

<b>Institution: University College London</b>
<b>Unit of Assessment: 30 – History</b>
<b>Title : Secret Science: Chemical and biological warfare research and policy in Britain</b>
<p><b>1. Summary of the impact</b> (indicative maximum 100 words)</p> <p>The development of chemical and biological warfare (CBW) in Britain is surrounded by secrecy and controversy, and attracts great public interest. Professor Brian Balmer's research has made him a leading commentator on this aspect of national defence policy, and as such he has had a major impact on public awareness and understanding of CBW, in the UK and abroad. His expertise has often been called upon to explain to the general public the import of newly declassified documents. His research has also had an impact on policy-makers, NGOs and others by informing them about the history of policy debates about the control of CBW weapons.</p>
<p><b>2. Underpinning research</b> (indicative maximum 500 words)</p> <p>Brian Balmer joined UCL in September 1994 as a Lecturer and became Professor in October 2013. Much of his research has been on the history of chemical and biological warfare, focusing on the UK in the twentieth century. He published a major monograph on the role of scientific expertise in the formation of UK biological warfare policy from 1935-65 [a], which was the first substantial academic history of the British biological weapons research programme and the formation of biological warfare policy in the UK. Prior to this, open accounts of the UK programme came largely from official histories and were necessarily sketchy, due to the extreme secrecy surrounding the topic. Balmer also published a number of single- and co-authored chapters and articles, drawing on new archival material that provides insight into the development of, and decision-making about, the UK programme [b] [c]. These publications chronologically extended or thematically supplemented the monograph as new sources were released into the public domain. More recently this work has expanded to include the history of the UK chemical warfare programme. At a theoretical level, these studies provide a fuller understanding of the role of scientific expertise in defence policy-making.</p> <p>A second major subject of Balmer's research has been secrecy in science. Several recent publications have concentrated on this theme [d], and resulted in a monograph of historical case studies about secrecy in the UK biological and chemical warfare research programmes [e]. The central argument of the book is that secret science is not simply the same as open science, just done behind closed doors. Secrecy changes science and scientists. What counts as a problem, as evidence, as a solution, as ethical or practical, can all change when science is placed behind closed doors. Moreover, secrecy is not static. Matters are rarely fully hidden or universally open, and the boundary between them is in continual need of shoring up. Consequently, the book turns away from an abstract view of secrecy and instead argues that, to understand the relationship between secrecy and knowledge production, historians and sociologists need to attend to the mechanisms by which secrecy is enacted and performed, and by whom, in everyday practices.</p> <p>Finally, locating his historical research on biological warfare policy within the broader framework of Science &amp; Technology Studies, Balmer has engaged in collaborative work, including a recent contribution to a collection of papers on controlling 'dual-use' technologies for a project sponsored by the UK Foreign and Commonwealth Office (FCO) and US Defence Threat Reduction Agency (DTRA) [f]. This provides evidence against the traditional determinist view that dual use – malign and benign – is an inherent characteristic of a technology and will always result in its application for hostile purposes; the paper argues that misuse is not an inevitability, but that the 'mediating influence of social processes is required for a technology to be misapplied for hostile purposes'.</p>
<p><b>3. References to the research</b> (indicative maximum of six references)</p> <p>[a] B. Balmer, <i>Britain and Biological Warfare: Expert Advice and Science Policy, 1930–1965</i> (Basingstoke: Palgrave, 2001).</p> <p>Critically well-received ('a scholarly marvel, a trustworthy treatise'; 'a detailed and invaluable account'; 'a thoughtful inquiry'; 'an important contribution to the... history of biological warfare': <i>Social Studies of Science</i> 32.4 (2002), 626-32; <i>Isis</i> 94.4 (2003), 763; <i>BMJ</i> 324 (9 Feb 2002),</p>

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370; *Bulletin of the Atomic Scientists* July/Aug 2002, 66–67). Available on request.

[b] B. Balmer, 'Using the population body to protect the national body: Germ warfare tests in the UK after WWII', in J. Goodman, A. McElligott, and L. Marks (eds.), *Useful Bodies: Humans in the Service of Medical Science in the Twentieth Century* (Baltimore: Johns Hopkins Press 2003), 27–52.

Peer-reviewed; leading academic publisher. Positive reviews of book as a whole in *Journal of the History of Medicine and Allied Sciences* 60.2 (2005) 244–5; *Perspectives in Biology and Medicine* 48.2 (2005) 312–14. Available on request.

[c] B. Balmer, 'The British program', in M. Wheelis, R. Lajos, M. Dando (eds.), *Deadly Cultures: Biological Weapons Programs Since 1945* (Harvard: Harvard University Press, 2006), 47–83.

Peer-reviewed; leading academic publisher. Available on request.

[d] B. Balmer, 'A secret formula, a rogue patent and public knowledge about nerve gas: secrecy as a spatial-epistemic tool', *Social Studies of Science* 36.5 (2006), 691–722.

Peer-reviewed journal. URL: <http://www.jstor.org/stable/25474471>

[e] B. Balmer, *Secrecy and Science: A Historical Sociology of Biological and Chemical Warfare*. (Ashgate Publishing 2012).

Major monograph from respected academic publisher. Submitted to REF 2014.

[f] C. McLeish and B. Balmer, 'The discovery of the V-series nerve agents', in J. Tucker (ed.), *Innovation, Dual Use, and Security: Managing the Risks of Emerging Biological and Chemical Technologies* (Cambridge, Mass: MIT Press 2012), 273–88.

Reviews and endorsements: <http://mitpress.mit.edu/books/innovation-dual-use-and-security>  
Submitted to REF 2014.

#### 4. Details of the impact (indicative maximum 750 words)

The major impact of Balmer's research has been to create greater public awareness of the development of chemical and biological weapons (CBW) research in the UK by penetrating the secrecy which surrounds them, and to inform public discourse and policy debate by putting them in their historical context. The history of CBW is poorly understood but attracts considerable media and public interest due to events such as the post-9/11 anthrax attacks. Through media work and public engagement activities, Balmer has reached a large general audience in the UK and Europe, and in the UK he has been directly consulted by policymakers and other interested parties.

The reach of the impact of Balmer's research among the general public has been very wide as a result of frequent media appearances in which he has discussed past biological weapons programmes. In 2010, the National Archives released newly declassified documents about Britain's biological weapons programme in WWII, which included new lists of microorganisms that were to be considered as potential agents on which to experiment. These lists generated considerable media interest and, on the strength of his monograph [a], Balmer was invited to put these documents in context. Initially he was interviewed and quoted in an article in *The Guardian*, which at the time had a print circulation of 300,472 [1]. This led to three appearances on BBC TV and radio, and Irish radio; Balmer's discussion of his research insights in an interview on BBC Radio 5 Live, *Drive Time* reached an audience of 6.76 million [2]. Later in 2010, Balmer was approached to view and comment on a newly discovered film of 'Operation Cauldron', a 1952 biological weapons trial using plague and other pathogens that had taken place at sea in utmost secrecy off the Hebrides islands, about which he had written in his book [a]. This interview was broadcast as part of BBC Bristol's *Inside Out West*, 'Operation Cauldron' (18 October 2010), with an accompanying BBC Wiltshire web article [3], and was subsequently quoted directly in *The Daily Mail*, with a daily print and online readership of over 6 million [4]. In 2011, Balmer provided extensive research-based advice to TV production company North One for a feature they produced for BBC 1's flagship factual programme *The One Show* about poison darts research in WWII [5]. Most recently, Balmer's research attracted media attention abroad, when his keynote lecture at a conference on *Technology, Values and Ethics* at the University of La Coruña led local and regional Spanish press

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to interview him about how his recent historical work [f] could contribute to contemporary arms control debates [6].

The *significance* of the impact of Balmer's research on the public awareness and understanding of CBW is indicated by the award in 2008 of a News & Documentary Emmy for 'outstanding science, technology and nature programming' to 'The Living Weapon', a documentary broadcast in the USA during the previous year, in which Balmer was interviewed at length. It was part of the Public Broadcasting Service's American Experience Series ('America's most watched history series'), and continues to be available for viewing on the series website [8]. The way in which that initial media appearance has generally led to several further requests for interviews is further evidence that Balmer's contributions have widely been perceived as important.

Unusual and striking evidence of the significance of Balmer's research was its use as the basis for an arts project, *Dark Spaces*, produced by Neal White and the Office of Experiments, which explored hidden sites of scientific research in the UK. This both expanded the reach of his work, and extended the range of beneficiaries. White, an artist in residence at UCL, discussed this project with Balmer and consulted his work. *Dark Spaces* involved a range of activities, including the compilation of the Overt Research Database, 'an on-going project to map and record advanced labs and facilities in the UK, and to involve the public in this exploration and revelation'. The South Edition of this database featured in the exhibition *Dark Places* at the John Hansard Gallery, Southampton (2009-2010, in partnership with Arts Catalyst and SCAN), reviewed in *The Guardian* and *ArtDaily*. Balmer is acknowledged in the exhibition brochure [9].

As well as reaching the general public in their millions via these contributions to local, national and international media, Balmer's work has informed political discussion through presentations of his research to policy-makers and non-governmental organisations (NGOs) in Britain and abroad. In 2012, he discussed his recently published chapter on V-series nerve agents [f] with two such special-interest audiences. At Chatham House, at the UK launch of the book in which this chapter was published, he addressed an audience of c. 50, including a FCO representative and a former director (who is still active in arms control) of Dstl Porton, the chemical and biological defence establishment. In September 2012, he was an invited discussant for a panel exploring the use of history to understand the present at the US-UK Joint Workshop on *Improving Intelligence Analysis on Emerging Biotechnology Threats*, organised by the ESRC Genomics Forum. The non-academic participants on that invitation-only occasion included members of the US and UK intelligence community, and representatives from the Federal Bureau of Investigation (USA), the Department of Homeland Security, US State Department and Dstl Porton. Balmer also presented this research to the World Health Organisation, Geneva, at their Global Public Health Histories seminar series (11 July 2012), where the audience of c. 40 people (plus a 'webinar' virtual audience) included interns and WHO staff, including personnel from their Centre for Strategic Health Operations, which provides 'a single point of coordination for response to acute public health crises including infectious disease outbreaks, natural disasters and chemical emergencies' (WHO website) [7]. This remit encompasses response to deliberate malign use of disease or chemicals. The talk, on the history of nerve gas, was therefore directly relevant for their understanding of the historical context of the Centre's mission.

Evidence for the significance of Balmer's research for policy-makers and NGOs is inevitably limited by the sensitive nature of CBW: much of the policy debate takes place in closed environments and it is accordingly difficult to prove the extent to which it has been influenced by Balmer's research. Nevertheless, there are strong indications that beneficiaries attach great value to Balmer's expertise. When the FCO and the DTRA sponsored a project on the governance of 'dual-use' technologies in 2009, they invited Balmer to contribute one of the two featured historical case studies. This case study [f] was described as supporting 'a very important argument' about the nature of dual-use technology by Michael Moodie, Assistant Director for Foreign Affairs, Defense, and Trade at the Congressional Research Service (CRS) and former Assistant Director of the US Arms Control and Disarmament Agency [9]. In July 2011, when the *Pugwash Mapping Disarmament in the UK* project report (begun several years earlier in response to a request from Baroness Shirley Williams when she was an advisor on nuclear proliferation, for an overview of UK non-governmental work on nuclear disarmament) extended its directory to include individual experts, Balmer was listed as a recognised expert on the history of CBW [10]. The US-UK Joint

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Workshop on Intelligence (September 2012) at which Balmer was invited to speak was explicitly designed to ensure 'Analytic Outreach' in accordance with a 2008 directive from the US Office of National Intelligence that charged intelligence analysts to engage with outside experts in order to 'explore ideas and alternative perspectives, gain new insights, generate new knowledge, or obtain new information' [11]. The fact that Balmer has been one of the first scholars invited into their normally closed world is clear evidence of the significant impact of his research.

Support for Balmer's research by key officials and policy makers also demonstrates the significance accorded to his work. The Joint Workshop generated so much interest from participants that the organiser (Prof Kathleen Vogel, Cornell University) and Balmer subsequently submitted a joint application for funding of a follow-up workshop bringing research to intelligence experts to the National Science Foundation in 2013. In 2013, an award of £460,446 from the AHRC for a new 3-year research project *Understanding Biological Disarmament: The Historical Context of the Origins of the Biological Weapons Convention* was supported by an invited project advisory board, which includes senior staff from the FCO, Chatham House and National Archives; their willingness to serve on the board is based on their familiarity with Balmer's underpinning work, and constitutes a clear indication of the significance which they attribute to his research in this field.

#### 5. Sources to corroborate the impact (indicative maximum of 10 references)

- [1] 'Files reveal Britain's secret biological weapons trials in second world war', Owen Bowcott and Rob Evans, *The Guardian* 17 May 2010 <http://bit.ly/16HiNs3>. Circulation: <http://bit.ly/1aVtkQA>.
- [2] Interviews: Radio 5 Live, *Drive Time*, 17 May 2010 (audience figure: <http://bbc.in/16bhBeX>); BBC TV Bristol, Points West, 18 May 2010; Tom McGurk Show, Radio 4fm, Ireland, 20 May 2010.
- [3] BBC Wiltshire news article on Operation Cauldron: <http://bbc.in/1560dHC>.
- [4] 'Horror film from 1952 shows British germ warfare tests', *Daily Mail*, 22 September 2012. <http://dailym.ai/1gCd2ZZ> Daily print + online readership (Adults 15+, July 12–Jul 13) National Readership Survey <http://www.nrs.co.uk/nrs-data-tables/>.
- [5] 'Con valores éticos claros se podría evitar alguna guerra', *Diario de Ferrol*, 15 March 2012; 'La prohibición de las armas químicas no puede olvidarse', *La Voz de Galicia*, 16 March 2012.
- [6] Chatham house launch: <http://bit.ly/18bPPq1>. Joint Workshop: <http://bit.ly/16Hkxx7> WHO Geneva seminar: <http://bit.ly/18Bqqys> [PDF].
- [7] Living Weapon website, which includes the full programme: <http://to.pbs.org/16biaFn>.  
Accolades for the American Experience series and its wide audience: <http://to.pbs.org/19imY75>.
- [8] Dark Places at the Hansard Gallery: <http://bit.ly/1aVu7Rj>; See also Arts Catalyst profile <http://bit.ly/18Br9Qk> *Dark Places* exhibition brochure (John Hansard Gallery: University of Southampton) available on request. *Guardian* review: <http://bit.ly/1aVuoE2>.
- [9] Review of a Balmer case study by Michael Moodie, former Assistant Director of the US Arms Control and Disarmament Agency <http://bit.ly/1a6nHuo>.
- [10] *Pugwash Mapping Disarmament in the UK* project report (PDF; see p. 20) <http://bit.ly/1aN93t0>.
- [11] Report on workshop for intelligence analysts (Sept 2012): <http://bit.ly/1aVuCuK>.