best prepared countries in the developed world, and we have no reason to dissent from this view. The Pandemic Influenza Contingency Plan has been regularly reviewed and updated; advice has been issued to frontline healthcare workers; the Government have ordered sufficient antiviral drugs to treat one quarter of the population; work to expedite the manufacture of a vaccine is underway.”⁴⁴⁶

⁴⁴⁵ Department of Health (2005) *Press Release: EU Health Council - Summary of Discussions*. London, 9 December 2005

⁴⁴⁶ House of Lords - Science and Technology Committee (2005) *Pandemic Influenza (Session 2005-06 HL Paper 88)*. London: The Stationery Office (16 December 2005), p. 7

4.3 A changing policy environment – other factors

As mentioned in the introduction of this chapter both cases are intertwined and overlap with one another. The following two sections contain material which is relevant to the discussion. A number of factors contributed to and influenced the policy context of bioterrorism policies in the UK. However, these developments do not neatly fit into either section above and are thus included in this section.

The BSE and FMD crisis

The BSE⁴⁴⁷ crisis and its repercussions had a significant impact on the wider policy environment in the UK. The Phillips Inquiry, an independent judicial inquiry into the Government's handling of the BSE crisis, published in 2000, questioned the "Government's use of science, the Government's use of expert committees and the Government's approach to risk"⁴⁴⁸, and recommended, amongst other things, the Government's use of scientific advice to be revised and improved because decisions were reached too slowly and key uncertainties not sufficiently acknowledged. The report stated that scientific advice needs to be transparent and accountable. This finding was echoed by the Anderson Inquiry into the lessons learned from the Foot and Mouth Disease (FMD) outbreak of 2001, published in 2002. Anderson identified three key areas for improvement: systems to handle epidemics, handling of outbreaks in a timely fashion, and basing interventions on "good

⁴⁴⁷ Bovine spongiform encephalopathy (BSE), or mad-cow disease is a neurodegenerative disease caused by prions. For a discussion of the BSE crisis see: Van Zwanenberg, P. & E. Millstone (2005) *BSE: risk, science, and governance*. Oxford: Oxford University Press

⁴⁴⁸ Phillips, N. & others (2000) *The BSE Inquiry: Report*. London: The Stationery Office, volume 1, chapter 13, paragraph 1262.

science” – advocating evidence based policy making in a transparent manner.⁴⁴⁹

The FMD outbreak occurred in the UK between February and September 2001⁴⁵⁰, the UK was declared free of Foot and Mouth in January 2002. Although FMD affects animals only and the UK response to it was exclusively economic agrarian (culling, travel and trade restrictions) it is worth mentioning this episode here briefly for its impact on health policy, institutions and policy makers.

The 2001 outbreak was the first case of FMD in the UK since 1967. For 221 days 2030 premises in the UK reported cases of FMD between 20 February and 30 September 2001. All livestock in these 2030 premises, as well as animals in a further 7500 premises were destroyed, around 11 million animals in total. The cost of the outbreak is difficult to estimate: closure of rights of way networks and images of burning pyres of dead animal adversely affected national, as well as international tourism, with possible repercussions on the value of the pound. Bans on trade and movement of livestock caused financial losses and wider disruption in the economy. The Government spent £2.79 billion on direct costs of measures to deal with FMD. Overall costs to the

⁴⁴⁹ Anderson, I. (2002) *Inquiry into the lessons to be learned from the foot and mouth disease outbreak of 2001 (HC 888)*. London: The Stationery Office. Two further inquiries have been conducted into Foot and Mouth Disease: “*Royal Society Inquiry into Infectious Diseases in Livestock*”. This inquiry examined scientific aspects of the crisis, the inquiry was chaired by Sir Brian Follett, reported 16 July 2002. The third inquiry was the “*Policy Commission On The Future Of Farming And Food*.”, which focused on long-term production and delivery of food within the country, chaired by Sir Donald Curry, reported in January 2002.

⁴⁵⁰ A second, more recent outbreak of Foot and Mouth Disease caused by an accidental release from research laboratory is not included here as it falls outside of the timeframe considered here. The Pirbright outbreak was confirmed in August 2007. For more information see: Health and Safety Executive (2007) *Final report on potential breaches of biosecurity at the Pirbright site 2007*. London: HSE

economy are estimated to be about 1% of the gross domestic product, around £10 billion.⁴⁵¹ The UK was FMD free on 15 January 2002, confirmed at an OIE meeting on 22 January, EU trade restrictions were lifted on 5 February 2002. The importance of FMD is not so much its specific disease characteristics, but in the governmental handling, the timing and general policy impact. Systemic failings to tackle the crisis head on were at the heart of a response that seemed mismanaged – with a:

“tendency towards paralysis through bureaucratic conflict and/or operational fragmentation [...] a culture of departmentalism [...] stubborn reluctance to listen to non-Whitehall expertise [...] stagnation [was] evident throughout the crisis [...] contingency plans mirrored work [from] before the 1967 epidemic [...] the slaughter policy was justified in one press conference using a study from the 1950s [...] many farmers expressed disbelief at MAFF officials trying to navigate unsuccessfully around the countryside using prewar maps. These outdated practices were a direct result of an insulated outlook that initially refused external expertise in epidemiological modelling as offered by numerous scientific centres of excellence [...] and sheer fragmentation caused by a multiplicity of actors involved”⁴⁵²

These failings forced the intervention of the Chief Scientific Advisor resulting in the Ministry of Agriculture, Fisheries and Food (MAFF) being relegated to assistance with the delivery of policy and its former primary role,

⁴⁵¹ House of Commons - DEFRA (2002) *The impact of foot and mouth disease (Session 2001-02 HC 323)*. London: The Stationery Office, Anderson, I. (2002) *Inquiry into the lessons to be learned from the foot and mouth disease outbreak of 2001 (HC 888)*. London: The Stationery Office. In addition to the measurable economic cost the Anderson report notes that: “further impacts, including the stress caused to farmers and others, restrictions on access to the countryside, health effects and environmental costs [...] the social structure and sense of community were severely damaged.” (p. 134)

⁴⁵² McConnell, A. & A. Stark (2002) Foot-and-Mouth 2001: The Politics of Crisis Management. *Parliamentary Affairs*, 55(4), 664-681, pp. 671. MAFF is the Ministry of Agriculture, Fisheries and Food.

the formulation of policy, being transferred to the Prime Minister's Office, with the Cabinet Office arranging cross-departmental co-operation and soliciting scientific advice. MAFF was formally abolished by merging it with the Department of the Environment, Transport and the Regions (DETR) to form the Department for Environment, Food and Rural Affairs (DEFRA).⁴⁵³ This reshuffle indicated that the "outdated approach to crisis management would not be tolerated" and replacement of "departmentalism, defensive decision-making and secrecy" with "coordination and more transparent 'joint-up' decision making."⁴⁵⁴ FMD, being a dominant policy issue at the time – as well as a media spectacle with footage of burning pyres of animal carcasses – impacted on the wider security and health policy discourse, on one hand, augmenting notions of vulnerability, economic vulnerabilities in particular; and, on the other hand, forcing a general rethink on the use of expert advice and scientific evidence in the policy formation process. The impact of Foot and Mouth Disease owes at least some of its policy impact to the legacy of the BSE crisis – another major disease driven policy disaster which dominated the policy discourse for 15 years, from the mid 1980s into the late 1990s, which also was inadequately handled by MAFF.⁴⁵⁵

⁴⁵³ DEFRA was created on 8 June 2001, by the Secretaries of State for Transport, Local Government and the Regions and for Environment, Food and Rural Affairs Order 2001 (No. 2568), entering into force on 13th August 2001. MAFF was officially dissolved by the Ministry of Agriculture, Fisheries and Food (Dissolution) Order 2002 (No. 794)

⁴⁵⁴ McConnell, A. & A. Stark (2002) Foot-and-Mouth 2001: The Politics of Crisis Management. *Parliamentary Affairs*, 55(4), 664-681, p. 673

⁴⁵⁵ Bovine Spongiform Encephalopathy, BSE or mad cow disease, is a fatal neurodegenerative disease in cattle, most likely caused by infectious proteins (prions) through consumption of cattle feed made from, or incorporating meat and bone meal from animals. BSE is transmissible to humans by ingestion of infected (cow) products where it can cause Creutzfeldt-Jakob Disease (CJD) or variant CJD (vCJD), an equally fatal neurodegenerative disease in humans. BSE was first recognised in the UK in 1986. The Government, and in particular the Ministry of Agriculture Fisheries and Food (MAFF) systematically downplayed, and understated inherent uncertainties about possible links

Failing to respond adequately to either BSE or Foot-and-Mouth crisis has had substantial and enduring effects on the policy environment – in terms of the handling of scientific advice and general approaches to risk management, and public trust in government and its institutions. The institutional response, besides merging MAFF, DETR and parts of the Home Office into DEFRA, was the establishment of a crisis management unit – the Civil Contingencies Secretariat (CCS) within the Cabinet Office in July 2001 – to address serious deficiencies in the UK’s civil protection arrangements, which became apparent during the FMD crisis in 2001, as well as during serious flooding and the fuel protests in 2000.⁴⁵⁶ CCS is tasked with developing resilience against high-impact risks, broad horizon scanning, running exercises through the Emergency Planning College, and establishing and re-evaluating a national risk register.⁴⁵⁷

A One Stop Shop for Public Health

In January 2002 the Chief Medical Officer, Sir Liam Donaldson, launched a new infectious disease strategy, within which he proposed a number of actions to create a “modern system to prevent, investigate and control the infectious

between BSE and human disease. The link between BSE and CJD was officially acknowledging in 1996. For an instructive account on the handling of the BSE crisis and its policy implications see: Van Zwanenberg, P. & E. Millstone (2005) *BSE: risk, science, and governance*. Oxford: Oxford University Press; For information on BSE, see: World Health Organization (2002) *Fact Sheet No 113 - Bovine Spongiform Encephalopathy*.

⁴⁵⁶ Groom, B. (2001) *Blair sets up crisis unit* Financial Times (London) 12 July 2001, p. 4

⁴⁵⁷ Anonymous (2002) *Task of ensuring that cover is more than just a front* Financial Times (London) 22 June 2002 & Cabinet Office (2008) *National Risk Register*. London: Cabinet Office. The first of the National Risk Register is published in August 2008 following the publication of the first National Security Strategy of the United Kingdom (March 2008, Cm 7291). The Risk Register features pandemic influenza as the risk with the highest relative impact, whereas “non-conventional attacks” (excluding nuclear) range in an area of medium relative impact and medium relative likelihood.

diseases threat and address health protection more widely.”⁴⁵⁸ Part of this new system was the creation of the Health Protection Agency (HPA) which:

“will provide an integrated approach to all aspects of health protection including chemical and radiological hazards, as well as infectious disease control. This approach builds on experience of recent incidents such as the outbreak of foot and mouth disease and planning following the terrible events of September 11 2001. The agency will draw together a number of the bodies of expertise which currently provide health protection services including the Public Health Laboratory Service, the National Radiological Protection Board, The Centre for Applied Microbiology and Research and the National Focus for Chemical Incidents. The new agency will work closely with regional and local public health services and the expert government advisory committees.”⁴⁵⁹

The HPA was set up as a special health authority in March 2003 and converted into a stand alone independent UK organization, a Quasi Autonomous Non-Governmental Organization (QUANGO) in April 2005,⁴⁶⁰ to provide an integrated approach to public health as well as unusual radiological, biological and chemical incidents – natural, accidental or deliberate in origin – as a ‘one stop shop’. The HPA subsumed and integrated existing agencies such as the Public Health Laboratory Service, the Centre for Applied Microbiology and Research, the National Radiological Protection Board, the National Poisons Information Service, and the National Focus for Chemical Incidents, and incorporates NHS public health staff responsible for

⁴⁵⁸ Department of Health - Chief Medical Officer (2002) *Getting ahead of the curve: a strategy for combating infectious diseases (including other aspects of health protection)*. London: Crown, 10 January 2002, p.14

⁴⁵⁹ Department of Health (2002) *Press Release: Chief Medical Officer launches infectious diseases strategy*. 10 January 2002

⁴⁶⁰ On the foundation of HPA and its roles see: Stewart, W. (2003) Nature, our worst enemy. *Journal of the Foundation for Science and Technology*, 17(10), 3-4 & Troop, P. (2003) Melding public health and protection. *Journal of the Foundation for Science and Technology*, 17(10), 4-5.

the control of infectious disease, emergency planning and other protection support.⁴⁶¹ One week after the inception of the HPA Sir William Stewart, the Chairman of the HPA, said that “the biggest bio-terrorist threat remains that from Mother Nature”, after briefly outlining natural disease threats he turns to deliberately caused disease with a stark warning about the threat posed:

“Bio-terrorism is low tech terrorism. Sophisticated equipment is not required to generate the organisms [...] chemical terrorism is not difficult either: it is low tech. The nerve gas sarin and the toxin ricin are easily made and transported [...] But all of us should think about the ease with which illicit substances are smuggled into Britain. In 2000, drugs with the street value of £789 million were seized, which shows what might be done with the materials of bio-terrorism”⁴⁶²

⁴⁶¹ Health Protection Agency (2003) *Health Protection Agency joins fight to tackle threats from infections and environmental hazards*. Press Release, 2 April 2003. The HPA was initially proposed by the Chief Medical Officer, Sir Liam Donaldson, see: Department of Health - Chief Medical Officer (2002) *Getting ahead of the curve: a strategy for combating infectious diseases (including other aspects of health protection)*. London: Crown, 10 January 2002. On 1 April 2005, the Agency was established as a non-departmental public body, replacing the HPA SpHA and the National Radiological Protection Board (NRPB) and with radiation protection as part of health protection incorporated in its remit. The National Institute of Biological Standards and Control (NIBSC) merged in to the Health Protection Agency on the 1 April 2009.; See also: <http://www.hpa.org.uk/>

⁴⁶² Stewart, W. (2003) Nature, our worst enemy. *Journal of the Foundation for Science and Technology*, 17(10), 3-4. Although there might be some truth in the statement, it appears to be grossly inflating the threat. The assertion the bioterrorism is low tech with no requirement for sophisticated equipment raises a number of questions, for example: compared to what? Compared to the manufacture of a nuclear device this might be true, but compared to a conventional home made explosive device this is certainly not the case. Likewise, the role of knowledge – technical know-how – appears to be neglected. The often cited ease with which conventional explosive devices can be constructed appears to flummox those who attempt to build them, more often than not. Bioterrorism presents numerous challenges over and above those of explosive devices – at a minimum: viable strains have to be acquired, grown, and dispersed – each step, in this most rudimentary characterisation of the process, presents in itself technical challenges.

The need for an “integrated approach to all aspects of health protection” was underlined by a report published in July 2003 by the House of Lords Science & Technology Select Committee. The report *Fighting Infection* follows an extensive consultation on “diagnosis, treatment, prevention and control of infectious disease.”⁴⁶³ The committee found an alarming lack of preparedness and co-ordination for dealing with major outbreaks of infectious disease which have not happened owing to “as much good fortune as to good management”. Further stating that:

“infectious disease services in England (devolved administrations have separate arrangements), whilst better than those found in many countries, suffer from problems. The services expected to protect the population from both common and more unusual infection are under-resourced and over-stretched. If this country were to experience a major outbreak of an infection the services may not be able to cope: there is not enough surge capacity”⁴⁶⁴

SARS

The emergence of the first severe and readily transmissible disease of the 21st Century, Severe Acute Respiratory Syndrome (SARS), illustrated the economic, social and political repercussions of an internationally spreading

⁴⁶³ House of Lords - Science and Technology Committee (2003) *Fighting Infection (Session 2002-03, HL Paper 138)*. London: The Stationery Office (2 July 2003), p. 8. In July 2002 the committee issued a call for evidence, attracting 117 written submissions. Forty nine individuals from thirty eight organizations gave evidence in person. In July 2002 the Committee organised a seminar, hosted by the Academy of Medical Sciences, to gain an overview of some of the main issues of infectious disease control. Over the duration of this inquiry the Committee visited health care institutions, research and surveillance centres and public health departments in England, Switzerland and the United States of America. (ibid.)

⁴⁶⁴ Ibid., p.6

novel disease. A deeply concerned World Health Assembly said, during the outbreak, that SARS

“poses a serious threat to global health security, the livelihood of populations, the functioning of health systems, and the stability and growth of economies”.⁴⁶⁵

This novel coronavirus emerged in China in November 2002, but Chinese authorities failed to officially inform the World Health Organization until February 2003, at which point the disease had reached Singapore. Within four months the disease spread rapidly to twenty-six countries, by July 2003 the number of probable cases rose to over 8000, of which 774 were fatal.⁴⁶⁶ After July 2003 the infection rate, as well as mortality rate went into sharp decline, WHO declared the SARS outbreak had been contained world wide on 5 July 2003.⁴⁶⁷ SARS is worth mentioning here because of its rapid international spread, and economic impact.

The outbreak has been used in presentations and documents outlining the possible dangers of bioterrorism as an oratory crutch in the absence of real life cases of deliberate use of contagious disease.⁴⁶⁸ The SARS outbreak

⁴⁶⁵ World Health Organization (2003) *Severe Acute Respiratory Syndrome (SARS)* Geneva, Switzerland: 56th World Health Assembly (WHA 56.29) A56/VR/10, 28 May 2003

⁴⁶⁶ World Health Organization (2003) *Summary of probable SARS cases with onset of illness from 1 November 2002 to 31 July 2003*.
http://www.who.int/csr/sars/country/table2004_04_21/en/index.html, 31 December 2003; Heymann, D. L. & G. Rodier (2004) Global Surveillance, National Surveillance, and SARS. *Emerging Infectious Diseases (Online)*, 10(2)

⁴⁶⁷ World Health Organization (2003) *Update 95 - SARS: Chronology of a serial killer*.
http://www.who.int/csr/don/2003_07_04/en/index.html: accessed August 2008, World Health Organization (2004) *WHO SARS Risk Assessment and Preparedness Framework October 2004 (WHO/CDS/CSR/ARO/2004.2)*. Geneva: WHO

⁴⁶⁸ See, for example: Laurance, J. (2003) *Britain not ready for bio-terror attack, say doctors* The Independent (London) 2 July 2003, p. 6; US Department of Health and Human Services (2003) *HHS provides \$1.4 billion more to states and hospitals for terrorism preparedness (press release)*. 2 September 2003; HSP CBW Events Database (2003) *EU-*

also set in motion renewed efforts to revise and update the WHO International Health Regulations (IHR).⁴⁶⁹ Chinese reluctance to share information in a timely fashion at the beginning of the outbreak and the subsequent rapid spread facilitated through international travel motivated the World Health Assembly to adopt a resolution urging members:

“to use their experience with SARS preparedness and response to strengthen epidemiological and laboratory capacity as part of preparedness plans for responding to the next emerging infection, the next influenza pandemic, and the possible deliberate use of a biological agent to cause harm”⁴⁷⁰

SARS was also the first instance in which the Global Outbreak Alert and Response Network (GOARN) of the WHO identified and responded to an outbreak, by collecting reports and co-ordinating a global network of laboratory scientists, clinicians, and epidemiologists electronically in real-time; thus aiding the implementation of strategies preventing nosocomial spread,

US conference on Transatlantic Co-operation on Combating Bioterrorism; Personal Communication (12 December 2003). 24 November 2003; University of Pittsburgh Medical Center (2005) Overview: International Conference on Biosafety and Biorisks - Lyon, France. (3 March 2005); & Weber, S. G. & others (2004) SARS, emerging infections, and bioterrorism preparedness. The Lancet Infectious Diseases, 4(8), 483-484. SARS is used to illustrate rapid world wide spread, as well as responses to it.

⁴⁶⁹ Although discussions were afoot prior to SARS, the outbreak provided a catalyst for negotiations of the revisions. See, for example: World Health Organization (2003) *Revision of the International Health Regulations (EB111.R13) EB111/SR/9*. Geneva, Switzerland: 56th World Health Assembly, Ninth Meeting 24 January 2003. Further, this resolution takes “into account also the existence of new risks and threats to health arising from the potential deliberate use of agents for terrorism purposes;” and affirms: “the additional threat posed by the substantial growth in international travel and trade, which provide greater opportunities for infectious diseases to evolve and spread;”

⁴⁷⁰ World Health Organization (2003) *Severe Acute Respiratory Syndrome (SARS)* Geneva, Switzerland: 56th World Health Assembly (WHA 56.29) A56/VR/10, 28 May 2003

and providing impetus for international travelling advice, including airport screenings and areas which were to be avoided.⁴⁷¹

As well as the WHO, the British Medical Association (BMA) linked SARS with bioterrorism in terms of the response.⁴⁷² At the BMA's annual conference, in July 2003, doctors warn that the UK is unprepared to deal with the large outbreaks, or bioterrorism, and demand more preparation and resources to tackle potential large demands placed upon the health care system during public health emergencies.⁴⁷³

The SARS outbreak has an effect on international as well as national disease surveillance, epidemic alert and response, and health security more generally. SARS was a "wake up call" to the policy community involved in health related issues. The rapid spread and identification in, "most OECD countries", and the ensuing "economic tidal wave" evoked notions of vulnerability to communicable diseases.⁴⁷⁴

4.4 Convergences – flu and bioterrorism

Two types of convergences have been alluded to in the cases described here from a UK policy perspective: First, the emerging overlaps in the

⁴⁷¹ Heymann, D. L. & G. Rodier (2004) Global Surveillance, National Surveillance, and SARS. *Emerging Infectious Diseases (Online)*, 10(2)

⁴⁷² The BMA has connected public health responses with bioterrorism previously. For example, in 2002 at the World Medical Association's annual meeting David Carter, former chief medical officer for Scotland, said that the public health capacity in all countries must be strengthened: "It is clear that public health has a vital role to play in planning. We must ensure that every one of our countries has an effective and well resourced public health system" Eaton, L. (2002) BMA says world is ill prepared for bioterrorism. *British Medical Journal*, 325(7368), 794

⁴⁷³ Laurance, J. (2003) *Britain not ready for bio-terror attack, say doctors* The Independent (London) 2 July 2003, p. 6

⁴⁷⁴ Senior HPA official, Interview, 9 October 2008

institutional responses and, second, overlaps due to the nature of the threat. The former could be described as a *utilitarian convergence* because both threats are coming from the potential of disease spreading in populations, whereas the latter could be described as a *normative convergence* based on increasing recognition or perception of the threat as a fundamental challenge to national security.

There are other, as yet unexplored, points of convergence between bioterrorism and influenza. First, there have been numerous occasions when influenza has been alleged to have emerged from, or been attributed to, biological warfare programmes. And second: where scientific research raises concerns.

Influenza caused by malicious intent?

The obvious connection between the bioterrorism and influenza is the use of influenza as a biological weapon. This is however rare, if it has been done at all. There are examples in the literature that influenza viruses have been *considered* as potential candidates for biological warfare programmes in the past, for example, during British efforts in the 1950s influenza was considered as a potential agent in one paper on research policy of the Biological Research Advisory Board⁴⁷⁵ whereas the French biological warfare programme in the 1960s considered influenza as a potential incapacitant.⁴⁷⁶ It appears plausible that other states with biological warfare programmes have

⁴⁷⁵ Balmer, B. (2001) *Britain and Biological Warfare: Expert Advice and Science Policy, 1930-65*. Basingstoke: Palgrave Macmillan, p. 120

⁴⁷⁶ Lepick, O. (2006) The French Biological Weapons Program. In: *Deadly Cultures - Biological Weapons since 1945*, eds. Wheelis, M., L. Rózsa & M. Dando, Cambridge, Massachusetts and London, England: Harvard University Press, 108-131

considered influenza viruses as well. However, there are no documented and verified cases of influenza virus ‘weaponization’ in the literature. A case of bioterrorism in which influenza may have been used among other diseases and methods of violence is in the Brazilian state of Matto Grosso, between 1957 and 1963, in attempts by ‘landowners’ to displace and or eradicate indigenous tribal populations in order to free land of inhabitation for sale.⁴⁷⁷

Apart from these documented cases of consideration of influenza viruses as biological weapons and its use in bioterrorism there are numerous occasions when influenza has been alleged to have emerged from, or been ascribed to, biological warfare programmes. These allegations can go both ways – the more common way is the perception or presumption that a naturally occurring disease may have had been manufactured in, and originated from “enemy labs”. Less common is direct allegation and accusation of states to be procuring or manufacturing influenza as a biological weapon.

Each case is briefly illustrated with recent examples. There are many more examples to be found in the literature. These stories or narratives may reveal, at least to a certain extent, the perceived threat from biological warfare programmes or the difficulty in attributing deliberate disease releases.

In November 2005, Vladimir Filippov, the Head of the Russian armed forces’ radiation, chemical and biological protection troops, revealed that for

⁴⁷⁷ Wheelis, M. & M. Sugishima (2006) Terrorist use of biological weapons. In: *Deadly Cultures - Biological Weapons since 1945*, eds. Wheelis, M., L. Rózsa & M. Dando, Cambridge, Massachusetts and London, England: Harvard University Press, 284-303. The authors describe this episode as ‘biocriminality’ because the actions of the perpetrating landowners were motivated by greed rather than political motives but were included by the authors as bioterrorism because of the “overtly and genocidal intent” of the attacks. (ibid. p. 286). As the authors note this episode deserves much more research.

over four months the troops investigated more than 200 biological samples from 12 regions in Russia to rule out the possibility that the outbreaks of bird flu resulted from an intentional release of the virus.⁴⁷⁸ It would not be surprising if other countries were equally suspicious, conducting similar studies, or assessments. This is, however, speculative.

More serious are allegations of the type emerged, for example, in a report in May 2006. Citing a “high ranking defector from North Korea’s Academy of Sciences” who alleged that North Korea assigned eight research centres to work on various aspects of the bird flu virus for hostile use, as a matter of priority.⁴⁷⁹ Various other examples can be cited to illustrate these sorts of reports or stories – these cases are, however, rarely substantiated, often speculative and involve statements from the extreme ends of the political spectrum. The North Korean example given above comes from a report which conflates a number of different issues – a report of a defector, an intelligence briefing in the US about avian influenza, and Al-Qaeda. It is difficult to prove or disprove these types of reports. It is equally difficult to assess the impact on policy, and policy makers’ perception. The invasion of Iraq in 2003 is an example of where it is difficult to disentangle hyperbole from fact, credibility of evidence and sources of intelligence, and the genuine character and sincerity of political motives.

⁴⁷⁸ Anonymous (2005) *Bird flu epidemic not triggered intentionally* ITAR TASS news agency 12 November 2005

⁴⁷⁹ Thomas, G. (2006) *North Korea trying to weaponize bird flu: Bio warfare experts call it potentially ‘greatest threat al Qaida could unleash*. Joseph Farah’s G2 Bulletin, cited in WorldNetDaily.com, 8 May 2006

Experiments of concern

There are three often cited experiments which have caused concern because of their supposed or perceived potential to be misused, or misappropriated for nefarious purposes. In short these experiments exemplify, for some, the dual-use problem and problems with unintended consequences of scientific research.

The first of these “experiments of concern” is a study published in the *Journal of Virology* by Jackson and others in 2001 on recombinant mousepox which suppresses and inhibits host immune responses and thus increases the fatality of the virus.⁴⁸⁰ The second study, published by Cello and others in 2002 in *Science*, on the synthesis of an infectious poliovirus from scratch, which demonstrated: “that it is possible to synthesize an infectious agent by in vitro chemical-biochemical means solely by following instructions from a written sequence.”⁴⁸¹ The third study which raised concern, which is most relevant for this dissertation, was the reconstruction of the 1918 influenza virus in a series of experiments, published in *Nature* and *Science* in 2005. It is an analysis of the final three genes of the 1918 human influenza virus, completing the genome sequence.⁴⁸² The other sequences had been published previously. The study presents “sequence and phylogenetic analyses of the complete genome of the 1918 influenza virus, and propose[s] that the 1918 virus was [...] an entirely avian like virus that adapted to humans” this is

⁴⁸⁰ Jackson, R. J. & others (2001) Expression of Mouse Interleukin-4 by a Recombinant Ectomelia Virus Suppresses Cytolytic Lymphocyte Responses and Overcomes Genetic Resistance to Mousepox. *Journal of Virology*, 75(3), 1205-1210

⁴⁸¹ Cello, J. & others (2002) Chemical synthesis of poliovirus cDNA: generation of infectious virus in the absence of natural template. *Science*, 297(5583), 1016-8

⁴⁸² Taubenberger, J. K. & others (2005) Characterization of the 1918 influenza virus polymerase genes. *Nature*, 437(7060), 889-93

significant, according to the authors, because of differences between the 1918 virus and subsequent human influenza viruses. The authors note that “a number of the same [sequence] changes have been found in recently circulating, highly pathogenic H5N1 viruses that have caused illness and death in humans”⁴⁸³ these changes are “likely to have an important role in human adaptation”.⁴⁸⁴ *Science* published a research article by Tumpey and others describing the reverse genetic engineering of 1918 pandemic influenza virus and its effects on mice. The virus was synthesised from genomic RNA obtained from unfixed tissue cultures from 1918 Spanish flu victims found in Alaskan permafrost and from archived formalin fixed lung tissue cultures. The study “generated a virus containing the complete coding sequences of the eight viral gene segments from the 1918 influenza virus [...] to study the properties associated with its extraordinary virulence.”⁴⁸⁵ Non encoded sequences were substituted with corresponding segments from closely related H1N1 influenza viruses. Thus, the reconstructed virus is not necessarily representative the pandemic virus because it is “built into the backbone of a laboratory strain”, and the construct is only one strain – in a pandemic a diverse virus population is in circulation, containing different strains.⁴⁸⁶

The publication of the studies was followed by questions raised about whether the benefits outweigh the risks posed by such research. The enumerated benefits in the long term include the early identification of an emerging pandemic and aiding vaccine and drug development; whereas the possible risks include accidental release of the virus from a research laboratory

⁴⁸³ Ibid. p. 889

⁴⁸⁴ Ibid. p. 890

⁴⁸⁵ Tumpey, T. M. & others (2005) Characterization of the 1918 Spanish Influenza Pandemic Virus. *Science*, 310(5745), 77-80, p. 77

⁴⁸⁶ Sharp, P. A. (2005) 1918 Flu and responsible science. *Science*, 310(5745), 17

potentially triggering a pandemic. Both publications were accompanied by editorials and special reports discussing these issues. The *Science* editorial by MIT Professor Phillip Sharp acknowledged the dual use nature and potential of misuse of the published information by “a terrorist group or a careless investigator”, but reassured readers’ concerns by reference to the papers’ approval by the US National Science Advisory Board for Biosecurity (NSABB) who “concluded that the scientific benefit of the future use of this information far outweighs the potential risk of misuse”.⁴⁸⁷ The *Nature* special report cited concerns voiced by various experts, for example, Richard Ebright who contended that “there is most definitely reason for concern [...] Tumpey et al. have constructed, and provided procedures for others to construct, a virus that represents perhaps the most effective bioweapons agent now known”, Barbara Hatch Rosenberg added: “This would be extremely dangerous should it escape, and there is a long history of things escaping”. The report finished with a quote from Taubenberger, one of the authors, to stymie concerns over unintended consequences and misuse:

“We are aware that all technological advances could be misused [...] but what we are trying to understand is what happened in nature and how to prevent another pandemic. In this case, nature is the bioterrorist”⁴⁸⁸

Conclusion and Discussion

Both these cases – pandemic influenza and bioterrorism – are multifaceted and complex, operating on a variety of levels and incorporating a number of different concepts and policy areas, and accordingly the policy area is inhabited by an equally large number of actors. The case studies are used

⁴⁸⁷ Ibid.

⁴⁸⁸ Bubnoff, A. v. (2005) The 1918 flu virus is resurrected. *Nature*, 437(7060), 794-5

here for a specific purpose: to explore the way in which ‘uncertain events’ are assessed, framed and responded to in the UK, with a particular view towards bioterrorism as such an event. The focus is on the policy response, on the national level, rather than local, regional, or international.

Both case studies illustrate cases of ‘uncertain events’ – events with high degrees of scientific complexity and contingency – classically characterised as low probability and high impact. However, pandemic influenza and bioterrorism are perceived to be, or have come to be perceived, to have a high probability of occurrence, with a likelihood of occurrence nearing certainty (“not if but when”), and both cases are assumed to cause wide-spread disruption and destruction when they materialise. However, evidence is scant, in particular for bioterrorism. The last influenza pandemic to hit the UK was in 1967, more than forty years ago, although a number of potential pandemic strains are in circulation, making an outbreak, at any time, plausible. On the other hand, bioterrorism has never occurred in the UK, and seldom elsewhere.⁴⁸⁹

Policy formation and Biothreat

As hinted at throughout this chapter the change in the perception of the threat of bioterrorism is a product of various processes and events, and is presented here to have occurred in a stepwise manner – a gradual, as well as

⁴⁸⁹ This is, to a certain extent, a definitional question. One could argue that there has been at least one episode of bioterrorism in the UK. In 1981 the ‘Dark Harvest Commandos’ deposited a parcel of soil containing anthrax bacteria (as subsequent analysis showed) outside CDE Porton Down, the UK’s defence research facility. The soil was taken from Gruinard Island which had been used for tests with anthrax during WW II. See, for example: Anonymous (1981) *Killer Disease Found In Soil Dumped By Protest Group* Associated Press (London) 13 October 1981

punctuated, transformation of a ‘threat logic’ or narrative within the UK government (policy makers), mediated through commentators as well as the intelligence community (policy shapers). The policy regime drawn up to counter bioterrorism has evolved in a complex and rapidly changing political environment.

The threat from bioterrorism was seen as negligible during, and until the end of the Cold War. The JIC assessment from 1989, states that the Joint Intelligence Committee has: “no intelligence that any terrorist group makes CBW agents, possesses any such agents or is currently contemplating attacks using CBW agents” but maintains that “use of CBW agents by terrorists would generate widespread fear and could cause large numbers of casualties” and that “terrorist organisations could also readily obtain and handle without insurmountable difficulty, suitable bacteria, viruses and certain toxins”⁴⁹⁰ The focus at this time is on proliferation by states, although there is a recognition that states might pass on unconventional weapons to non-state actors. This recognition is most likely informed by proliferation concerns on one hand and terrorism on the other – Iraqi use of chemical weapons, and not only Libyan production capabilities of chemical and biological weapons but also their support in the bombing of Pan Am flight 103 over the Scottish town of Lockerbie. In addition to concerns over proliferation of state capabilities, is a latent but steadily growing concern over increased ease of access to biological agents due to rapid scientific progress and with it a presumed erosion of technological barriers. The lowering of technological barriers is a trend which extends further back than the period described here, and continues to do so beyond the period described here. This lowering of the technological barriers

⁴⁹⁰ JIC, 26 June 1989, cited in Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004), pp.29

which may enable hostile exploitation has been theoretically assumed and is inextricably linked due to the 'dual-use' nature of the knowledge, and technology as a part thereof, necessary for the production of biological agents.⁴⁹¹ The publication of the 'experiments of concern' – the synthesis of recombinant mousepox with increased virulence, the de novo synthesis of a poliovirus solely by following instructions from a written sequence, and the recreation of the 1918 pandemic influenza strain – have allegedly demonstrated the lowering of technological barriers enabling terrorists to undertake genetic manipulations. The lowering of technological barriers is, and has been, a constant source of concern. This trend has been cited as an enabling factor for the acquisition of biological agents for nefarious purposes in virtually every published assessment of the propensity of terrorist groups to use unconventional weapons over the past thirty years. However, most groups who engage in terrorism tactics have been technologically conservative, preferring to use tested and proven conventional explosives.⁴⁹² In 2009 the US Director of National Intelligence made the following assessment of the groups who have shown interest in unconventional weapons:

“Most terrorist groups that have shown some interest, intent or capability to conduct CBRN attacks have pursued only limited, technically simple approaches that have not yet caused large numbers of casualties.”⁴⁹³

⁴⁹¹ For an eloquent articulation of the dangers the exploitation of biotechnology, see for example: Meselson, M. (2000) Averting the hostile exploitation of biotechnology. *CBW Conventions Bulletin*, (48), 16-19

⁴⁹² Although, it should be noted that groups have consistently shown a degree of innovative capacity in using and adapting conventional explosives, and that novel modes of construction of explosives or modes of attack have diffused internationally, from vehicle bombs to remote triggering devices.

⁴⁹³ Blair, D. C. (2009) *Annual Threat Assessment of the Intelligence Community for the Senate Select Committee on Intelligence*. Washington, DC: Office of the Director of National Intelligence (12 February 2009)

This statement would have been equally true twenty years earlier. During the early 1990s the perception that conventional weapons suit the purposes of terrorists better prevailed, however there was the recognition that the use of CBRN is a remote possibility, considering it unlikely to be successful, and hypothetical.

This perception changed with the sarin gas attacks in Matsumoto and Tokyo in the mid 1990s, although preparations were underway prior to the attacks. International co-operation on CBW terrorism was stepped up. Despite this changed perception, institutionally not much changed. Exercises were held to test and prepare emergency responders and decision makers. The most obvious impact that the Tokyo attacks have had was that the hypothetical use of CBRN weapons was now seen as a real possibility, which was seen as nigh on impossible to control. The rise of Islamic extremism was seen as problematic and the interest, although lack of evidence of actual acquisition, was noted in several intelligence reports. By the end of decade there is 'increasing concern', or 'utmost concern' over a 'potentially a serious threat', with 'horrific potential'. At this time there is heightened awareness of emerging infectious diseases, and media attention to the possible use of CBRN by terrorists, prompting both, the Royal Society as well as JIC to state that "the actual threat does not match the media hype" although acknowledging that certain individuals are 'interested'.

Policy failures in response to first BSE and FMD forced an institutional response. The Civil Contingencies Committee and its Secretariat in the Cabinet Office, created in July 2001, took over responsibilities from the Home Office Emergency Planning Division, thus starting to centralise the emergency response.

September 11, in particular, and the anthrax letters following it to a lesser extent caused a shake-up of the institutional arrangement. It jolted the

system. The calculus of risk changed, moving the hypothetical position that aggressors may seek indiscriminate destruction into an area of certainty – a statement by the House of Commons Defence Committee illustrates a wide held perception of the threat at the time: “Although we have seen no evidence [...] we can see no reason to believe that people who are prepared to fly passenger planes into tower blocks would balk at using such [CBR] weapons. The risk that they will do so cannot be ignored”⁴⁹⁴ The post 9/11 threat perception paradigm is that the terrorist threat is “real and present”, indiscriminate and capable of causing massive destruction.⁴⁹⁵

September 11 also acted as a catalyst and precipitated changes in the UK that were in the offing prior to the attacks. Apart from legislation being rushed through Parliament, a multi-agency, cross-government, joined-up-thinking approach was embedded, involving most, if not all, governmental departments and agencies in preparations and contingency planning, as well as newly formed agencies (for example, JTAC, HPA, etc.). The impact of September 11 did of course not just affect the UK’s governmental perception and policy, but reverberated internationally, culminating most dramatically in military action against Afghanistan and Iraq, which in turn caused, directly or indirectly a spate of terrorist attacks, in the UK as well as elsewhere.

⁴⁹⁴ House of Commons - Defence Committee (2001) *The Threat from Terrorism (Session 2001-02 HC 348-1)*. London: The Stationery Office (18 December 2001)

⁴⁹⁵ See, for example, the press release accompanying the release of the 9-11 Commission Report: “Every expert with whom we spoke told us that an attack of even greater magnitude [than 9-11] is now possible – and even probable. We do not have the luxury of time. We must prepare and we must act.” The statement adds that Osama bin Laden and al Qaeda “seek creative methods to kill Americans in limitless numbers, including the use of chemical, biological and nuclear weapons.” Kean, T. H. & L. H. Hamilton (2004) *Public Statement: Release of 9/11 Commission Report*. 22 July 2004

Terrorist attacks, and plots, in the UK, as well as internationally, have had the effect of augmenting the perception of threat which was so dramatically raised in 2001. Most notably, the 'ricin plot', and the London bombings on 7th July 2005.

Problems

A re-occurring problem with the construction of the narratives is the problem of delineating the subject. Disentangling the issue of bioterrorism from other, related areas, for example, chemical and nuclear issues, or separating the domestic response from the wider international context is problematic. If a narrative had been written from a US American perspective, for example, it would have been quite different. For example in the US the product tampering of Tylenol, laced with cyanide (in 1982, leading to product safety regulations), and the acquisition of Plague bacteria by white supremacist Larry Wayne Harris (leading to export control and transfer protocols), the Sarin gas attacks in Tokyo (20 March 1995), followed by the Oklahoma Federal building bombing by Timothy McVeigh (19 April 1995), have impacted policy thinking and discourse differently in the US than in the UK. Most prominent difference is the impact of the anthrax letters in 2001, when half of the US Senate and their staff had to vacate their offices for six months to allow for decontamination activities. There have undoubtedly been spillovers into the UK policy thinking – due to a close working relationship between the US and UK intelligence agencies. Despite this close relationship, and a number of similarities in threat characterisation and conceptualisation, there are significant differences in the response to bioterrorism. These may be due to a number of inter-related factors as well as fundamental differences in institutional set up, arrangements, and histories.

Further, on the international level, apart from close bilateral relationships with the US, there are important multilateral relationships into

which the UK is embedded. These multilateral relationships have some relevance on the policy making process in the UK. For example, the G8, the World Health Assembly, the European Union, various international initiatives such as the Proliferation Security Initiative, the Australia Group, the Co-operative Threat Reduction Initiative, the Global Health Security Initiative, as well as United Nations treaties, conventions and resolutions on proliferation and terrorism.

5

Institutional Arrangement & Policy Response

Introduction

Numerous approaches have been devised to respond to the challenge of biological terrorism, and biological weapons in general. Each approach addresses different aspects of the problem – approaching the problem from different angles, and perspectives, at a range of levels from individual to international. Collectively these approaches have variously been described as ‘regimes’, ‘networks’, or ‘webs’; in recognition that to effectively control, prevent and deter the use of biological weapons a complementary set of legal, social, political measures is required, connected as well as unconnected. Each concept – regime, network, and web – has “different origins and different implications, they all have, at the root, the idea that there is no single solution to the challenges posed by biological weapons.”⁴⁹⁶ Likewise, at the heart of these responses is the recognition that there *are* challenges posed, which need to be addressed.

⁴⁹⁶ Rappert, B. & C. McLeish (eds.) 2007. *A web of prevention: biological weapons, life sciences and the governance of research*, London: Earthscan, p. 2

This chapter examines the institutional responses and arrangements drawn up to confront the threat of bioterrorism in the UK, as well as the main institutional players embedded in these arrangements. Exploring the institutional arrangement is the first step towards understanding how policy is made in the UK with regard to bioterrorism. This chapter seeks to answer the first research question: Who are the main actors in the policy making process with regard to bioterrorism?

Institutional Arrangement and Main Actors

The institutional response to bioterrorism as well as pandemic influenza in the UK is complicated. It is multi-layered, from local to national and international including the devolved administrations, from strategic to operational; bringing together a number of different actors: government departments, agencies, and other actors, such as first responders, academic and non-governmental organizations, and industry.⁴⁹⁷

Strategic and overall policy decisions are made within the Cabinet Office in the UK. Specific policy areas are dealt with by Cabinet committees. The committees are supported by the Cabinet Office's Civil Contingency Secretariat within the Capabilities Framework, which designates lead departments to specific policy challenges. The lead department in pandemic influenza is the Department of Health; in the case of counter-terrorism – of which CBRN is a subset – the lead department is the Home Office. The designation of lead departments can thus be used to characterise a distinct policy area in which each 'case' falls as defined by governmental designation – pandemic influenza

⁴⁹⁷ Industry involvement in both of these areas is ubiquitous and prolific, from defence contractors, to pharmaceutical industry.

is a health contingency, whereas bioterrorism falls into the rubric of law enforcement. Both are framed as civil contingencies, requiring emergency responses.

Emergency responses can be disaggregated by differentiating between three tiers of engagement with the perceived threats. These three categories can be defined as: operational “what needs to happen on the ground”, tactical “what people and emergency responders need to get their job done”, and strategic “the wider political agenda” including the international context. The focus of this dissertation is on the strategic level, rather than the operational or tactical response levels.⁴⁹⁸

First I turn to the institutional arrangement adopted to confront pandemic influenza, followed by that of bioterrorism.

Pandemic influenza

In the case of pandemic influenza, decision making is limited to emergency response planning, the necessity of planning for, and assessment of the threat of pandemic influenza emergence is internationally ‘negotiated’ within the fora of the World Health Organization (WHO).⁴⁹⁹ Influenza

⁴⁹⁸ However, institutions operate in interdependent networks and policy decisions are influenced, amongst other things, by bargaining of resources and interests between different actors of the policy network, international obligations (such as EU directives), legal defensibility of policies to avoid or diffuse blame, and dealing with uncertainty and incomplete knowledge. Thus, strategic level responses are influenced by resource constraints at tactical and operational levels. See chapter 3 of this dissertation, especially the section entitled “Institutions – interdependence confounds centrality”.

⁴⁹⁹ Several other international fora influence the negotiation of the pandemic influenza threat, for example, the Global Health Security Advisory Group (GHSAG) of the G7, and the EU Centre for Disease Prevention and Control (ECDC). In terms of influenza the ECDC works closely with the European Influenza Surveillance Scheme (EISS) is a European

pandemics are thought to be cyclical and their emergence is therefore a question of when it will happen not if it will happen. This circumstance is reflected in the international, as well as national, institutional responses with an emphasis on early detection, surveillance and monitoring of virus subtypes in circulation in human and animal populations.

In 1997 the response system to influenza pandemics was reshaped,⁵⁰⁰ with the publication of the Chief Medical Officer's new infectious disease strategy "*Getting ahead of the Curve*" which included, amongst other priorities, pandemic influenza and terrorism.⁵⁰¹ In 2005 the response to pandemic influenza was updated, from its 1997 predecessor, with the publication of a new contingency plan in March 2005.⁵⁰² The contingency plan, like its predecessor, is structured along the pandemic phases of the WHO, which define the evolution of an influenza pandemic.⁵⁰³ The contingency plan

funded initiative. Decision 2119/98/EC of the European Parliament and of the Council set up the European Network for the Epidemiological Surveillance and Control of Communicable Diseases (the 'European Network') and its Early Warning and Response System (EWRS).

⁵⁰⁰ Department of Health (1997) *Multiphase contingency Plan for Pandemic Influenza*. London: Department of Health, 1 March 1997

⁵⁰¹ Department of Health - Chief Medical Officer (2002) *Getting ahead of the curve: a strategy for combating infectious diseases (including other aspects of health protection)*. London: Crown, 10 January 2002

⁵⁰² Prior to this, the main actors involved in pandemic influenza response were: UK Health Departments (including policy branches, the Medicines Control Agency and the NHS Executive, as well as the Secretary of State and the Chief Medical advisor); Public Health Laboratory Service (PHLS); Royal College of General Practitioners Research Unit; Health Authorities; Trusts; Fundholders; WHO Collaborating Centre for Reference and Research on Influenza; National Institute for Biological Standards and Control (NIBSC); Medical Research Council (MRC). Department of Health - Chief Medical Officer (2005) *Pandemic Flu: UK influenza pandemic contingency plan*. London: Department of Health, 1 March 2005. This plan has been continuously updated, first in October 2005, then again in March, and November 2007.

⁵⁰³ Ibid. Starting from the base level where no new influenza subtypes have been detected, to potentially dangerous animal viruses circulating in animal reservoirs during the 'inter-pandemic period', to the 'pandemic alert period' where human infections occur at varying degrees, to the 'pandemic period' during which there is increased and sustained

continued...

provides an overarching framework for an escalating, integrated, multi-agency, UK-wide response to an influenza pandemic, setting out the aims and objectives, planning parameters, strategic policies and roles and responsibilities of the main organisations involved.⁵⁰⁴ This allows: “a step-wise escalating approach to preparedness planning and response leading up to declaration of the onset of a pandemic.”⁵⁰⁵ Each UK phase corresponds to a phase in the WHO plan. The WHO confirms disease progression and status and announces the progression to another phase of the WHO plan:

“Once a pandemic has been declared [by WHO], UK action will depend on whether cases have been identified in the UK, and how extensively it has spread. For UK purposes, therefore, additional UK alert levels are included within the WHO pandemic phase”⁵⁰⁶

The Department of Health has a central role in the health response to pandemic influenza. Health response planning and strategic decisions are made by the Department of Health, as the lead department, and by the Cabinet Office Ministerial Civil Contingencies Committee (CCC) with support of the Civil Contingencies Secretariat (CCS). Within the CCC the work on pandemic influenza is co-ordinated and overseen by the cross-governmental ministerial committee (MISC 32) which was set up in early 2005.⁵⁰⁷ MISC 32

transmission in the general population. The final stage is the post pandemic period with a return to the initial inter-pandemic period.

⁵⁰⁴ Leese, J. (2006) *Department of Health Perspective*. Paper given at: Joint DH-DEFRA Workshop on transmission risks of avian influenza from birds to humans; Avonmouth House, London, 6 July 2006

⁵⁰⁵ Department of Health - Chief Medical Officer (2005) *Pandemic Flu: UK influenza pandemic contingency plan*. London: Department of Health, 1 March 2005, p. 15

⁵⁰⁶ Ibid. p. 15

⁵⁰⁷ The Ministerial Committee on Pandemic Influenza Planning (MISC 32) is sometimes referred to as MISC 32 Flu Working Group (FWG). The Cabinet Office does not “release information about cabinet committees other than their membership and terms of reference” (personal communication with CCS), so an exact date of MISC 32’s

oversees the decision making of the response planning, whereas the Department of Health produces the strategic contingency plan, which is operationalized in the contingency plans produced by the Health Protection Agency (HPA). MISC 32 is chaired by the Secretary of State for Health, attended and advised by the Chief Medical Officer (CMO), and is challenged on the scientific basis of its decision making by the government's Chief Scientific Advisor (CSA).⁵⁰⁸

The Department of Health established two bodies in 2005: the Scientific Advisory Group (SAG) on Pandemic Influenza, to provide the scientific evidence base for health related pandemic influenza policies, and the UK National Influenza Pandemic Committee (UKNIPC) which is chaired by the CMO and tasked with the provision of specialist advice to the UK Health Departments on the health response during an influenza pandemic.⁵⁰⁹

establishment could not be gained. When asked in Parliament about how many times MISC 32 had convened Jim Murphy, Parliamentary Under-Secretary for the Cabinet Office, answered: "Information relating to internal meetings, discussion and advice and the proceedings of Cabinet and Cabinet committees is generally not disclosed as to do so could harm the frankness and candour of internal discussion" Murphy, J. (2006) *Influenza Pandemic Planning*. 2 February, vol. 442, part 74, col. 271: Hansard (Commons). However, information on MISC 32 was later volunteered by Derek Twigg, Parliamentary Under-Secretary (Minister for Veterans) for the Ministry of Defence – MISC 32 held 23 meetings between early 2005 and 12 December 2007, after this date its name changed to the Pandemic Flu Implementation Group (PFIG) to reflect a step change in its work programme from policy development to policy implementation. Twigg, D. (2007) *Armed Forces: Influenza*. 18 December, vol. 469, part 25, col. 1448W: Hansard (Commons)

⁵⁰⁸ Evidence given by the Department of Health and the Health Protection Agency to the House of Lords Science and Technology Committee: House of Lords - Science and Technology Committee (2005) *Pandemic Influenza (Session 2005-06 HL Paper 88)*. London: The Stationery Office (16 December 2005); & Royal Society & Academy of Medical Sciences (2006) *Pandemic Influenza: science to policy*. London: Royal Society (November 2006)

⁵⁰⁹ For information see: <http://www.dh.gov.uk/ab/SPI/index.htm>. In January 2008 the SAG on Pandemic Influenza was renamed *Scientific Pandemic Influenza Advisor Committee (SPI)* by Sir Gordon Duff when the scientific remit and client group was widened and he became the first independent chair. The new scientific remit widened to include, among

continued...

Following the March 2005 publication of the contingency plan both advisory groups started their meetings, SAG met for the first time on the 22 June 2005, UKNIPC met for the first time on the 18 July 2005.⁵¹⁰

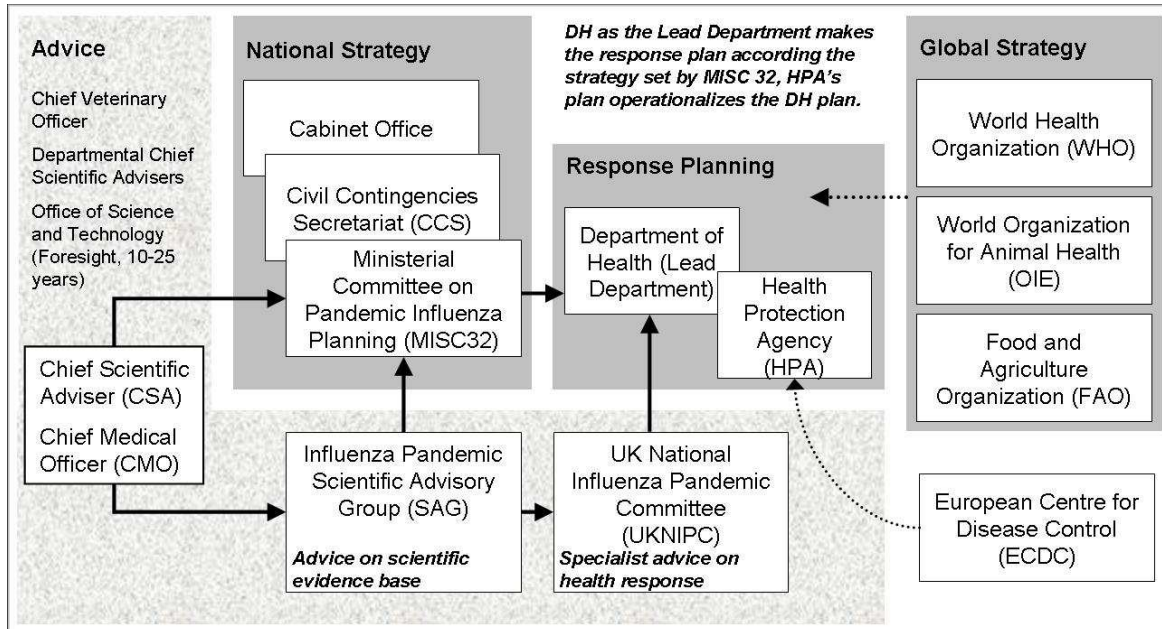


Figure 3: Pandemic Influenza Institutional arrangement

This schematic (figure 3) represents pandemic influenza strategic response arrangements, including advisory structures. Although the policy process in terms of pandemic influenza is clearer and more transparent than

other disciplines, risk management. The inclusion of an independent chair is following recommendations found in a November 2006 Royal Society policy document on science and policy making in response to pandemic influenza. Royal Society & Academy of Medical Sciences (2006) *Pandemic Influenza: science to policy*. London: Royal Society (November 2006)

⁵¹⁰ Minutes of the meetings are available online. The SAG met seven times until December 2006, and UKNIPC met five times until September 2006. The discussions of the advisory groups included, inter alia: vaccine and antiviral availability, sourcing, distribution, novel approaches and other public health measures; pandemic measures and exit strategies; reviews of national and international preparedness, including situation updates; lessons from exercises; communication strategies; and modelling techniques and reviews of evidence. See: www.advisorybodies.doh.gov.uk/

that of bioterrorism it still leaves room for improvement. The Royal Society thus lamented:

“The role of science in policymaking at the ministerial level in the lead departments is unclear from the evidence we received. In particular, the decisions relating to seeking advice, the source of advice, and whether the advice and available evidence are used, must all be more transparent. From the evidence we received, the basis for choosing a source of scientific advice also seems a closed matter. Although the quality of in-house government scientists is undoubtedly good, it is clearly difficult for these scientists to be expert across all of the issues of concern to their departments.”⁵¹¹

Bioterrorism

The policy response to bioterrorism is part of the wider CBRN response, which in turn is part of the overall counter-terrorism response. Terrorism is primarily seen as a law enforcement challenge – the published counter terrorism strategy of the UK is testament to that. The strategy focuses on four areas, the four ‘Ps’: Prepare, Prevent, Protect, and Pursue.⁵¹² These four areas are the primary responsibility of, and thus co-ordinated through the Home Office and the Metropolitan Police, supported by the Joint Terrorism Analysis Centre (the primary provider of intelligence to Whitehall customers). Terrorism is a central organizing theme and is pervasive in and around government.

⁵¹¹ Royal Society & Academy of Medical Sciences (2006) *Pandemic Influenza: science to policy*. London: Royal Society (November 2006), p.28, Recommendation 34.

⁵¹² Home Office (2006) *Countering International Terrorism: The United Kingdom's Strategy (Cm 6888)*. London: The Stationery Office (10 July 2006)

The diagram below gives an outline of the organization around the bioterrorism threat, as established in the period following September 11, as of 2005; and as far as could be discerned from the published literature, interviews, and disentangled from the wider terrorism response.

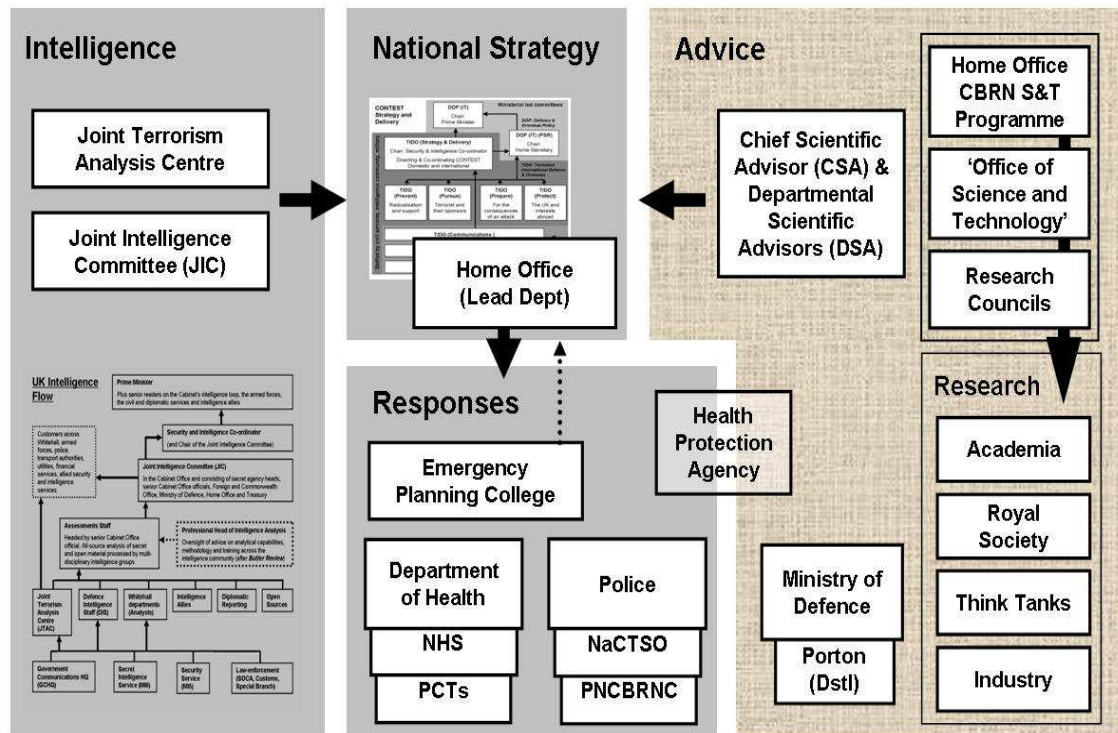


Figure 4: Bioterrorism institutional arrangement as of 2005. Representation of the institutional response to bioterrorism. The smaller diagrams, bottom left (outlining the intelligence flow in the UK) and top centre (outlining the CONTEST strategy and delivery), are reproduced in full detail below

This representation (figure 4) of the institutional response arrangement to bioterrorism concentrates on the national strategic level and thus lacks reference to the international context; each 'box' in the diagram (four shaded areas: Intelligence, National Strategy, Advice, and Response) has international

linkages.⁵¹³ The diagram also lacks the multiple levels of inter-connectedness between different actors, for example the JIC is located in the Cabinet Office and is comprised of the heads of the secret intelligence agencies, senior officials from Offices of the Cabinet, Foreign and Commonwealth, and Home, and the Ministry of Defence and Treasury. The Cabinet structure and the Intelligence structure are outlined in greater detail below (see figure 5 & 6).

The principal Government departments in the bioterrorism policy response are the Cabinet Office with a co-ordinating role and the Home Office as the lead department on CBRN as well as wider counter-terrorism efforts. Within the Cabinet Office is the Civil Contingencies Secretariat (CCS), including numerous ministerial committees and sub-committees (figure 4).⁵¹⁴

The institutional response, in terms of the wider counter-terrorism effort has a long history in the UK. The Cabinet Office has maintained committees on terrorism since what became known as the troubles began in the late 1960s without interruption.⁵¹⁵ The counter-terrorism strategy CONTEST, launched in early 2003, reshuffled the Cabinet Committee structure to reflect the counter-terrorism strategy's four 'Ps'. The "CONTEST Committee structure" falls under the Defence and Overseas Policy Committee, and is overseen by the sub-committee Defence and Overseas Policy – International Terrorism (DOP (IT)) which is furnished with detailed work from the DOP (IT) Protection, Security

⁵¹³ For example, the Intelligence Agencies co-operate with international partners (see for example the evidence gained for the uncovering of the 'ricin plot' in Chapter 4 above); the Police interacts with Interpol, specifically on bioterrorism; and the Department of Health with the WHO (see pandemic influenza above).

⁵¹⁴ CBRN or terrorism falls into the remit of dedicated committees set up for the counter-terrorism strategy CONTEST.

⁵¹⁵ Hennessy, P. (2007) From Secret State to Protective State. In: *The New Protective State - Government, Intelligence and Terrorism*, ed. Hennessy, P., London: Continuum Books & Mile End Institute, 1-41, pp. 26

and Resilience (PSR). The ministerial led DOP committees are supported by the 'TIDO machine' (Terrorism International Defence and Overseas) which breaks down into eight separate parts. Three of these are concerned with terrorist equipment and techniques and cut across four CONTEST specific TIDOs – Prevent, Pursue, Prepare and Protect. The TIDO machine is directed by the TIDO (Strategy and delivery) under the chairmanship of the Security & Intelligence Co-ordinator.⁵¹⁶

⁵¹⁶ The Security & Intelligence Co-ordinator is an important role in Cabinet and Intelligence, who reports to the Cabinet Secretary and Head of the Home Civil Service, and to whom the Chairman of the JIC reports. The SIC is also the Principal Accounting Officer for the Single Intelligence Account, and oversees the Civil Contingencies Secretariat as the deputy Chair of the Civil Contingencies Committee, supporting the Home Secretary in his role as Chair. This position was held from its inception by Sir David Omand (June 2002 – January 2005). Omand drafted the CONTEST strategy whilst in office. Prime Minister's Office (2002) *Press Release: Appointment of Security and Intelligence Co-ordinator and Permanent Secretary, Cabinet Office*. 20 June 2002, Prime Minister's Office (2005) *Press Release: Security and Intelligence Coordinator, Cabinet Office*. 4 January 2005

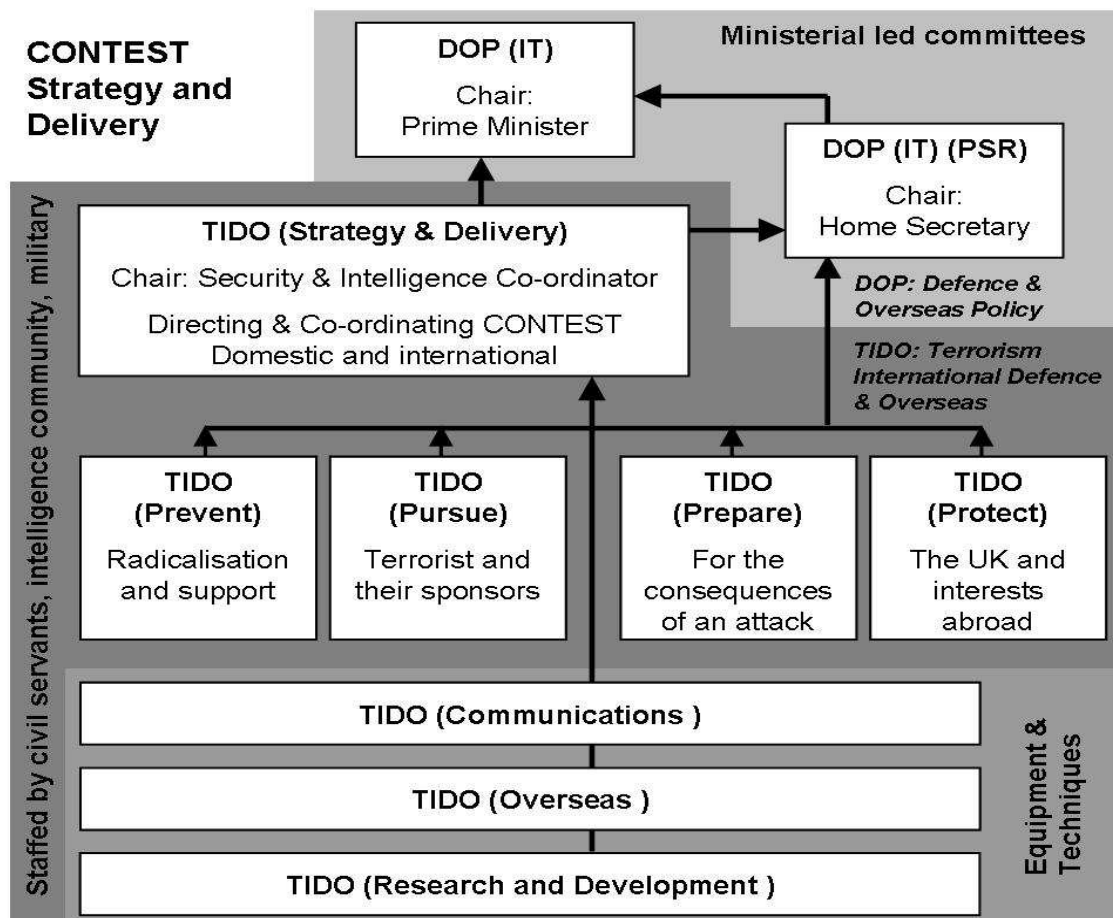


Figure 5: CONTEST Cabinet Committee Structure.⁵¹⁷

Moving down in the bioterrorism diagram (figure 4) into the 'Responses' box: the Department of Health has various roles in planning response levels, as well as in modelling effects of deliberate releases. The National Health Service, and by extension the Primary Care trusts, have a critical role in the

⁵¹⁷ Following Hennessy and Omand. Hennessy, P. (2007) From Secret State to Protective State. In: *The New Protective State - Government, Intelligence and Terrorism*, ed. Hennessy, P., London: Continuum Books & Mile End Institute, 1-41. Diagram adapted from p. 27. The structure presented here is constantly shifting, but generally accurate for the timeframe considered here. It should be noted that the Cabinet Committee structure has been reshuffled in 2009, replacing DOP with the Ministerial Committee on National Security, International Relations and Development (NSID).

bioterrorism response, in surveillance, identification and response.⁵¹⁸ Police forces play a central role in the operational response in that it enforces terrorism legislation. With a specific regard to bioterrorism two police units are important: the National Counter-Terrorism Security Office, a unit which is co-located with the Centre for the Protection of the National Infrastructure (CPNI), is responsible for inspections of commercial and research laboratories under the *Anti-Terrorism Crime and Security Act 2001*.⁵¹⁹ The second unit is the National CBRN centre which leads the multi-agency preparations for responding to Chemical, Biological, Nuclear and Radiological attacks. In a similar vein, the Emergency Planning College is a Cabinet Office unit which authors emergency scenario exercises and provides training for emergency response to local and central government.

The decision making apparatus of the national strategy – that is the Home Office and Cabinet Office – receives, broadly speaking, three types of outside input. Two of these are indicated by horizontal arrows in the diagram (figure 4) – Intelligence and other ‘Advice’, the third input, indicated by the dotted line arrow, is feedback from the ‘response box’, which is generated through emergency response exercises staged by the Emergency Planning College, which involves ministers and civil servants.

⁵¹⁸ Primary Care Trusts, hospitals in particular are the first responders and first line of defence in a bioterrorism incident, especially if the release is clandestine. For example, the US anthrax letters of October 2001 were accompanied by notes stating that the letters ‘contain anthrax’; however it was emergency responders and medical staff in hospitals who raised the alarm and alerted appropriate authorities (the US CDC in this case) when patients presented themselves with unusual symptoms. Cole, L. A. (2003) *The anthrax letters: a medical detective story*. Washington, D.C.: Joseph Henry Press

⁵¹⁹ See for example: McLeish, C. & P. Nightingale (2005) *The impact of dual use controls on UK science: results from a pilot study (Report of the ESRC Science and Society Project: Dual-use Controls and Genomic Research)*. SPRU Electronic Working Paper 132: University of Sussex, April 2005

Other 'Advice', on the right hand side in the diagram (figure 4), comes from a variety of different sources. Research on CBRN related issues is stimulated or solicited from academia, think tanks and industry through direct tendering of contracts from the Home Office's CBRN Science and Technology programme, or funding made available through the Research Councils.⁵²⁰ The Health Protection Agency (HPA) has numerous roles in response to bioterrorism, an advisory role, surveillance, as well as planning and executing exercises and responses to incidents. HPA is thus involved in responses as well as an advisory capacity which is represented in the diagram by straddling both areas. The Ministry of Defence plays a smaller role in these processes, and is involved through the Defence Science and Technology Laboratory (DSTL).⁵²¹ The scientific advisory structures – the Departmental Scientific Advisors, as well as the Chief Scientific Advisor – are involved in advising on and challenging the scientific evidence base of decisions. However, the provision of advice, as well as the process of threat assessment in the area of bioterrorism as a whole, is not clear. Recalling the Royal Society critique of the pandemic influenza response – the same may hold in the case of bioterrorism as well:

“the quality of in-house government scientists is undoubtedly good, it is clearly difficult for these

⁵²⁰ Formerly the Office of Science and Technology of the Department of Trade and Industry (DTI) played a role in directing funding through the research councils. DTI was replaced by the Department for Business, Enterprise and Regulatory Reform (BERR) and the Department for Innovation, Universities and Skills (DIUS) on 28 June 2007. BERR and DIUS have been merged into the Department for Business, Innovation and Skills (BIS), on 6 June 2009.

⁵²¹ DSTL Porton Down is involved in sample identification and research for defensive purposes. Initially established in 1916 as a proving ground Porton changed remit and function a number of times. Recently, in 1991 it became the Chemical and Biological Defence Establishment (CBDE); in 1995 became part of the Defence Evaluation and Research Agency (DERA) as the Chemical and Biological Defence (CBD) Sector; in 2001 DERA split into two organisations: QinetiQ, a private company, and DSTL (Defence Science and Technology Laboratory), remaining an agency of MoD. See: www.mod.uk/

scientists to be expert across all of the issues of concern to their departments.”⁵²²

JTAC and the Cabinet Office, are at the heart of the cross Whitehall terrorism risk assessment process.

“JTAC produces high quality, authoritative threat assessments that draw on information and advice from a wide range of relevant government and overseas partners. These assessments are regularly updated and communicated to all customer departments. It is then for departments to use their own expertise and experience together with JTAC’s threat assessment to produce a risk assessment that informs their strategic resource allocation decisions and prioritisation. This activity is being coordinated by the Civil Contingencies Secretariat in the Cabinet Office, which is responsible for developing and maintaining the Planning Assumptions that underpin the UK Resilience Capabilities Programme. The Planning Assumptions, which are based on an explicit and auditable risk assessment, will be used to derive targets for the various capabilities that underpin the resilience of the UK. In turn, the readiness of the UK to respond to major disruptive challenges will be assessed against these targets.”⁵²³

⁵²² Royal Society & Academy of Medical Sciences (2006) *Pandemic Influenza: science to policy*. London: Royal Society (November 2006), p.28, recommendation 34.

⁵²³ Cabinet Office (2004) *Government Reply to the Eighth Report From the House of Commons Science & Technology Select Committee, Session 2002-2003 HC 415-I (Cm 6108)*. London: The Stationery Office (January 2004), p. 6

The intelligence machinery, on the left hand side of the bioterrorism diagram (figure 4), is complex in its own right; inputs come from a variety of sources and agencies. The diagram below (figure 6) outlines the flow of intelligence in the British intelligence machinery.

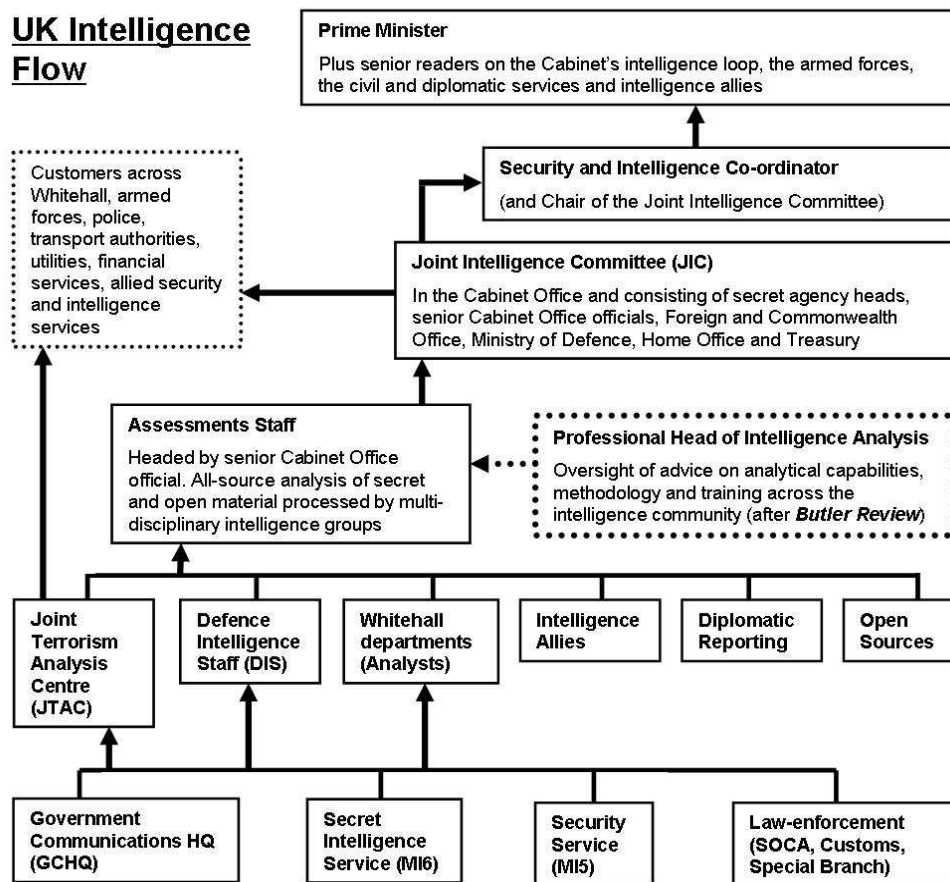


Figure 6: UK Intelligence Flow. The diagram outlines the British intelligence machinery and the flow of intelligence within it.⁵²⁴

⁵²⁴ Following Hennessy and Omand. Hennessy, P. (2007) From Secret State to Protective State. In: *The New Protective State - Government, Intelligence and Terrorism*, ed. Hennessy, P., London: Continuum Books & Mile End Institute, 1-41. Diagram adapted from p. 31

Discussion

The potential of high morbidity, mortality and economic, social and political disruption on the one hand and the complexities and uncertainties of the threats – pandemic influenza and bioterrorism – pose challenges for governance and policy response. The institutional arrangements (figures 3 & 4) have a number of actors in common, for example both are co-ordinated through the Civil Contingencies Secretariat (CCS), and in both arrangements the Department of Health and the Health Protection Agency are responsible for advice and responses. However, despite the similarities in consequences, overlaps in response capabilities, and surveillance to a certain extent,⁵²⁵ bioterrorism and pandemic influenza fall into separate (but overlapping) policy networks.

The policy response to bioterrorism is part of the wider counter-terrorism effort, the responsibility of the Home Office, and ostensibly a law enforcement challenge.

Pandemic influenza, is recognised as separate policy problem with its own ministerial groups at Cabinet level and separate from other infectious disease challenges, or indeed seasonal influenza considerations, is seen as a public health problem and thus the responsibility of the Department of Health.

There appears to be greater clarity in the pandemic influenza arrangement, compared to the arrangement of the bioterrorism response. This

⁵²⁵ Some surveillance capabilities overlap, or are the same. For example, responses to disease outbreaks fall under the remit of the Department of Health and the Health Protection Agency whether natural or un-natural in origin. However, in the case of bioterrorism much of the surveillance is related to intelligence and not health related.

may be because of secrecy, but it could also be because bioterrorism is institutionally bound up in the wider counter-terrorism effort, and thus more complex. Another explanation could be that the influenza policy space is governed more by international organizations such as the WHO, thus hollowing out decision making by reducing it to operational responses on the national level.⁵²⁶ Alternatively, it could be that the threat of bioterrorism is not seen as a high priority, as compared to other risks – or that it has been ‘dealt with’: and is seen as an arms control problem and a problem of governance in the life sciences, and accordingly a specific locus for bioterrorism policy decisions is diffused. However, the bioterrorism appears to be a salient policy area as described in chapter 4, and there is an extensive policy network as described in this chapter, although the institutional arrangement may have a broader remit bioterrorism is within this remit.

Three main functions have been identified in regard to bioterrorism in the wider institutional arrangement: provision of advice and intelligence, setting of national strategy, and responses (figure 4). The main actors in the policy making process with regard to bioterrorism are the Home Office as the lead department, the Joint Terrorism Analysis Centre, and the intelligence machinery more widely, as provides of threat assessments. The Department of Health and the Health Protection agencies play an important but lesser role as providers of responses. The role of scientific advice, its use and impact, is unclear.

⁵²⁶ See Chapter 3, section on “Policy, Governance and Government”. Rhodes, R. A. W. (1997) *Understanding Governance: Policy Networks, Governance, Reflexivity and Accountability*. Maidenhead: Open University Press

The schematics above (figure 3 for pandemic influenza & 4 for bioterrorism) represent interactions between the main institutional actors in terms of lines of accountability, or information provision. Viewed as a policy network these arrangements would need to be supplemented with arrows for information flow (rather than just provision). Moreover, the distribution of power, composition of the groups and institutions, the intensity of their linkages, and frequency of interaction between the actors residing in the network would yield a more complex picture. These are, however, closed matters and difficult to scrutinise. Furthermore, pressures from outside of the policy area (for example, competing resource intensive interests acting on the Home Office, Civil Contingencies Secretariat, or the Department of Health) are not transparent. As outlined in Chapter 3 the institutional arrangement only provides a partial explanation of policy formation processes. Mapping in this way can only give an insight into the structural arrangement, and does not sufficiently explain how the structure links to the policy outcomes.

6

Threat Assessments

Introduction

An assumption made throughout this dissertation is that specific understandings, framings, or conceptualisations, of the bioterrorism threat inform the policy response.⁵²⁷ That is, the way in which a threat is conceptualised has a direct effect on the response: other factors influence the response as well, but the framing of the threat has a fundamental and significant impact on the response. Thus, the way in which the threat is derived and assessed is of critical importance and has implications for the policy formation.

This chapter is concerned with the construction and framing of the threat. So it takes up the second research question: How are the threats of bioterrorism assessed in the UK?

⁵²⁷ That is understandings, perceptions and conceptualisations of policy makers – those actors within a policy network who make and shape policy decisions, not the ‘public’. The policy makers’ impression of the threat from bioterrorism is informed and shaped by advice given to them from various sources – from expert sources, intelligence, to popular media, and preconceptions.

Threat Assessment – The construction of threat

“A ‘threat assessment’ is an analysis of the intent and capability of terrorists to carry out attacks, whereas a ‘risk assessment’ combines the threat assessment with assessments of vulnerabilities and impact to inform prioritisation and resource allocation decisions. Government has recognised that a proportionate response to terrorism must be based on a thorough assessment of the terrorist threat and the best scientific advice, and has put the necessary structures in place to facilitate this.”⁵²⁸

Threat assessments are often described as a function of two or three variables either derived from a likely perpetrator or the resilience of a system – a combination of likelihood, intent, capability, vulnerability, and impact. Threat assessments are invariably expressed as a simple function. The Government, for example, described threat assessments as ‘*intent*’ times ‘*capability*’.⁵²⁹ Sir David Omand, who drafted the UK counter-terrorism strategy CONTEST, described threat in terms of ‘*vulnerability*’ times ‘*likelihood*’ times ‘*impact*’.⁵³⁰ Although, being described as a function the model is not used quantitatively,⁵³¹ and serves as a heuristic for a qualitative assessment. The framing of the threat, that is the inclusion or exclusion of specific terms or

⁵²⁸ Cabinet Office (2004) *Government Reply to the Eighth Report From the House of Commons Science & Technology Select Committee, Session 2002-2003 HC 415-I (Cm 6108)*. London: The Stationery Office (January 2004), p.5. The Government’s reply to the House of Commons Science and Technology Committee report on The Scientific Response to Terrorism gives an insight into the way the government frames risk and threat, and the differences between the two concepts.

⁵²⁹ House of Commons - Science and Technology Committee (2003) *The Scientific Response to Terrorism (Session 2002-03 HC 415-I & II Government's Response)*. London: The Stationery Office (6 November 2003)

⁵³⁰ Omand, D. (2008) *A year in reflection*. Paper given at: RUSI 4th Annual S&T Conference for Homeland Security and Resilience; London, 25 June 2008

⁵³¹ The terms of the equation are incommensurable; a reduction of these concepts to numerical values, or single metrics, to arrive at a threat value would be problematic and misleading.

parameters in the assessment of the threat, has ramifications for the outcome of the threat assessment.⁵³²

Threat assessment and Cold War Legacy

Threat assessments of bioterrorism in the post Cold War period have an increasing focus on terrorism. Informed by Cold War plans these assessments were drawing on potential state capabilities – the “battlefield paradigm” – which was superimposed on non-state groups. Assessments of the terrorist threat started off with strategic considerations: what needs to be done to prepare, and manage consequences, rather than starting from first principles. The starting point was given, and although intelligence led, it originated from a paradigm developed with battlefield applications in mind and thus Cold War defence preparations against potential Soviet attacks. These assessments were based on worst-case scenario assessments.⁵³³

A technocratic explanation prevailed during this time. The technocratic explanation can be summarised as follows: due to advances in biological sciences the technological barriers are lowered and therefore the possibility of bioterrorism increased.

The focus during this time was however still on state proliferation, with bioterrorism seen as a peripheral, if worrying, problem. The technocratic framing of the terrorist threat also served to remove the potential perpetrator from the threat equation – with the perception of technological feasibility

⁵³² Intent appears to be a staple in threat assessment equations, but is almost never found in risk assessment equations. It may be an actor’s agency which transforms a risk into a threat.

⁵³³ Interview, Senior HPA Officials, 9th October 2008, London.

gradually, over time, becoming a certainty, whilst at the same time a perception of decreasing moral constraints to cause mass casualties completely removed the need to assess intent.

The removal of intent from the threat assessment equation, by assuming it a given property of the threat function (the assumption that there are ‘aggressors bent’ on using biological weapons, to use the wording of a 1994 Royal Society report⁵³⁴) may have implications for policy. The removal of intent removes the focus from people. Of course, neither intent nor people are being excluded – they are explicitly included in the threat assessment equation, but as a constant not a variable. Robinson states that:

“‘Assessing the threat’ means gauging the capabilities and intentions of people possibly determined to do us harm. It is people, not things, that have to be the focus of such assessment: inanimate objects can intend nothing and, in themselves, can therefore pose no threat.”⁵³⁵

Thus, the assumption of intent as a given might limit or foreclose policy options for intervention, by shifting policy focus to things rather than people. This focus on things rather than people is evident, for example, in the expanding list of agents in Schedule 5 of the *Anti-Terrorism Crime and Security Act* 2001. Although the arrests and convictions of Dhiren Barot (dirty bomb

⁵³⁴ Royal Society (1994) *Scientific Aspects of Control of Biological Weapons*. London: Royal Society

⁵³⁵ Robinson, J. P. (2010) Scientists and Chemical Weapons Policies. In: *Assessing the threat of weapons of mass destruction: the role of independent scientists*, eds. Finney, J. L. & I. Šlaus, Amsterdam: IOS Press, 79-91, p 79

plot) and Kamal Bourgass (ricin plot) suggest otherwise, both had 'intent' but no capability as such.⁵³⁶

It would, of course, be wrong to posit that there is one overall threat assessment driving the UK's institutional responses; there are numerous assessments of risks, threats, and vulnerabilities done for a variety of different objectives and reasons, by a number of different assessors. The assessment of intent and capability of people to deliberately spread biological agents falls to the intelligence community.

Although there is a central understanding of threat that is used for decision making, this understanding is derived from numerous instrumental assessments (such as emergency preparedness scenario exercises), these in turn are based on the inverted threat model – not if but when.

⁵³⁶ Dhiren Barot planned attacks, including attacks on the London Underground, and a radiological dispersal device from fire alarms, and exploding limousines filled with gas cylinders. He was arrested on 3rd August 2004 and sentenced to a minimum of 40 years' imprisonment after pleading guilty to conspiracy to murder. The plot received international media coverage. Home Secretary John Reid said at the time: "The outcome of this trial once again shows the extent of the very real and serious threat the UK faces from terrorism." From Barot's notebooks it becomes clear that he was far from having an operational capability – no materials were recovered apart from plans and a manuscript of notes. Barot's sentence was later reduced to 30 years on appeal. The appeal judge said that expert scientific evidence showed the "exploding limousines" project was superficially attractive although "amateurish". BBC News – Online (2007) *UK al-Qaeda cell members jailed* 15 June 2007; & BBC News – Online (2007) *'Dirty bomb' man's sentence cut* 16 May 2007.

At the time speculation over "dirty bombs" was rife, in September 2004 police arrested four individuals under Section 41 of the Terrorism Act 2000 on suspicion of their having attempted to purchase a kilogram of "Red Mercury" for an unnamed Saudi citizen following a sting operation by the News of the World. Red Mercury is a fictional substance purportedly developed by Soviet scientists for "briefcase nuclear bombs". See: Burleigh, J. (2004) *Four held after 'sting' uncovers alleged dirty bomb conspiracy* The Independent (London, internet edition) 26 September 2004; BBC News – Online (2006) *What is red mercury?* (Chris Summers) 25 July 2006.

The traditional model of threat assessment, as presented in the literature and in official sources, is inverted – transformed from a (supposedly) extrospective threat assessment to an introspective calculus of vulnerability. Instead of looking outward at potential perpetrators, their capability and propensity to use biological agents as traditionally done in threat assessments, the gaze is directed inwards to identify vulnerabilities and planning for contingencies. Capability and propensity on behalf of the perpetrator are assumed, an attack is inevitable (“not if but when”), thus, in effect inverting the threat assessment and instead performing a vulnerability assessment. Jenkins warns exactly against this mode of assessment:

“The analysis of “dream threats” is filled with pitfalls. It is easy to begin by identifying vulnerabilities – they are infinite, positing theoretical adversaries – they are legion, then reifying the threat – a subtle shift of verbs from could to may happen. “Could” means theoretically possible while “may” suggests more. So long as the reader and the policymakers understand the utility of what necessarily must be speculative, there is no problem. The danger arises when speculation becomes the basis for launching costly efforts to prevent “what ifs,” or worse, when policymakers believe that highly publicized preventive or mitigation efforts will deter such adversaries. This is not to say the threat is not real [...] Terrorist use of chemical or biological weapons is a legitimate concern, although the evidence here is sketchier. My intention is rather to point to the risks of fact-free analysis.”⁵³⁷

Despite Jenkins’ warning of dream threats in a fact-free analysis generating infinite adversaries, the rise of the threat was soberly assessed by the JIC in 1989: although terrorists could “generate widespread fear and could cause large numbers of casualties” there was no intelligence indicating that

⁵³⁷ Jenkins, B. M. (1999) Foreword In: *Countering the New Terrorism*, ed. Lesser, I. O., Santa Monica, California: RAND

they would – no intelligence indicating acquisition, merely ‘interest’.⁵³⁸ This position was maintained within the intelligence community for most of the 1990s, although slowly escalating.

Cognizant civil servants have characterised the threat assessment process in the following way: Scenarios are used during the early parts of the assessment; scenario construction is intelligence-led and uncertainties are dealt with by invoking worst case scenarios. These scenarios are then turned into “concepts of operations” – which includes ‘what can be done’ about the threat or the situation, including “time line considerations”: what needs to be done first and second, and so on. This thus constructed ‘concept of operations’ is then “pushed through the cabinet – through its whole raft of expertise”, expertise on, for example, transport issues and resilience, etc. Decisions are consensual or arrived at through “team work ... with challenges”, cost benefit considerations are political: “big decisions are ministerial”. The cabinet then produces a paper which is “science checked”.⁵³⁹

According to this rough outline, the threat assessment process starts with an intelligence led scenario. The Joint Terrorism Analysis Centre (JTAC) is the primary provider of threat assessments. The Government clarifies the function of JTAC as a provider of threat assessments to its Whitehall customers:

“JTAC’s threat assessments are used by customer departments to inform their own risk assessments, which then inform strategic spending decisions”⁵⁴⁰

⁵³⁸ JIC, 26 June 1989, cited in Lord Butler (2004) *Review of Intelligence on Weapons of Mass Destruction*, HC 898. London: The Stationery Office (14 July 2004), pp. 29

⁵³⁹ Interview, 9th October 2008, London.

⁵⁴⁰ Cabinet Office (2004) *Government Reply to the Eighth Report From the House of Commons Science & Technology Select Committee, Session 2002-2003 HC 415-I (Cm 6108)*. London:

JTAC's intelligence led assessments are used to construct scenarios, as described above. These scenarios, or models, are instrumental in constructing a threat assessment.

Models

Models are used to assess effects of deliberate spread of diseases. Models are evocative, with their readily accessible imagery and figures – they can plant ideas, “[s]urreptitiously and insidiously these ideas have an impact on policy framing, such is the power (and simplicity) of modelling”.⁵⁴¹ In this way models are simple unifying explanations providing a framework for understanding events and can be instrumental components of a threat narrative.⁵⁴²

Models have to be treated with care when used for policy purposes; despite being methodologically rigorous in their own right, the model's reliance on context dependent assumptions, and specificity, means that they can only serve an illustrative function, not a prescriptive one, without lengthy and careful qualification.

Modelling of bioterrorism as well as for other security related policy areas is closely guarded – models and assessments are not available publically. One senior Home Office source stated:

The Stationery Office (January 2004), p. 5

⁵⁴¹ Scoones, I. & P. Forster (2008) *The International Response to Highly Pathogenic Avian Influenza: Science, Policy and Politics (STEPS Working Paper 10)*. Brighton: STEPS Centre, p. 38

⁵⁴² See chapter 3.

“derivation of the threat position is perhaps the most sensitive of all the activities that are carried out in government. Knowledge of even the process used could inadvertently give an advantage to an aggressor and hence is must be closely guarded”⁵⁴³

There are some examples of such models being discussed in the literature on bioterrorism, or CBRN more widely, however none of these are indicative of models being used in decision making.⁵⁴⁴ A position of secrecy presents a problem for academic, or other, inquiry into the evidence base which supports policy decisions.⁵⁴⁵ Thus, I have to look towards pandemic influenza policy decisions where there is an emphasis on modelling. There are differences between pandemic influenza and bioterrorism, as discussed in preceding chapters, most notably in this instance is the absence of intentionality or agency in naturally occurring diseases. As discussed above, intent is a constant rather than a variable in the threat assessment equation of bioterrorism the models used in the assessment of pandemic influenza may give some insight.

⁵⁴³ Senior Home Office official, personal communication, 14th July 2008. Of course, this need for secrecy extends beyond official assessments, into, for example, the academic sphere. In an assessment of radiological terrorism a group from King’s College London stated: “There is at least one credible immersion scenario which would readily kill several hundreds and disrupt a large city. We will not describe it.” In: Acton, J. M. & others (2007) *Beyond the Dirty Bomb: Re-thinking Radiological Terror*. *Survival*, 49(3), 151-168, p. 157

⁵⁴⁴ For example, the Parliamentary Office for Science and Technology (POST) cited two assessment studies, one US and one WHO, in their November 2001 briefing paper. However, POST provides information to parliamentarians and is not involved in threat assessments. The POST note was subsequently cited in a House of Commons Defence Committee report. House of Commons - Defence Committee (2001) *The Threat from Terrorism (Session 2001-02 HC 348-1)*. London: The Stationery Office (18 December 2001)

⁵⁴⁵ Secrecy also presents a problem for democratic accountability. See also Royal Society & Academy of Medical Sciences (2006) *Pandemic Influenza: science to policy*. London: Royal Society (November 2006), as cited in chapter 5; and House of Commons - Science and Technology Committee (2003) *The Scientific Response to Terrorism (Session 2002-03 HC 415-I & II Government's Response)*. London: The Stationery Office (6 November 2003), p. 83, as cited in chapter 4.

Response and preparedness, in form and function, are comparable, as stated by the ministerial forum of the Global Health Security Initiative:

“we recognize that preparedness for and response to bioterrorism have much in common with preparedness for and response to naturally occurring global health threats such as pandemic influenza”⁵⁴⁶

Moreover, an overlap can also be seen in the institutional arrangement, where some key actors are shared by both policy areas, as outlined in chapter 5.

The UK model

The UK Contingency Plan gives an outline of how the threat of pandemic influenza is assessed and conceptualised in the UK, albeit in vague terms:

“For planning purposes, working estimates of the most likely subsequent spread and impact have been derived from theoretical modelling, informed by past experience, knowledge of the world today and expert advice [...] Plans will need to be constructed which deal with a wide range of possibilities. To simplify presentation this document concentrates on a ‘most likely’ base scenario following WHO advice – but the possible ranges are also considered. These are working estimates for planning purposes, and not predictions of the next pandemic.”⁵⁴⁷

⁵⁴⁶ Global Health Security Initiative (2003) *Ministerial Communiqué*. Berlin: Fourth ministerial meeting on health security and bioterrorism, 7 November 2003, Statement no. 9

⁵⁴⁷ Department of Health - Chief Medical Officer (2005) *Pandemic Flu: UK influenza pandemic contingency plan*. London: Department of Health, 1 March 2005, pp. 18. The scientific evidence base is more thoroughly analysed and elaborated upon in: Cabinet Office - Civil Contingencies Secretariat (2007) *Overarching Government strategy to respond to pandemic influenza: analysis of the scientific evidence base*. London: Cabinet Office (22 November 2007)

The 2005 report of the House of Lords inquiry into pandemic influenza contains a memorandum by the Department of Health within which the question of how the risk of pandemic influenza emerging and spreading is assessed is answered in the following way:

“This risk is assessed on the basis of: the extent and geographic spread of the current H5N1 outbreaks in poultry and in migrating aquatic and other birds; the extent, severity and geographic incidence of avian flu in people; the extent of antigenic change in current H5N1 viruses, compared to the viruses which first emerged (in 1997); historic knowledge of the evolution of influenza viruses and of previous influenza pandemics; the demography of the region and opportunities it provides for interchange of genetic material between influenza viruses from different species. [...] The epidemiological and virological information for assessing the risk is collected and interpreted by the World Health Organisation (WHO) and World Organisation for Animal Health (OIE). The European Commission (EC) undertakes assessments on behalf of Member States of the European Union and assessments are also undertaken by HPA and by the Veterinary Laboratories Agency to inform contingency planning by the DH and the Department for Environment Food and Rural Affairs (Defra)”⁵⁴⁸

The overall assessment of risk from pandemic influenza *emerging* is ostensibly done by the WHO, FAO and OIE. National assessments are then a function of surveillance and contingency planning.⁵⁴⁹ This contingency

⁵⁴⁸ House of Lords - Science and Technology Committee (2005) *Pandemic Influenza (Session 2005-06 HL Paper 88)*. London: The Stationery Office (16 December 2005) p. 82

⁵⁴⁹ The WHO phase 6 “Pandemic Period – Increased and sustained transmission in general population” is subdivided into four UK alert levels: (i) Virus/cases only outside the UK; (ii) virus isolated in the UK; (iii) outbreaks in the UK; (iv) widespread activity across the UK; each triggering further UK wide responses. A number of UK bodies, such as the Health Protection Agency (HPA), the National Collaborating Laboratory (NCL) and Influenza Reference Laboratories (NIRL) and the National Institute for Biological Standards and Control (NIBSC) are involved in, and liaise with the WHO in surveillance

planning relies upon modelling to estimate numbers of morbidity and mortality to assess and develop effective mitigation strategies. The models are fitted to historical data of previous pan- and epidemics.⁵⁵⁰ Modelling is done by the HPA and the pandemic influenza Scientific Advisory Group (SAG), in a collaborative effort with international partners.

“UK modellers are amongst the international leaders in using mathematical modelling to assess the risk of the emergence of pandemic influenza [...] Projections of the likely impact of a pandemic are included in the UK Influenza Pandemic Contingency Plan. Those are the best available based on current knowledge, previous experience and mathematical modelling...”⁵⁵¹

However, models are problematic, especially when modelling an influenza strain yet to emerge with unknown characteristics – such as the virus’ basic reproduction number⁵⁵² and efficacy of counter-measures (social as well as medical).⁵⁵³ The model used for pandemic influenza planning is

efforts. Department of Health - Chief Medical Officer (2005) *Pandemic Flu: UK influenza pandemic contingency plan*. London: Department of Health, 1 March 2005

⁵⁵⁰ Cabinet Office - Civil Contingencies Secretariat (2007) *Overarching Government strategy to respond to pandemic influenza: analysis of the scientific evidence base*. London: Cabinet Office (22 November 2007)

⁵⁵¹ House of Lords - Science and Technology Committee (2005) *Pandemic Influenza (Session 2005-06 HL Paper 88)*. London: The Stationery Office (16 December 2005) p. 83, Complementary evidence given by Dr Klaus Stöhr.

⁵⁵² The basic reproduction number (R_0) is the mean number of secondary infections a typical primary case causes without interventions. When the R_0 is more than 1 the infection will spread within a population. The basic reproduction number (R_0) used in models is 1.4-2.2, the UK’s assumption, based on expert views in the SAG, puts the R_0 close to 2, this would lead to a clinical attack rate of the order of 80%, that is without interventions. Cabinet Office - Civil Contingencies Secretariat (2007) *Overarching Government strategy to respond to pandemic influenza: analysis of the scientific evidence base*. London: Cabinet Office (22 November 2007)

⁵⁵³ See, for example: Chung, P. H. (2005) Preparing for the worst-case scenario: Response to Longini et al (12 Aug 2005, p. 1083) *Science*, 310(5751), 1117; Longini reply 1117-8, & Normile, D. (2005) Avian influenza - Pandemic skeptics warn against crying wolf. *Science*, 310(5751), 1112-3

complex, with wide ranges of morbidity and mortality. It is under constant review, and open to scrutiny from the scientific community.⁵⁵⁴

The situation is different in the case of bioterrorism. The assessment process is secret, not transparent and the level of independent scrutiny is difficult to ascertain. More than 75 agents are listed in the *Anti-Terrorism Crime and Security Act 2001*⁵⁵⁵ whereas in the pandemic influenza case only one virus type has to be assessed. This complicates the assessment considerably.⁵⁵⁶

Exercises

Another possible avenue to get to the threat assessment are the planning assumptions used in emergency response exercises. There is little published information available on the specifics of the exercises. And the purpose of exercises is to test responders – operationally, tactically, or strategically.

⁵⁵⁴ The evidence used in SAG Modelling Subgroup paper is published in peer-reviewed journals, see for example: Ferguson, N. M. & others (2006) Strategies for mitigating an influenza pandemic. *Nature*, 442(7101), 448-52; Cooper, B. S. & others (2006) Delaying the international spread of pandemic influenza. *PLoS Medicine*, 3(6), 212; Colizza, V. & others (2006) Modeling the Worldwide Spread of Pandemic Influenza: Baseline Case and Containment Interventions. *PLoS Medicine*,

⁵⁵⁵ As of the last amendment in 2007 (S.I. 2007/929) Schedule 5 of the *Anti-Terrorism Crime and Security Act 2001* lists 35 viruses, 4 rickettsia, 21 bacteria, 2 fungi, and 13+ toxins. Only a fraction of these 75+ agents are comparable to influenza due to contagion, or non-contagion, as well as other factors.

⁵⁵⁶ A similar problem was encountered in the ASSRBCVUL project – how to deal with a large number of different threat agents? The approach that was used in the ASSRBCVUL project to assess the threat from, and vulnerability to, RBC weapons was to ask: how RBC agents might suit the purposes of terrorists? In other words, assuming a fully rational agent who is using RBC weapons what effects can be caused by the deliberate spread of RBC weapons. The solution to this problem in the ASSRBCVUL project was to define the types of damage available from agents – categories of damage consequence, and evaluate these against a range of scenarios.

Exercises are necessarily artificial and possibly inflated in scope to test responders.

Chapter 4 lists a number of exercises: Firestorm in 1995, Trump Card in 2000, Magpie in 2004, a Home Office statement which notes that between 2003 and 2004 six large scale exercises, and thirty-two table top exercises were carried out; in 2005 exercise Atlantic Blue, carried out together with Canada and the US, and Common Ground together with the EU. Exercise Magpie in 2004, for example, was a 'live' exercise with 14 simulated fatalities and 30 simulated serious injuries, following a sarin gas release.

Between 2005 and 2007 four national pandemic flu exercises have been staged to inform and test the contingency plans, three human infection scenarios – 'Aurora', 'Shared Goal', 'Winter Willow' – and one zoonotic infection scenario, exercise 'Hawthorn'. Hawthorn involved a number of table top exercises and a two-day live exercise involving 500 people from 40 organizations.⁵⁵⁷ Exercise 'Winter Willow' involved two stages, a national-level table top exercise involving international representatives from the WHO and ECDC, and stage two a full national exercise held over several days involving around 5000 participants were involved during the exercise, from nine Regional Civil Contingencies Committees in England and their equivalents in the devolved administrations, fifty one local Strategic Co-ordination Groups covering the whole of the UK, all Strategic Health Authorities and a local Health Community Group for each Authority's area.⁵⁵⁸

⁵⁵⁷ State Veterinary Service (2006) *A report on Exercise Hawthorn - A series of linked exercises testing government's avian influenza disease emergency preparedness*. London: State Veterinary Service Contingency Planning Division (September 2006).

⁵⁵⁸ Leese, J. (2006) *Department of Health Perspective*. Paper given at: Joint DH-DEFRA

Published information on the exercises reveals little in terms of planning assumptions. Information on the terrorism exercises is sparse, and planning assumptions on pandemic influenza are published in the literature as cited above, the scenario exercises are designed to test the response plans and national and international communication channels, and exercises have occurred shortly before the publication of each updated version of the national pandemic influenza contingency plan. Little can be deduced from these scenario exercises, other than that their frequency is indicative that the threat from deliberate disease is substantial enough to warrant costly and repeated exercises.

7

Discussion & Conclusions

Introduction

The emergence of bioterrorism as a policy issue is the subject of chapter 4. It outlined that between the late 1980s and the middle of the first decade in the new millennium the policy response to bioterrorism has drifted as well as shifted. Chapter 5 outlined the policy response and its institutional arrangement. Chapter 6 looked at the conceptualisation of threats through threat assessments. This chapter brings together these themes with the conceptual framework outlined in chapter 3.

A basic understanding of bioterrorism threat is that it is a compound of terrorism and biological weapons – both of these are complicated and diffuse.⁵⁵⁹ They are represented in a simplified manner in the policy discourse. These simplifications are consistent with conceptualising the understandings of terrorism and biological weapons as narratives. These narratives represent terrorism, more often than not, as a homogenous or monolithic entity; within which followers of extremist ideologies are organised in international

⁵⁵⁹ See chapter 3 of this dissertation for a discussion of these concepts.

networks, efficiently exchanging information worldwide, and seeking wanton destruction of civilisation. The narrative of the biological weapon holds that biological weapons are technologically sophisticated weapons systems with massive destructive power, which can be easily and cheaply produced by anyone with a basic understanding of science and access to the internet.

“What has changed in the 21st century is that, in the hands of terrorists, weapons of mass destruction would be a first resort – the preferred means to further their ideology of suicide and random murder. These terrible weapons are becoming easier to acquire, build, hide, and transport. Armed with a single vial of a biological agent or a single nuclear weapon, small groups of fanatics, or failing states, could gain the power to threaten great nations, threaten the world peace.”⁵⁶⁰

Although the above description of the terrorism threat with biological weapons is an extreme one it was, and still is, a prevalent position following September 11, not just in the US, but in the UK as well. In 2006, Prime Minister Gordon Brown made following statement on the changed global context of terrorism:

“While the last thirty years have seen Britain having to cope with terrorism in Northern Ireland, recent terrorist plots are of a different scale: global conspiracies driven by extremist ideology to cause mass casualties with no warning – often involving suicide bombings and with the potential threat of chemical biological radiological and nuclear weapons. [...] Let us be clear: we face enemies that not only have a hatred of the policies we pursue, but a hatred of our very existence.”⁵⁶¹

⁵⁶⁰ Bush, G. W. (2004) *President Announces New Measures to Counter the Threat of WMD*. Fort Lesley J. McNair - National Defense University: White House Press Release, 11 February 2004

⁵⁶¹ Brown, G. (2006) *Gordon Brown's speech on terrorism. Full text of the speech given by the* continued...

The focus on threat narratives places the process by which policy actors arrive at a particular perception at the centre. The way threat is assessed and the parameters, assumptions and sources that inform threat assessments is of central importance to understanding the policy formation process.

Three significant events have affected a shift in the perception of threat from bioterrorism. The first event is the fall of the Berlin Wall. There appears to be a marked change in thinking about bioterrorism which came about at the end of the Cold War, when a number of different strands of events were brought together. The disintegration USSR and with it the end of the relatively stable, albeit precarious, strategic balance based on deterrence within the bipolar bloc system is a marked point in the transition of world affairs.⁵⁶² Institutions which had grown-up over decades in the state-centric industrial-military paradigm of the Cold War were still locked into the mindset which prevailed during this period. During the 1980s fears grew over state sponsored terrorism, on the one hand Saddam Hussein's Iraq which used chemical weapons against Iran and in Iraqi Kurdistan; and on the other hand the Libyan sponsored bombing of Pan Am flight 103 over Lockerbie and Gaddafi's long suspected biological and chemical weapons programme. Both regimes were thought capable of passing biological or chemical weapons on to terrorist groups. In addition to the possibility that Iraq and Libya may pass on unconventional weapons systems was the collapse of the Soviet Union, where

chancellor to the Royal United Services Institute in London Guardian (Online) 13 February 2006

⁵⁶² The Cold War has been characterised as the last of great 'old wars', and its end initiated, or continued a transition towards 'new wars' – a fundamental change in the character of war and political violence. Kaldor, M. (2006) *New and Old Wars: Organized Violence in a Global Era*. Cambridge: Polity. A shift from old to new terrorism has been placed at a similar time. Laqueur, W. (1999) *The New Terrorism: Fanaticism and the Arms of Mass Destruction*. Oxford: Oxford University Press

a substantial biological warfare programme had been uncovered and fears were growing that 'weapons scientists' might not only defect to other countries, but also offer their expertise on the 'black market' to other interested parties.

The second event, in 1995, was the use of sarin in the Tokyo subway system being the first significant use of unconventional weaponry by non-state actors;⁵⁶³ the third event were the attacks on, and following, 11 September 2001, which caused a jolt to the response system, precipitating institutional re-configurations in the UK; subsequent terrorist attacks and plots augmented a prevailing perception of threat.

Technological change, most notably in the life sciences; re-emerging and emerging infectious diseases; and overall escalating trends in terrorism – have provided an undercurrent, causing a drift in perceptions, slowly escalating from the mid 1990s onwards.

New Security Challenges

Before delving into a discussion on the construction of policy narratives it is worth citing a group of former military chiefs, diplomats, analysts and academics who convened at the Royal United Services Institute (RUSI) between 2006 and 2008. They raised concerns about the entanglement of security and defence with party politics.⁵⁶⁴ Their key message was that successive

⁵⁶³ As noted before, not the first use, but significant in the way that it was noted by media, policymakers and academia, in the UK as well as internationally, and thus remained in the consciousness of policy makers, shapers, advisors and experts.

⁵⁶⁴ Prins, G. & R. Salisbury (2008) Risk, Threat and Security: The case of the United Kingdom. *RUSI Journal*, 153(1), 22-27. The article expresses the consensus view of a group of former military chiefs, diplomats, analysts and academics following a private seminar

governments have failed to address novel security demands, by making security and defence a token in short term party politics. In their view damage had been done to the security of the United Kingdom via a “piecemeal and erratic response”⁵⁶⁵ to the new security challenge of the new terrorism. This erratic response is engendered, they say, fundamentally, by “flabby and bogus strategic thinking” and in “many institutional disturbances”.⁵⁶⁶ The group explains the failure to respond in a coherent manner and in the following way:

“The stiff geometry of the Cold War world has given way to a less predictable (although actually older and familiar) flow of forces in world affairs; but the mindset of Cold War planners and analysts and the institutions shaped by them still linger. This mismatch leaves us open to ambush. We maintain a posture to meet threats of a certain type for which we have defences of a certain type. What we actually face are risks that could grow into threats that are significantly different in origin and in nature. We lack the certainty of the old rigid geometry”⁵⁶⁷

What the ‘RUSI group’ described is a feature commented on by a number of observers and commentators encountered throughout the research; especially in the case of bioterrorism policy. To put the RUSI group’s point into different words: the response to the new security challenge of terrorism, of which bioterrorism is a subset, has been locked-in to a state centric approach

series held at RUSI between May 2006 and January 2008. The article calls for twin oversight system, consisting of a Cabinet Committee and a joint parliamentary Committee (Commons and Lords), addressing strategic risks and threats coherently, consistently and effectively. The twelve participants of the seminar were Professor Gwyn Prins, Lord Salisbury, Sir Mark Allen, Vice Admiral Sir Jeremy Blackham, Chris Donnelly, Field Marshal the Lord Inge, Tom Kremer, Lord Leach, Baroness Park of Monmouth, Douglas Slater, General Sir Rupert Smith, and Professor Hew Strachan.

⁵⁶⁵ Ibid. p. 27

⁵⁶⁶ Ibid. p. 26

⁵⁶⁷ Ibid. pp 23. The authors intriguing turn of phrase “risks that could grow into threats” is elaborated: “Latent risks can become patent threats. What marks the change of a risk into a threat is usually the emergence of a factor which has been misjudged”

– a consequence of institutional configuration adopted, and narratives established, during the Cold War.

However, there is not necessarily a lock-in to Cold War thinking in terms of counter-terrorism in general, just in relation to CBRN terrorism through its historical linkage to arms control and thus state centricity. Counter terrorism, especially in relation to the domestic response has a long history in the UK, institutional knowledge and experience accumulated during the Troubles – a history, and with it the institutional memory, has been more and more relegated with the increasing and escalating threat of Islamic extremism or international terrorism.

“What has become increasingly clear is that, now, nine years in the wake of 9/11, there were plenty of otherwise decent right-minded people who temporarily lost sight of what most fundamentally needs protecting in Western society: its values and democratic principles. This myopia was most acute in the Bush Administration, but it afflicted many in the UK too. Our Prime Minister announced that everything had changed, our Government temporarily signed up to the impossible concept of a ‘War on Terror’ and our Parliament gave its assent to a raft of poorly-conceived legislation.”⁵⁶⁸

This raft of poorly conceived terrorism legislation⁵⁶⁹ has meant that some civil liberties have been sacrificed for increased security.⁵⁷⁰

⁵⁶⁸ Hindle, G. (2010) *Is it time to give parliamentary oversight of intelligence some teeth?* Comment and Analysis: RUSI.org, 16 February 2010

⁵⁶⁹ This position, that terrorism legislation is poorly conceived, is echoed by the UK Independent Reviewer of Terrorism Legislation, Alex Carlile, personal communication, 9th February 2010.

⁵⁷⁰ The erosion of civil liberties include sweeping police powers conferred by the successive terrorism legislation as outlined in chapter 4. See also: Grayling, A. C. (2009) *Liberty in the age of terror: a defence of civil liberties and enlightenment values*. London:

The Intelligence Security Committee stated:

“If we seek greater assurance against the possibility of attacks, some increase in intrusive activity by the UK’s intelligence and security Agencies is the inevitable consequence. Even then it seems highly unlikely that it will be possible to stop all attacks.”⁵⁷¹

What motivated these pieces of legislation and subsequent erosion of civil liberties was the insecurity felt following September 11. The hitherto existing structures were seen as inadequate, although this view had been adopted prior to the attacks and cross governmental integration, joined up thinking was on the political agenda, the attacks jolted the system and forced or enabled institutional responses, although the responses were not substantially structural – the establishment of JTAC being the only direct institution resulting from the terrorist attacks⁵⁷² – they were pervasive in that most departments adopted a terrorism portfolio. The ‘old structures’, which grew out of the “stiff geometry of the Cold War” are embedded in “the mindset of Cold War planners and analysts and the institutions shaped by them”.⁵⁷³ Using the concepts of this dissertation: the framing of the new

Bloomsbury

⁵⁷¹ Intelligence and Security Committee (2006) *Report into the London terrorist attacks on 7 July 2005 (Cm 6785)*. London: The Stationery Office (11 May 2006), p. 39. Increasing intrusion into civil liberties shows not only diminishing returns in terms of stopping attacks, but has also been shown to be counter-productive in terms of community relations, possibly increasing the likelihood of terrorist attacks Osborne, P. (2006) *The use and abuse of Terror*. London: Centre for Policy Studies, & Omand, D. (2006) Ethical Guidelines in Using Secret Intelligence for Public Security. *Cambridge Review of International Affairs*, 19(4), 613-628

⁵⁷² The attacks caused major recruitment in the Intelligence Agencies, see for example: Andrew, C. M. (2009) *The Defence of the Realm: the authorized history of MI5*. London: Allen Lane, pp 813

⁵⁷³ Prins, G. & R. Salisbury (2008) Risk, Threat and Security: The case of the United Kingdom. *RUSI Journal*, 153(1), 22-27

security challenge are influenced by prevailing narratives which have been established in different circumstances and changed in response to events.

Policy Narratives

Policy narratives are understood here as specific, shared understandings; they are necessarily abstractions and simplifications of complex phenomena. Policy narratives are simple, unifying, easily expressed explanations that organise experiences and provide a framework for understanding events. Information which suits the narrative is privileged and information which does not suit the narrative is discarded.⁵⁷⁴

Distinct and Separate Narratives

I posit that there are three distinct and separate narratives. These narratives have been identified and distilled from documentary sources and interviews as presented in the preceding chapters. These distinct and separate narratives came together in the late 1980s, resulting in the threat of bioterrorism being framed in a specific way. The narratives have been reinforced by a number of events which have caused institutional responses. These institutional responses in turn have augmented the threat narrative. The now prevailing conceptualisation of the bioterrorism threat, which has been created or evolved in this way, has become embedded. Moreover, it stands to become further entrenched and embedded when viewed in the light of an intractable terrorism threat. However, a shift in priorities as well as a diffuse and fragmented institutional arrangement could lead to the bioterrorism threat subsiding over time, by being overtaken by a more dominant narrative.

⁵⁷⁴ This follows the definition established in chapter 3.

In this section I will first look at the narratives separately and then turn to the merging into the bioterrorism threat narrative.

The first is a narrative of WMD; the second is a Terrorism narrative; the third is one of Technological Progress.

WMD Narrative

The 'WMD' narrative posits biological weapons as weapon of mass destruction, together with chemical and nuclear weapons. The focus is on state run programmes, sophisticated and industrial scale technology, exclusively positioned at the massively destructive end of the threat spectrum. Policy responses to this narrative are found in international conventions, such as the 1972 *Biological Weapons Convention*, and international agreements and initiatives, such as export controls.

Terrorism Narrative

The 'Terrorism' narrative holds that: The terrorism threat is real and imminent. The narrative conflates all types of terrorism into one monolithic threat, from single plotters to sophisticated international networks. Terrorists will attempt to kill as many people as possible and are free of moral constraints which might prevent them from doing so. The willingness to sacrifice themselves in attacks compounds the danger – they can not be negotiated with and are not only actively seeking biological, chemical, radiological, and nuclear weapons but they would use them given the opportunity to cause maximum harm and destruction of 'our way of life'. The terrorism narrative, in its modern form, has its origin in what has been termed the new terrorism – indiscriminate mass casualty events perpetrated by transnationally acting groups. The policy response to the terrorism narrative is

law enforcement, although internationally this has also involved military action.

Technological Progress Narrative

The ‘Technological Progress’ narrative states that with the progress of technology, technological barriers are lowered allowing easy and cheap access to sophisticated technologies for anyone: the hostile exploitation of biology is feasible and achievable – and over time the risk of hostile exploitation of sciences can, according to this narrative, only increase. Policy responses to the technological progress narrative fall under governance of science or research dealing with the ‘dual-use’ problem.

The three distinct narratives are not necessarily caricatures of extreme positions. The WMD narrative, for example, is based on the theoretical potential of biological weapons systems together with historical evidence from state programmes.

The narrative frames the threat – the framing of the threat shapes and influences the policy debate with fundamental consequences for notions of what constitutes the best strategy for governance of, or policies, against bioterrorism. Although the narratives overlap they suggest different solutions, each in their own right – law enforcement for ‘terrorism’, multilateral international instruments for ‘WMD’, and a diverse array of measures for the governance of scientific research for the ‘technological progress’ narrative.

Events

The events thesis has been posited a number of times in this dissertation: in short, it states that a number of successive events have led to a change in perception (sarin, 1995); then jolted political and institutional structures

(September 11, 2001); further bombings and plots have augmented the threat (Madrid & London).

The end of the Cold War caused a shift in global power relations; the crumbling Soviet Union revealed its biological warfare programme raising concerns over a potential nefarious 'brain drain'.

The release of sarin gas in Tokyo which killed 11 and injured almost 4000 people broke the "state monopoly"⁵⁷⁵ on most powerful means of destruction. The event caused a fundamental shift in threat perception, moving the threat of terrorists from a hypothetical to reality, a threshold had been broken.⁵⁷⁶

The attacks on Washington and New York on September 11, 2001 took the US as well as the western world by surprise – the largest single terrorist attack hitherto known. The ensuing anthrax letters combined the massive destruction with a "weapon of mass destruction", creating a lasting political impact. In the UK numerous institutions were shaken up and re-configured, legislation was hastily enacted, and with the launch of military action against Afghanistan in October 2001, and Iraq in April 2003 the UK became involved in the War on Terror. Despite retaliatory strikes against Al-Qaeda the network was able to mount further high profile attacks:

"The view that al-Qaida has lost much of its leadership and been thoroughly disrupted is assiduously cultivated; yet the movement and its wider associates have been extraordinarily active, with numerous attacks across the world since 9/11: including Djerba, Bali, Mombasa and

⁵⁷⁵ Tucker, J. B. (2000) *Toxic terror: assessing the terrorist use of chemical and biological weapons*. Cambridge, Ma. and London: MIT Press

⁵⁷⁶ Zilinskas, R. A. (1996) Aum Shinrikyo's Chemical/Biological Terrorism as a Paradigm? *Politics and the Life Sciences*, 15(2), 237-239

Karachi (2002), Riyadh, Casablanca, and Istanbul (2003), Madrid, Khobar, Taba and Jeddah (2004), London, Sharm al-Sheikh, Aqaba and Amman (2005).⁵⁷⁷

The bombings following September 11 augmented the elevated threat perception, especially the bombs in Madrid and London (including the failed plot two weeks after the London attacks) reinforced the prevailing threat narrative of terrorism – terrorism is real and imminent.

The conceptualisation of bioterrorism as consisting of the combination of three distinct narratives – ‘technological progress’, ‘terrorism’, and ‘WMD’ – which overlap means that events which have nothing, or little, to do with the deliberate spread of disease still have an impact on the bioterrorism narrative further reinforcing and augmenting the overall bioterrorism narrative. So that conventional terrorist attacks, unrelated to bioterrorism, further entrench the narrative. Bioterrorism conceptualised as a combination of the terrorism narrative and the technological progress narrative can thus, in part, explain the rise of bioterrorism as a policy issue over time.

The three narratives have emerged from separate origins, but have subsequently merged over time. In the late 1980s all three narratives had already been established in their own right, but were still relatively separate. The technological progress narrative had been closely linked to the WMD narrative through arms control. The terrorism narrative remained within the conventional area, but started to get entangled with the WMD narrative through concerns over state sponsorship of terrorism combined with their

⁵⁷⁷ Rogers, P. (2006) *There are alternatives*. openDemocracy, 26 March 2006
http://www.opendemocracy.net/conflict/alternatives_3405.jsp

unconventional weapon programmes, followed by concerns over Russian BW 'brain drain'.

Narratives and Policy Responses

Chapter 6 argued that the threat assessment model is inverted, based on the 'not if but when' notion, and that 'intent' is turned from a variable (an unknown) into a constant (known). Chapter 5 posited that, within the institutional arrangement, intelligence occupies a prominent position informing the policy process by feeding into models and exercises, which in turn form a basis for policy decisions. A central role of intelligence as a basis for policy decision can be problematic:

“In developing policy on the basis of intelligence, it needs to be recognized throughout that intelligence analysts are expected to draw worst-case interpretations from the available wisps of information. Furthermore, because intelligence analysts are making their assessment against a background of knowledge of their own national programs in this area, an element of mirror-imaging is liable to enter the intelligence assessment. Although intelligence analysts are generally aware of the strengths and weaknesses of their assessments, it is by no means clear that the policymakers who make decisions based on those intelligence assessments are equally aware. Similarly, policymakers may err on the side of caution so that they cannot be accused of having failed to take steps to protect the security of their country.”⁵⁷⁸

⁵⁷⁸ Dando, M. & others (2006) Analysis and Implications. In: *Deadly Cultures - Biological Weapons since 1945*, eds. Wheelis, M., L. Rózsa & M. Dando, Cambridge, Massachusetts and London, England: Harvard University Press, p. 362

The Butler review, for example, found that limitations of intelligence were not adequately acknowledged when the Government was considering military action against Iraq.⁵⁷⁹

The interaction of the bioterrorism narrative with institutions is important. Once a narrative is taken up by institutions and becomes embedded in their structures, or gives rise to a new institution as is the case with JTAC, then the institution and the narrative mutually reinforce one another, thus becoming further entrenched. The diffuse and difficult to assess nature of terrorism (terrorism narrative) coupled with the potential for high impact when combined with unconventional weapons (WMD narrative) creates an intractable threat and the theoretical possibility of something happening (intent as a constant) prevents analysts from ever giving an 'all clear' – the threat is irreducible. It is an intractable problem. Moreover, the threat narrative is kept in a hyperbole, augmented by events⁵⁸⁰ and "worst-case interpretations from the available wisps of intelligence."⁵⁸¹

However, the reliance on intelligence poses another problem – a need, or desire, for secrecy effectively excludes informed scrutiny.⁵⁸² Democratic accountability is difficult to attain in any area of security related policy, this

⁵⁷⁹ Similarly, the Royal Society lamented a lack of transparency in the provision of scientific advice, as cited in chapter 5. Royal Society & Academy of Medical Sciences (2006) *Pandemic Influenza: science to policy*. London: Royal Society (November 2006)

⁵⁸⁰ Events which may or may not be related to deliberate releases of pathogenic material, conventional terrorism, or plots without substance (for example the ricin plot).

⁵⁸¹ Citing the quote above (Dando et al. 2006). Problem with intelligence, or 'wisps of information', is what Colin McColl's called 'cat's eyes in the dark' (cited in the Methodology Chapter).

⁵⁸² Secret intelligence is frequently cited as evidence of a real and imminent threat to justify counter-terrorism measures and intrusions into civil liberties. The position – 'if you knew what we know' – has been encountered at various conferences and seminars attended during the research period, given by the senior officials of the metropolitan police counter-terrorism branch, intelligence agencies and the Home Office.

becomes problematic if “we seek greater assurance against the possibility of attacks, some increase in intrusive activity by the UK’s intelligence and security agencies is the inevitable consequence. Even then it seems highly unlikely that it will be possible to stop all attacks”⁵⁸³

‘Evidence based’ Policy making

The 1999 *Modernising Government* white paper noted that Government “must produce policies that really deal with problems, that are forward-looking and shaped by evidence rather than a response to short-term pressures; that tackle causes not symptoms”⁵⁸⁴ The Government assured that it has a “commitment to ‘what works’ over ideologically driven policy” and that it is engaged in evidence-based policy making⁵⁸⁵ and “has recognised that a proportionate response to terrorism must be based on a thorough assessment of the terrorist threat and the best scientific advice”⁵⁸⁶

Invoking the authority of ‘science-’ or ‘evidence-based’ policy decision rules implies that ‘sound science’ can determine decisions with rigour and

⁵⁸³ Cited at the beginning of this chapter. Intelligence and Security Committee (2006) *Report into the London terrorist attacks on 7 July 2005 (Cm 6785)*. London: The Stationery Office (11 May 2006), p. 39

⁵⁸⁴ Cabinet Office (1999) *Modernising Government (Cm 4310)*. London: The Stationery Office, March 1999, Chapter 2, paragraph 2

⁵⁸⁵ House of Commons - Science and Technology Committee (2006) *Scientific Advice, Risk and Evidence Based Policy Making (Session 2005-06 HC 900-I & II)*. London: The Stationery Office (26 October 2006), evidence – Memorandum from Government, p. 86

⁵⁸⁶ Cabinet Office (2004) *Government Reply to the Eighth Report From the House of Commons Science & Technology Select Committee, Session 2002-2003 HC 415-I (Cm 6108)*. London: The Stationery Office (January 2004), p.5

objectivity delivering robust outcomes in complex, uncertain and contested policy areas.⁵⁸⁷

An ‘objective’ and ‘scientifically sound’ singular risk picture is derived from the threat assessment equation⁵⁸⁸ in the following way; first:

“reduce the multiple, complex, and indeterminate dimensions of knowledge to just two readily quantifiable kinds of parameter: outcomes and probabilities. Second, these parameters are then ‘re-aggregated’ in careful disciplined ways to yield an ostensibly simple scalar representation of ‘risk’ [...] Even if the underlying calculative procedures are performed only symbolically or informally, the associated quantitative idiom is routinely held to confer a high degree of authority and stochastic reliability.”⁵⁸⁹

‘Values’ for the components of the threat assessment equation – likelihood, impact, capability, vulnerability, and intent – are derived from the three threat narratives, as described in this chapter. The singular risk picture derived from this ‘science based’ risk assessment approach reduces and conflates the inherent complexity and obscures underlying framing assumptions into a single value.

To characterise this “reductive aggregative” approach as an evidence-based policy approach is problematic as “evidence-based” implies objectivity. Which evidence is used? Who interprets this evidence? What are its

⁵⁸⁷ Stirling, A. & I. Scoones (2009) From Risk Assessment to Knowledge Mapping: Science, Precaution, and Participation in Disease Ecology. *Ecology and Society*, 14(2), Online edition; & see discussion on risk in chapter 3 & threat assessment in chapter 6 of this dissertation.

⁵⁸⁸ As described in Chapter 6.

⁵⁸⁹ Stirling, A. & I. Scoones (2009) From Risk Assessment to Knowledge Mapping: Science, Precaution, and Participation in Disease Ecology. *Ecology and Society*, 14(2), Online edition, p.4

limitations? By selecting particular frames through which the evidence is interpreted narrows the scope of the threat assessment, and consequently forecloses alternative policy options.

Policy obstacles through framing

The biological weapon threat spectrum ranges from rudimentary home brewing to sophisticated state programmes: “[the] threat posed by chemical and biological weapons covers the basics of kitchen chemistry and bathtub biology through to the sophisticated chemical and biological weapons developed in state-led programmes”⁵⁹⁰

The ‘WMD’ narrative inflates the threat by invoking mass destruction. It is thus responsible for locating the bioterrorism threat at the high impact end of the threat spectrum. This threat spectrum is asymmetric, in that the probability of acquisition of a useable ‘weapon’ is skewed heavily towards kitchen sink operations, but the bioterrorism threat narrative is skewed towards the massively destructive end of the spectrum.

The ‘Terrorism’ narrative frames bioterrorism as an emergency and crisis – an “immediate and real threat”. The urgency causes political buy-in at high levels, appropriation of funds, and institutional responses. Investments into responses to terrorism have been sustained for a considerable time, however they are tied to rapid responses and timeframes. There is an emphasis on emergency response, including training, decontamination, real time detection

⁵⁹⁰ Littlewood, J. & J. Simpson (2007) The chemical, biological, radiological and nuclear weapons threat. In: *Homeland security in the UK: future preparedness for terrorist attack since 9/11*, ed. Wilkinson, P., London: Routledge, 57-80,p.74

and identification of agents, and personal protective equipment for first responders.⁵⁹¹

The monolithic view of terrorism, as pointed to above, has been criticised by several commentators, for example:

“Context is all in the analysis of political violence. In the view of the enormous diversity of groups and aims involved, generalisations and evaluations covering the whole field of modern terrorism should be treated with considerable reserve. Over-simplified analysis of phenomena tends to induce simplistic and dangerous proposals for panaceas.”⁵⁹²

And,

“entangling disparate phenomena under the ‘terrorism’ label implies a preference for a homogenized policy, although it would be better to differentiate threats and respond specifically to each variant”⁵⁹³

These commentators urge to disaggregate terrorism into categories according to motivational parameters, objectives, and so on (for example, national-separatist, social revolutionary, etc).⁵⁹⁴ A disaggregation, they argue,

⁵⁹¹ Scoones and Forster point out similar findings in their analysis of policy narratives framing the international Avian Influenza ‘crisis’, see: Scoones, I. & P. Forster (2008) *The International Response to Highly Pathogenic Avian Influenza: Science, Policy and Politics (STEPS Working Paper 10)*. Brighton: STEPS Centre, p.34

⁵⁹² Wilkinson, P. (2005) International Terrorism: the changing threat and the EU's response. *Chailot Paper*, 84 (October 2005), p.12

⁵⁹³ Kellman, B. & R. Bilder (2000) Review Essay: Clashing Perspectives on Terrorism. *The American Journal of International Law*, 94(2), 434-438, p. 435

⁵⁹⁴ This type of disaggregation or differentiation of groups who engage in political violence can produce interesting insights into, for example, the propensity to use unconventional weapons. See for example: Post, J. M. (2005) The psychology of WMD terrorism. *International Studies Review*, 7(1), 148-51, & Piazza, J. A. (2009) Is Islamist Terrorism More Dangerous?: An Empirical Study of Group Ideology, Organization, and Goal Structure. *Terrorism and Political Violence*, (21), 68-88

would enable differentiated and targeted responses. Comprehensively integrated approaches to diverse policy challenges can only make sense where there is a common causal mechanism – thus, integrated approaches to counter radicalisation⁵⁹⁵, for example, or the process of terrorist recruitment⁵⁹⁶ may make sense because there are common causal mechanisms.⁵⁹⁷

The ‘WMD’ narrative is problematic because it associates biological weapons with chemical, radiological and nuclear weapons. However, these systems are categorically different in consequences and impact. The causal mechanism with which they cause harm and the type of harm they can cause is fundamentally different.

“biological weapons give the good guys opportunities that nuclear weapons don’t: a biological weapon can be prevented from causing mass lethality after an attack.”⁵⁹⁸

⁵⁹⁵ Radicalisation refers to a number of processes in, and used by, violent movements; including indoctrination, desensitisation, creating of an enemy ‘other’, and, in the most extreme cases readying operatives for potentially destructive assaults. See, for example: Berman, E. (2009) *Radical, religious, and violent: the new economics of terrorism*. Cambridge, Massachusetts; London: MIT Press; Laqueur, W. (2003) *No end to war: terrorism in the 21st century*. New York; London: Continuum; & Hoffman, B. (1998) *Inside terrorism*. London: Gollancz.

⁵⁹⁶ Terrorist recruitment serves as an example here, it should be noted that the process by which people ‘become terrorist’ has a narrative of its own, which is contested. For an insightful example see: Silke, A. (2003) *Becoming a Terrorist*. In: *Terrorists, Victims and Society: psychological perspectives on terrorism and its consequences*, ed. Silke, A., Chichester: Wiley, 29-53

⁵⁹⁷ The integrated approach to counter-terrorism is advocated by some, see for example: Gustafson, K. (2010) *Complex Threats: The Globalisation of Domestic and Foreign Security*. *RUSI Journal*, 155(1)

⁵⁹⁸ Graham, B. & J. Talent (2009) *Bioterrorism: Redefining Prevention* (Guest Editorial). *Biosecurity and Bioterrorism*, 7(2), 125-126, p.126. The article continues “[...] A major part of our [US] biodefense strategy should be based on reaching a level of preparedness that will effectively remove bioweapons from the category of WMD. This will happen neither quickly nor cheaply, but it will be well worth the investment.” The authors, former senators, head the US Commission on the Prevention of WMD Proliferation and

continued...

Combining these different systems in one integrated CBRN approach may foreclose other policy options.⁵⁹⁹

The ‘technological progress’ narrative is the most complicated of the three narratives to unpick. It holds that through advancing *science* access to *biological weapons* becomes easier. The narrative adopts a simplified and reductive view of technology, the life sciences and biological weapons in particular. Biological weapons are depicted as artefacts, which deliver desired effects ‘off the shelf’.⁶⁰⁰ Likewise, attempts to govern and regulate advances in the life sciences to prevent ‘dangerous’ research being conducted whilst promoting, or at least not inhibiting, ‘beneficial’ outcomes are based on a simplified understanding of technology and innovative processes in the life sciences.⁶⁰¹

“Since neither technologies’ function nor how well they perform them, are solely determined by their intrinsic properties, innovation cannot be an *event* where the artefact/function is discovered. Instead innovation is a process [...] technology should not be understood as only

Terrorism. The conclusions of this article are sound. However, the commission is the product and apex of what Leitenberg called an influential “group of vociferous proponents of the bioterrorism threat” who have been setting the US policy agenda by “systematically and deliberately” exaggerating the threat which led the US government to spend an “overwhelming proportion of its resources” on biodefence - \$54.39 billion on civilian biodefence following September 11 (Financial Year 2001-FY2010). Leitenberg, M. (2007) Understanding the threat. In: *Bioterrorism: confronting a complex threat*, eds. Wenger, A. & R. Wollenmann, Boulder & London: Lynne Rienner, 39-76, p. 67 & Biodefence figures from: Franco, C. (2010) Billions for Biodefense: Federal Agency Biodefense Funding, FY2009-FY2010. *Biosecurity and Bioterrorism*, 7(3), 1-19

⁵⁹⁹ A recent example of the integrated approach can be found in Home Office (2010) *The UK’s Strategy for countering the use of CBRN by terrorists*. London: The Stationery Office (22 March 2010).

⁶⁰⁰ In media and literature the notion of biological weapons available on a ‘black market’ is an example of the view that a biological weapon is a ‘thing’, rather than a technology.

⁶⁰¹ The labels ‘beneficial’ and ‘dangerous’ are inherently subjective and difficult to apply to legitimate scientific research. See for example the discussion on the ‘experiments of concern’ in chapter 4 of this dissertation.

artefacts as it includes and can be defined as ‘all the knowledge, concepts, experimental processes, tangible and intangible artefacts and wider socio-technical systems that are required to recognise technical problems and to conceptualise, formulate, research, develop, test, apply, diffuse and maintain effective solutions to those problems.’⁶⁰²

Adopting a wider framing of technology as a combination of artefacts, knowledge and learning embedded in a socio-political system may offer an explanation as to why there have been so few actual incidences of bioterrorism: a simplified conception of technology leads to an over-estimation of “the ease with which it is possible to move from a pathogen to a weapon with the potential to harm more than a few people, and the even larger technical problems associated with developing biological weapons of mass destruction.”⁶⁰³ It should be noted that even the acquisition of a pathogen can present a significant barrier. Aum Shinrikyo’s efforts to produce a biological weapon failed at this stage; as did the ‘ricin plotter’, and despite Al-Qaeda’s ‘interest’ there is no evidence that they have been able to acquire any biological agents.⁶⁰⁴

⁶⁰² McLeish, C. & P. Nightingale (2007) Biosecurity, bioterrorism and the governance of science: The increasing convergence of science and security policy. *Research Policy*, 36, 1635-1654, p. 1645.

⁶⁰³ Ibid. p. 1645.

⁶⁰⁴ See chapter 4; & on Al-Qaeda Leitenberg, M. (2007) Understanding the threat. In: *Bioterrorism: confronting a complex threat*, eds. Wenger, A. & R. Wollenmann, Boulder & London: Lynne Rienner, 39-76, p. 49; On Aum’s BW failure Wheelis, M. & M. Sugishima (2006) Terrorist use of biological weapons. In: *Deadly Cultures - Biological Weapons since 1945*, eds. Wheelis, M., L. Rózsa & M. Dando, Cambridge, Massachusetts and London, England: Harvard University Press, 284-303, pp 293.

Policy Implications

The possibilities of biological warfare are chilling. This apparent potential for harm should, however, not invoke simplified and reductive risk characterisations to frame the response to a complex and dynamic threat which consists of a broad and asymmetric threat spectrum, with a raft of possible agents and modes of use, on the side of the weapon, as well as complicated social factors such as motivations and group composition, on the side of the perpetrator.

“The lack of CBRN attacks should lead policy-makers, politicians, scholars, and governments to ask penetrating questions. Why have so few CBRN attacks occurred? What is the actual threat posed by CBRN? What is the perceived threat posed by these weapons? And, aside from what is real, what is supposition, and what is the evidence concerning CBRN weapons, what does all this mean for the future policy towards the domestic management of terrorist attacks?”⁶⁰⁵

Narratives are powerful cognitive shortcuts (heuristics) which prejudice policy formation processes by narrowing interpretation. The study and identification of dominant narratives in specific policy settings can aid the understanding of the emergence of policy issues. Moreover, not just the understanding of their emergence but the study of narratives may also enable a critical assessment of the underlying assumptions. Unpicking the narratives allows a re-evaluation of the threat posed by bioterrorism; not in order to choose one interpretation over another but to complement and enhance the

⁶⁰⁵ Littlewood, J. & J. Simpson (2007) The chemical, biological, radiological and nuclear weapons threat. In: *Homeland security in the UK: future preparedness for terrorist attack since 9/11*, ed. Wilkinson, P., London: Routledge, 57-80 p.58

narrow interpretation which has evolved out of ‘historical accident’.⁶⁰⁶ Risk based precautionary and participatory approaches⁶⁰⁷ can offer a way into this opening up of policy options which have thus far been restricted by the narrow interpretation that has become entrenched through the processes described above.

Further Research

This research has looked at the rise of bioterrorism threat in the UK over a period of time which has been characterised by significant changes in the international environment. The processes described are complex, multi-causal, and the policy network and processes involved are in many cases not open for inquiry. Many questions remain unanswered. This research has provided a framework, a way to conceptualise the threat from bioterrorism, and further inquiry is needed on a variety of aspects of its construction and application. Many of these research areas are not accessible to academic scrutiny, or only allow a limited view of what is going on. As Littlewood pointed out: “Difficult as it may be to admit, those outside of the intelligence and counter-terrorism community or without access to such information are in many cases simply guessing at the CBRN threat”⁶⁰⁸

⁶⁰⁶ I use the word ‘evolve’ here, as I do not think that the threat of bioterrorism, or unconventional terrorism in general, has been deliberately or intentionally created. These narratives do not have a narrator. They are emergent properties of a complex socio-political system. The narratives evolved in response to a number of events and their institutional environment. For example, the WMD narrative has entangled bioterrorism with unconventional weapons threats, for historical reasons (arms control) and institutional arrangements (WMD frame).

⁶⁰⁷ Stirling, A. & I. Scoones (2009) From Risk Assessment to Knowledge Mapping: Science, Precaution, and Participation in Disease Ecology. *Ecology and Society*, 14(2), Online edition

⁶⁰⁸ Littlewood, J. & J. Simpson (2007) The chemical, biological, radiological and nuclear

This research has concentrated on a conceptual level of the threat narrative which is held by policy makers and shapers, and embedded in institutions. This narrative is contested – how do these contests play out, is the dominant narrative challenged and amended as a consequence, over time? Is it a passive or an active process? What may trigger re-evaluation of the threat narrative? The manner in which bioterrorism has been characterised here suggests that it is passive, and now that it is tacitly and structurally entrenched in national strategy,⁶⁰⁹ it here to stay, maintained for as long as there is technological progress and any type of terrorist activity. Should the threat narrative be counteracted? Or even reinforced to stimulate preparations? Or is it going to fizzle out over time when sidelined and overtaken by a different narrative?

Furthermore, there are a number of questions about processes of interaction between actors on different levels of engagement: how do other countries relate to the shaping of the narrative, what is their role and impact on the UK, in particular in this case the US, but also other international actors, such as the EU, G8, UN, WHO? Do supranational organizations have a harmonising effect on the threat narrative? For example, is a similar bioterrorism threat narrative operating in EU countries and spreading to new member states? How can differences in threat perception between countries be explained?

weapons threat. In: *Homeland security in the UK: future preparedness for terrorist attack since 9/11*, ed. Wilkinson, P., London: Routledge, 57-80 p.58

⁶⁰⁹ As part of institutions, and in the counter-terrorism strategy CONTEST, which has been supplemented with a specific CBRN terrorism strategy. See: Home Office (2010) *The UK's Strategy for countering the use of CBRN by terrorists*. London: The Stationery Office (22 March 2010)

There are many more angles and perspectives on the linkages between the bioterrorism threat, terrorism in general and the policy process that require academic attention, in order to understand further aspects of their interactions.

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