

**A Historical Sociology of Teargas in  
Britain and the Empire, 1925-1965**

**Alexander Chanan Mankoo**

**Thesis submitted for the Doctor of Philosophy  
Department of Science and Technology Studies**

**UCL**

**2019**

## **Declaration**

I, Alexander Chanan Mankoo, confirm that the work presented in this thesis is my own. Where information has been derived from other sources, I confirm that this has been indicated in the thesis.

## **Abstract**

Teargas has followed a markedly different trajectory to its chemical weapons (CW) counterparts over the twentieth century. While the Geneva Protocol of 1925 and the 1993 Chemical Weapons Convention prohibited chemical agents as means of warfare, from the early interwar period teargas gained legitimacy as a technology for domestic policing across the world. Moreover, this role in domestic riot control later became a means for some states to justify its use in military operations. This PhD therefore asks: how did teargas, in the case of British policy, become associated with riot control and policing in the twentieth century, yet prohibited as a means of warfare? Drawing from key concepts in STS and related social sciences, I argue that we can take the technical characteristics of ‘teargas’ (its ‘non-lethality’ or low toxicity) as being co-produced with its social role as a crowd control agent. Furthermore, I argue that by doing so we gain insight into how the ‘non-lethal’ status of teargas was situated within a ‘civilising’ governmentality in Britain. This governmentality both legitimated, and was legitimated by, the authority of scientific expertise.

The thesis makes this argument by tracing a historical sociology of teargas in Britain and the empire from 1925 to 1965. Using declassified records from the UK National Archives and sources from newspaper archives, it examines three significant moments in Britain’s construction of teargas as a domestic technology. The first addresses the initial transition from military to colonial policing contexts that teargas made in British policy during the interwar period; the second focuses on Britain’s first use of teargas on populations within the UK during civil defence gas tests during WWII; the third traces the widespread use of teargas throughout the empire from WWII until 1965, examining the emergence of CS gas with the conception of riot control later in this period. Ultimately, I contend that CS, the ‘teargas’ of our contemporary moment, emerged from a sociotechnical imaginary of non-lethal chemical control grounded in ‘civilising’ modes of techno-politics.

## Impact Statement

In grappling with the history of teargas in Britain, this PhD offers insights that can have impact in three main areas. Firstly, it has implications for policy pertaining to arms control at the international level and use of force at the domestic level, especially regarding the democratic governance of teargas technologies. By demonstrating how assumptions about who gas should be used on and why were embedded within definitions of harm, lethality, and toxicity, the analysis here serves as a caution for policy makers, practitioners, and activists to consider what is taken for granted in the governance of both teargas and emergent arms technologies today – particularly those that purportedly straddle the boundary between military and civilian application.<sup>1</sup>

Secondly, it makes novel contributions to the historical literature on teargas, chemical weapons, and British defence in general. For example, it involves the first in-depth examination of Britain's WWII civil defence gas tests, which involved the use of teargas on British publics across the nation; it sheds light on the intricate ties between Britain's development of teargas and its imperial control of colonial populations; and it includes a detailed study of the experiments at Porton Down that led Britain to identify and adopt CS as a 'riot control agent'. The project fills these historical gaps, puts related historical work (on WWII civic life, for instance) in a new light, and encourages further research on events revealed here from other disciplinary perspectives. Moreover, there is scope to develop a publicly orientated online tool with which people around the UK search an interactive map that shows whether, when, and where teargas tests took place in their local areas.

Thirdly, the project furthers work in STS that builds on Sheila Jasanoff's notions of 'co-production' and 'civic epistemology', showing how these approaches are valuable ways with which to understand the social and political aspects of the emergence of teargas in the twentieth century. In doing so, it also highlights how relations between conceptions of experimentation, care, and control interact to provide legitimacy to particular technologies, futures, and ways of governing. Furthermore, I offer the concept of 'orders of subjectivity' as a means to examine how different actors in systems of sociotechnical governance perform a combination of both structured (contingent) and agential (emergent) roles in these

---

<sup>1</sup> I have already spoken at events on security with key representatives of government and civil society



assemblages. There is thus scope for future work that builds on this concept to examine how different configurations of these orders emerge across social and cultural contexts.

The project has already generated a number of outputs – including an edited volume on chemical weapons<sup>2</sup> and my co-organising an international conference.<sup>3</sup> There is certainly scope for the work to produce further scholarly publications, and precipitate a workshop on the topic involving policy makers, arms control professionals, and scholars. Finally, it also provides a wealth of material that could be used in compiling an undergraduate taught course on science, technology, and security – a topic often lacking from current STS or history of science syllabi.

---

<sup>2</sup> Alex Mankoo and Brian Rappert (eds.), *Chemical Bodies: The Techno-Politics of Control* (London, New York: Rowman & Littlefield, 2018).

<sup>3</sup> The conference was titled “Science/Technology Security: Challenges to Global Governance?” and took place at UCL’s Global Governance Institute on 20/21 June 2016.

## Acknowledgements

I would first like to thank my supervisor Brian Balmer for his intellectual, mental and emotional support throughout my PhD and academic life in general. He has continually given me a constructively critical eye, confidence and encouragement, and drawn me into the community of chemical and biological weapons control scholars. I appreciate him both as a scholar and a kind human being. I thank Jon Agar for his advice and support as my secondary supervisor, and I thank my extended academic family in the UCL Science and Technology Studies Department for the guidance and conversations over the years: including Chiara Ambrosio, Joe Cain, Brendan Clarke, Emily Dawson, Jean Baptiste-Gouyon, Simon Lock, Tiago Mata (and for being my internal examiner), Melanie Smallman, Erman Sozudogru, Alex Spelling, and Jack Stilgoe. I thank Lori Coletti Campbell, Malcolm Chalmers, and Susan Walsh for their resourcefulness and kindness in helping with all manner of organisational and administrative undertakings. I am indebted to my fellow PhD students (past and current) in the department for years of friendship, laughter, commiseration, motivation, and inspiration – including Katherine Cecil, Sadie Harrison, Liz Jones, Oliver Marsh, Sara Peres, Sam Vanderslott, Raquel Velho, and Jacob Ward.

I was incredibly fortunate to undertake a 2018 Spring Fellowship in the Science, Technology and Society Program at the Harvard Kennedy School of Government as part of my PhD. I am deeply grateful to Program Director Sheila Jasanoff for her invaluable insights into my research, the exciting community she has cultivated at the Kennedy School, and for her hospitality during my time Cambridge, MA. Thanks to Shana Ashar for her organisational work and making me feel welcome in the program, and my wonderful colleagues there for the many thought provoking conversations, fun trips, and friendships. I would also like to thank Jeanne Guillemin and Matthew Meselson, who welcomed my wife Dianna and I with a wonderful dinner during our time in Boston, and have been a great source of insight. During the middle of my PhD, I also worked in the Understanding Patient Data team at the Wellcome Trust on a three-month internship, and extend my thanks to my colleagues there as well.

I thank Jason Dittmer in UCL's Geography Department for a fantastic time co-organising the Science/Security/Technology conference, and for giving me the opportunity to compile an edited volume during my PhD. I thank Brian Rappert for co-editing that volume

with me; I was privileged to work alongside his dependable support, critical eye, and experience in the field. I am grateful to the authors (many of whom I now call friends) who contributed to that project. Special thanks go to Anna Feigenbaum, a brilliant fellow researcher of all things ‘teargas’ who I have enjoyed fascinating conversations with throughout my PhD. Regarding others within the community of CBW scholarship, I am indebted to the staff of the Harvard-Sussex Program on Chemical and Biological Weapons – especially Julian Perry Robinson, Caitríona McLeish, and James Revill for their expertise, support of, and interest in my work over the years. I thank Brett Edwards for being an insightful, thorough and enthusiastic external examiner. Thanks to John Walker at the FCO, the staff at The National Archives – particularly Stephen Twigge – and the staff at the East Sussex Records Office and Kingston History Archive for their assistance with my work. I thank the Economic and Social Research Council for funding my PhD, without which this work would not have been possible, and the Research and Development Management Association for additional funding.

Finally, I wish to express a deep gratitude to my family – my parents, brothers, and sisters – who have never stopped supporting me in my PhD over the last few years, and to my close friends who spurred me on. Most importantly, I am indebted to Dianna – for marrying me during my PhD, for always having faith in me (even when I don’t), and for delighting in my work almost as much I do. Thank you; I endeavour to always do the same for you.

## Table of Contents

<b>Declaration</b>	<b>2</b>
<b>Abstract</b>	<b>3</b>
<b>Impact Statement</b>	<b>4</b>
<b>Acknowledgements</b>	<b>6</b>
<b>Table of Contents</b>	<b>8</b>
<b>Abbreviations</b>	<b>12</b>
<b>List of Figures and Tables</b>	<b>15</b>
<b><u>Introduction</u></b>	<b><u>16</u></b>
Preamble	16
The Research Question, Objectives and Argument	17
<i>Why Write a Historical Sociology of Teargas in Britain?</i>	19
<i>What do I mean by ‘Teargas’?</i>	23
<i>Why is this Work Important?</i>	24
Structure of Project	25
<b><u>1 Literature Overview</u></b>	<b><u>28</u></b>
Part One: The Historical Overview	28
<i>The Ancient World</i>	28
<i>The Early 20<sup>th</sup> Century, 1900-1914</i>	30
<i>The First World War and its Aftermath</i>	34
<i>Porton Down</i>	36
<i>International Treaty Prohibitions</i>	41
<i>Military Use of Teargas in the Interwar Years</i>	44
<i>Chemical Warfare and Colonialism</i>	45
<i>World War II</i>	49
<i>Post War: Expanding the Colonial Gas Experiment</i>	52
<i>Vietnam</i>	55
<i>Riot Control, Northern Ireland and the Himsworth Report</i>	59

Part Two: The Thematic Overview	61
<i>Classifying Chemicals: What Kind of Thing is Teargas?</i>	63
<i>Power, Biopolitics and Orders of Subjectivity</i>	66
<i>Co-production and Civic Epistemology</i>	74
<i>Co-construction, Sociotechnical Imaginaries and Technological Legitimacy</i>	77
<i>Teargas in Matters of (Taking) Care</i>	81
<i>Experimentation</i>	84
<b>2 Methods and Methodology</b>	<b>90</b>
Gathering the Sources	90
Analysis of Sources	93
<i>Documents from The National Archives</i>	93
<i>Documents from Newspaper Archives</i>	94
<b>3 Making a Gas of Colonial Control: The Legitimation of Teargas in the Interwar British Empire</b>	<b>97</b>
The Early Interwar Period: “A Final Argument Against its Employment”	99
<i>Teargas in Interwar America</i>	99
<i>Reticence toward gas in Interwar Britain</i>	101
<i>Requests for Teargas before 1933</i>	102
A Shift in Sentiment, 1930-1933: the ‘Humanity’ of Teargas	110
<i>Bringing US Policy into the British Colonial Model</i>	114
India, 1933: The Authorisation of Teargas for a Limited Experiment	116
Palestine, 1933: Teargas for Use in Dealing with Mobs and Riots	121
<i>Gas: an alternative or antecedent to shooting?</i>	124
<i>The Return of Worthington-Evans’ Arguments for Gas</i>	127
1935-1936: Broadening the Applications of Gas, Authorisation	130
Given to the Empire	
<i>Palestine</i>	130
<i>India, and the Colonial Empire</i>	131
<i>Debating Public Knowledge regarding Teargas</i>	134
Subjectification, Race, and Experimentation	139
Summary	145

<b>4 Teargas in the Town Square: Civil Defence Gas Tests in WWII Britain</b>	<b>147</b>
A Standout Case	148
The Emergence of Gas Tests in Britain’s Civil Defence Structures	150
<i>The Air Raid Precautions Department (ARP) and ARP Schemes</i>	152
The First Publicised Gas Test: Brighton, February 1941	157
<i>Tests as State Care</i>	160
Simulation and Anticipation: Future Emergencies, Present Experiences	164
<i>Simulation and Anticipation as State Care</i>	167
Gas Tests as Human Experimentation	169
<i>Consent</i>	175
<i>Public Relations</i>	177
Liability: Negotiating Responsibility for Gas Test Injuries	179
<i>Lines of Legality</i>	181
<i>Liability in Practice: A Case Emerges, as the MOHS Concedes Indemnity</i>	184
Summary	189
<b>5 Tear-gassing the Empire: The Making of a Riot Control Agent</b>	<b>191</b>
Burma, 1939: Enacting Non-Lethality in the Empire	193
<i>Teargas in Rangoon: Interpreting ‘Control’</i>	195
The (Re)Making of Teargas: Entangled Networks of Supply, Experimentation and Subjectification	202
<i>Peshawar: The gassing of 1,100 prisoners in a courtyard</i>	205
<i>Abandoning the No 92 Grenade</i>	209
Operation Crusoe, Malaya	212
<i>Planning the trials</i>	213
<i>Conducting the trials</i>	217
<i>“Tell the truth and shame the devil”: Navigating potential futures of public knowledge</i>	219
Making ‘CS’ a teargas	222
<i>CS as a sternutatory agent?</i>	224
<i>Measuring a ‘Mob’</i>	227

<i>Addressing persisting effects</i>	230
Debating Teargas in Parliament: April 1965	233
<i>Responses following the Parliamentary Q&amp;A</i>	238
Summary	240
<b>6 Discussion: Teargas the Weapon of Gas Warfare, to Teargas the Riot Control Agent</b>	<b>243</b>
<hr/>	
Toxicity as Safety: From the Empire, to Northern Ireland, to Policing at Home	243
<i>Policing in the 1990s: Gas becomes Spray</i>	244
<i>The Chemical Weapons Convention</i>	247
The Arc of my Arguments: Teargas in British Policy, 1925-1965	249
Further implications for STS and avenues for future work	257
Implications for Arms Control, Policy and Activism	260
The Making of a War Gas; The Making of a Riot Control Agent; What Next?	265
<b><u>Bibliography</u></b>	<b>267</b>
<hr/>	
Appendix 1: The Development of Teargas in France, 1900-1915	287
Appendix 2: Table of Teargases Used by the WWI Belligerents	289
Appendix 3: My Approach to Cataloguing Archive Entries	291
Appendix 4: Maps of Civil Defence Teargas Tests in Britain From February to June 1941, By Month	293
Appendix 5: Text of the Report of the Civil Staff Surgeon, Peshawar	296
Appendix 6: Kohat, the gassing of a procession of 300 in a bazaar	298
Appendix 7: The Comet Airliner Crash and Operation Crusoe	301
Appendix 8: CS as a teargas in the Empire; problems in the field	302

## Abbreviations

AIR	Air Ministry and Royal Air Force
ARP	Air Raid Precautions
BBC	bromobenzyl cyanide (teargas)
BNA	British Newspaper Archive
BW	Biological weapons/warfare
CA	a-bromobenzyl cyanide (teargas)
CAB	Cabinet (UK)
CAP	chloroacetophenone (teargas), see also CN
CB	chemical and biological
CBDE	Chemical and Biological Defence Establishment
CBW	Chemical and biological weapons
CDD	Chemical Defence Department
CDEE	Chemical Defence Experimental Establishment
CDES	Chemical Defence Experimental Station
CDRD	Chemical Defence Research Department
CID	Committee of Imperial Defence
CN	chloroacetophenone (teargas), see also CAP
CO	Colonial Office (UK)
COS	Chiefs of Staff
CS	2-chlorobenzalmalononitrile/o-chlorobenzal-malononitrile (teargas) aka T.792.
CTs	Communist Terrorists
CW	Chemical weapons/warfare
CWC	Chemical Weapons Convention
CWS	Chemical Warfare Service (US)
DCDRD	Director of Chemical Defence Research Department
DGIS	Director General Information Services
DM	Adamsite
Dstl	Defence Science and Technology Laboratory
ESRO	East Sussex Record Office



FCO	Foreign and Commonwealth Office (UK)
FO	Foreign Office (UK)
FRS	Fire and Rescue Service (UK)
GOC	General Officer Commanding
GP	Geneva Protocol
HMG	Her Majesty's Government (UK)
HMSO	Her Majesty's Stationery Office
HC	House of Commons
HO	Home Office (UK)
ICA	incapacitating chemical agents
ILPI	International Law and Policy Institute
IO	India Office (UK)
KMT	Kuomintang (Nationalist Party of China)
LA	local authority
MNLA	Malayan National Liberation Army
MOD	Ministry of Defence
MOHS	Ministry of Home Security
MoI	Ministry of Information
MP	Member of Parliament
MSCi	Master in Science
NCO	non-commissioned officer
NLW	Non-lethal weapon
OC	oleoresin capsicum (pepper spray)
OPCW	Organisation for the Prohibition of Chemical Weapons
PAVA	pelargonic acid vanillylamide (incapacitant spray)
PR	public relations
RCA	Riot control agent
RUC	Royal Ulster Constabulary
SA	Sturmabteilung (Nazi Party)
SRO	Senior Regional Officer
SACSEA	Supreme Allied Commander South East Asia
SIPRI	Stockholm International Peace Research Institute

SK	ethyl iodoacetate (teargas)
STS	Science and Technology Studies
TNA	The National Archives (UK)
WO	War Office (UK)
WWI	World War One
WWII	World War Two
UK	United Kingdom
US	United States (adjective)
USA	United States (noun)
USSR	Union of Soviet Socialist Republics (Soviet Union)

## List of Figures and Tables

Figure 1. Press Cutting from The Daily Mirror, circulated by CO officials.	135
Table 1. The twelve regional offices of the Ministry of Home Security, 1939-1945	154
Figure 2. Levels of control in the ARP	155
Table 2. Results Table of Operation Crusoe	218
Table 3. Greenwood's list of Teargas Use in Dependencies, 1960-65	234-235

## Introduction

### Preamble

“Could we not all agree that it is better to cry than die?”<sup>4</sup>

- Mr. J. Amery, MP for Preston North, Commons Debate, 1 April 1965.

Julian Amery’s question to the British Commons on the 1 April 1965, and specifically to Secretary of State for the Colonies Baron Greenwood, lays out a binary that has permeated and guided British research, development and policies regarding teargas since the early twentieth century. The distinction between the non-lethal and lethal effects of technologies of force – between crying and dying as he put it – was at the heart of so many of the decisions made by British policy makers, scientists, and police, to authorise, research, adopt or use teargas for the purposes of crowd control throughout the century. Although these developments occurred across a plethora of contexts in Britain and its empire, the power of this distinction, which took on different forms in different instances, endured and prevailed in them all. Whether in the secret laboratories of Porton Down, in policing the often tense environment of the hot and busy streets of Britain’s colonies, in the murmuring parley of halls of national and international law making, or in the hands of besieged air raid wardens during World War Two, the ‘temporary’ and relatively ‘innocuous’ effects of teargas made it uniquely fit for a purpose.

That purpose – using teargas to control and bring order to domestic and colonial crowds and populations – persists even today. An exceptional case in the arena of chemical weapons control, according to the 1993 Chemical Weapons Convention (CWC), teargas is prohibited as a means of warfare yet permitted for “law enforcement including domestic riot control purposes.”<sup>5</sup> For policy makers, police, researchers, protestors and so on, distinctions between lethality and non-lethality have not only been ways of understanding the properties of teargas, but also means to govern it – for Amery, for example, it was *better* to cry than to die. Establishing where the bounds of lethality lay came hand in hand with the power to

---

<sup>4</sup> “HC Debate: Maintenance of Order (Tear Smoke)”, 1 April 1965, vol 709 cc1823-24, Hansard.

<sup>5</sup> OPCW, Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Organisation for the Prohibition of Chemical Weapons, Paris, 13 January 1993 (updated 2005), Article II, 9(d).

determine what kinds of force on whom were legitimate for what kinds of purposes – the power to govern the use of force in their societies. This thesis, therefore, interrogates how teargas came to be such an exceptional chemical agent in British policy in the mid twentieth century, by asking who erected these bounds, where, when, how, and why?

Before moving on to present my PhD question and objectives in more detail, however, I wish to dwell on Amery's question a moment longer. In it, he referred to the contrast between crying and dying in the form of a plea for unanimity in the Commons: his question began in the form, 'could we not all agree?' This is by no means unusual, given it was being asked in the Commons, a place where rhetoric, disagreement and debate are by nature ubiquitous. However, in a general sense, Amery's push for consensus upon a particular way of understanding the teargas issue points to a much larger theme that runs deep throughout this thesis and the history of teargas in general. What, in the eyes of whom, makes a technology fit for purpose? Whose consensus is needed before police can gas crowds with a chemical agent? Who has the power to set the terms of debate, and why? And who is excluded, harmed or made invisible as a result?

This thesis will ultimately show that, rather than embracing a range of interpretations of the effects of teargas, Amery appealed to his peers to align with what was the dominant way of framing teargas – as a clear-cut, non-lethal, alternative to guns. This approach afforded authority to both scientific and medical knowledge (as ways to know what teargas 'is') as well as to the value of teargas as a police technology (how it should be used). Setting up the debate with a taken for granted binary made the problem of force in crowd control immediately more quantifiable and resolvable – riot control without a risk of killing was inarguably better than riot control with that risk – and particularly so for those concerned with the geopolitical needs and interests of Britain and its empire. Yet, this thesis will demonstrate how, in doing so, this approach rendered so many other ways of knowing and living in the world invisible – it will show how teargas has not just obscured people in a physical sense. It has also been accorded the power to obfuscate their voices, their communities, their knowledge, and, in some cases, even their very right to life.

### **The Research Question, Objectives and Argument**

The central question of this thesis can be put succinctly: How did teargas, unlike other chemical weapons, come to occupy its role in British policy as a crowd control technology in

domestic policing over the course of the twentieth century? And how did it come to be prohibited as a means of warfare yet broadly accepted as a means of law enforcement? Hence, the objective of this PhD is to trace a historical sociology of teargas technology in Britain and the empire, with a specific focus on the period of 1925-1965. Put differently, the project investigates some of the actors, themes, events and narratives that come to the fore in British history from 1925-65 when teargas is placed centre stage. This lies in contrast with much of the related literature on the topic, which has featured abbreviated insights into the history of teargas in the context of broader histories of either chemical and biological weapons (CBW), or non-lethal weapons (NLWs), more generally. Most of these do not offer substantial insight into the history of teargas technology specifically, though some detail various aspects – for example, its development, its adoption, its (mis)use – in either more thematically orientated, institutionally focused, or general contributions. These will be cited and acknowledged in Chapter 1. Yet teargas has occupied, and continues to occupy, unique social spaces and roles distinct from other CBW, with its own technological histories and ontologies requiring assessment on their own terms, even if they are in many respects linked to those of CBW more generally.

In answering the research question, my central argument here is that there is great analytical value in taking teargas's role as a technology for crowd control as co-produced with judgments regarding its chemical effects, 'non-lethality', 'humanity', and toxicity – co-production that occurred at the intersection of British policy makers, police authorities, and the (military) medical and scientific establishment. This approach reveals how these actors' ways of understanding and classifying teargas as a particular kind of chemical agent simultaneously constituted social and political means of governing and ordering the world; knowledge and governance were inseparable. Within my argument, I offer two other contentions: firstly, that the emergence of the thing 'teargas' was not a singular event, but that multiple configurations of 'teargas' emerged in British policy throughout my period of study. These configurations did not always align, sometimes diverging and other times converging, and could exist simultaneously, contingent upon the social context within which 'teargas' was situated. However, I will argue that, in aligning with a British 'sociotechnical imaginary' of non-lethal chemical control, certain configurations came to dominate and influence the trajectory of teargas policy over and above others.

Secondly, I contend that understanding these emergences of ‘teargas’ in Britain – particularly the dominant ones – requires an appreciation of the British political culture and geopolitics from which they germinated. In this respect, I suggest that ‘teargas’, as a sociotechnical object, differed across cultural contexts. For example, during the interwar period, I show that ‘teargas’ in Britain was associated with a distinct set of social actors compared with ‘teargas’ in the United States. This difference led both to unique classifications of teargas and modes of governing it in the two contexts. In these modes of governance, I also argue that the concomitant knowing and governing of teargas entails an establishment of what I term ‘orders of subjectivity’ – in other words, a means to sort, order and control particular bodies over and above, and through, others. Throughout this thesis, I will interrogate both the agential and enforced forms of subjectivity that these moments involve as a way to highlight what is at stake in the construction of this ambiguous thing called ‘teargas’.

#### *Why Write a Historical Sociology of Teargas in Britain?*

The topic of teargas has been of growing interest to historians and social studies scholars in recent years, though there has been little work as substantial as this project. However, one of the most recent contributions to the history of teargas is also the most detailed and extensive, and it must be mentioned first here. With respect to the history of teargas specifically, Anna Feigenbaum’s *Tear Gas: From the Battlefields of WWI to the Streets of Today* is currently the broadest analysis in terms of historical scope.<sup>6</sup> Feigenbaum’s book is not intended to be entirely comprehensive; rather she aims to “put tear gas on trial” with a focus on police-public relations and on exposing “those who profit from the violent control of other people.”<sup>7</sup> Her work does so by investigating key actors and events, resisters and profiteers that characterised the various periods in the history of teargas (predominantly in the USA and UK, but also across the world – especially in the later part of her history). Her background in Media and Communication Studies as well as her previous research on protest culture makes her uniquely suited for such an approach.

---

<sup>6</sup> Anna Feigenbaum, *Tear Gas: From the Battlefields of WWI to the Streets of Today* (London, Brooklyn, NY: Verso Books, 2017).

<sup>7</sup> *Ibid*, 11.

My project, though related to Feigenbaum's, takes on a different form in that it engages more specifically with literature and concepts from the field of Science and Technology Studies (STS). Consequently, it is perhaps more concerned with the insights that studying teargas can offer the history and sociology of science and technology (and vice versa) and less so with holding contemporary actors or profiteers to account. Nevertheless, my work still engages with themes of power, control, and violence; these are subjects that STS grapples with extensively by interrogating what, and who, is at stake in the construction of scientific and technological knowledge itself. Feigenbaum's work asks, "what happens to our notions of safety, security and harm when medical knowledge is covered up in the pursuit of ulterior motives," and answers this excellently. My PhD, on the other hand, is more interested in a different question: querying how those notions of safety, security and harm might have been co-produced with medical (and scientific) knowledge in the first place. These reasons are precisely why I have chosen to pursue a 'historical sociology' of teargas. Moreover, this approach has subsequently led me to focus on a slightly different set of empirical case studies to Feigenbaum. While some sections of Chapters 3 and 5 examine case studies that Feigenbaum has investigated in her work, albeit with a different analytical bent, a number of the case studies in all three of my empirical chapters are novel contributions to the field.

By 'historical sociology', I refer to an approach akin to one that both Brian Balmer and Donald MacKenzie have adopted in previous work on CBW and nuclear missile guidance respectively.<sup>8</sup> The approach is historical, insofar that the case studies within it can "read straightforwardly as an account of certain events," as either novel contributions to, or novel perspectives upon particular episodes in, the history of teargas.<sup>9</sup> However, these historical case studies are also entry points to discussions about more thematic topics pertaining to CBW technologies and technologies of force, including (human) experimentation, power and subjectification, legitimacy, and the relationship between care and control. These episodes in history are also lenses with which to glean understanding of phenomena that are at once social and technological. Rather than attempting to "generate rigid laws of social theory", Balmer's historical sociology draws from sociologist Jennifer Platt in using case studies to highlight and sensitise us "to features we might recognise as being present or conspicuously

---

<sup>8</sup> Brian Balmer, *Secrecy and Science: A Historical Sociology of Biological and Chemical Warfare* (Burlington, VT: Ashgate, 2012); Donald MacKenzie, *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance* (Cambridge, MA: MIT Press, 1990).

<sup>9</sup> Balmer, *Secrecy and Science*, xi.



absent in analogous cases.”<sup>10</sup> To build upon MacKenzie’s words, it is not just that “technological change is simultaneously economic, political, organisational, cultural and legal change,” but that knowledge itself is at once ‘technical’ and political, organisational, cultural, and so forth.<sup>11</sup> Thus, the cases examined here will be of interest both as potentially novel information to the historian, and examples of particular sociotechnical processes or phenomena of interest to the sociologist, the STS scholar, and perhaps others.<sup>12</sup>

The period of 1925 to 1965 was selected for three reasons: firstly, the role that teargas played in this period, particularly in Britain, remains considerably under-researched. Within this timeframe, the interwar years have been the area of the most historical attention. Historians such as Thomas Faith and Daniel Jones, as well as Anna Feigenbaum, have examined the trajectory of teargas in the interwar United States and its relationship with the development of the United States Chemical Warfare Service (CWS).<sup>13</sup> On the other hand, historians of both policing and British imperialism – notably Mike Waldren and Simeon Shoul respectively – have focused on various aspects of the interwar adoption of teargas in Britain’s colonies.<sup>14</sup> The tail end of my period of interest – which ends in the early part of the Vietnam War and prior to Britain’s use of teargas in Northern Ireland – has also garnered considerable attention from historians of CBW and STS scholars. Furthermore, both arms control and STS scholarship has engaged considerably with more recent developments in both British and international policy on teargas. These various contributions will be covered in the historical overview in Chapter 1. For now, I am making the point that, aside from the aforementioned work of Feigenbaum, there has been no extensive attempt to trace the trajectory of teargas

---

<sup>10</sup> *Ibid.*; Jennifer Platt, “What Can Case Studies Do?” in Robert G. Burgess (ed.) *Studies in Qualitative Methodology: Volume 1, Conducting Qualitative Research* (London: JAI Press, 1988), 1-23. Platt says that case studies provide the researcher with a ‘barium meal’ through the social processes they highlight.

<sup>11</sup> MacKenzie, *Inventing Accuracy*, 9.

<sup>12</sup> Within the field of International Relations, however, Historical Sociology has come to refer to a variety of approaches engaging with history. See John Hobson, George Lawson and Justin Rosenberg, “Historical sociology” in Robert A. Denemark (ed.) *The International Studies Encyclopedia* (Malden, MA: Wiley-Blackwell; International Studies Association, UK, 2010).

<sup>13</sup> Daniel P. Jones, “From Military to Civilian Technology: The Introduction of Tear Gas for Civil Riot Control,” *Technology and Culture* 19, no 2 (1978): 151-168; Thomas Faith, ““As Is Proper Republican Form of Government”: Selling Chemical Warfare to Americans in the 1920s,” *Federal History* 2 (2010): 28-41; Thomas Faith, *Behind the Gas Mask: The U.S. Chemical Warfare Service in War and Peace* (University of Illinois Press, 2014); Feigenbaum, *Tear Gas*, Chapter 2.

<sup>14</sup> R.M. Douglas, “Did Britain Use Chemical Weapons in Mandatory Iraq?” *The Journal of Modern History* 81, no 4 (2009): 859-887; Simeon Shoul, “British Tear Gas Doctrine between the World Wars,” *War in History* 15, no 2 (2008): 168-190; Mike Waldren, *Tear Gas and Empire* (Chatteris: Police Firearms Officers Association, 2013).

specifically across the twentieth century. Much of the work that has been done, albeit informative, tends to feature teargas as a brief fragment in broader stories of the rise of NLWs or CBW.<sup>15</sup> In particular, accounts tend to end with the UK Cabinet's interwar authorisation of teargas in the colonial empire. As this project shall show, this decision is but a puzzle piece of the whole story.

My second reason for selecting this time period is because it has definitive relevance to my research question – that is, how teargas became constructed as a technology of domestic policing in British policy. While this shift did indeed begin in the interwar years, the later developments in the mid twentieth century must be taken into account if we are to examine Britain's first actual use of teargas for crowd control, and understand how teargas became co-produced with the conceptions and contexts of 'riot control' that we associate with it today.

My final reason for selecting this period was the practicality and feasibility with regard to what was achievable within a three-year PhD course. To take into account more recent developments at the same level and depth of critical analysis would have necessitated a longer period of research, but also would need a much longer word limit than regulations permit. Instead, I opted for a more in-depth critical analysis of what is still a long period of four decades, which provides the field of STS with a sociotechnical case study of interest for a variety of reasons that I will detail in the thematic overview in Chapter 1.

The issue of feasibility also ties into why I limited my study to the British context. This, too, was in part because of the materials accessible to me, whether for reasons of time, budget or lack of language skill. Expanding my study to other European nations, for example, would have required a level of proficiency in other languages that I lack, and undertaking a detailed study of the USA would have involved considerable budgetary expenditure on researching a history that is already fairly well documented by the field. Finally, the choice to focus on the British case was also partly of personal interest. It was obviously vital that I choose a topic that excited me when undertaking a three to four year commitment to research. Moreover, as a British citizen with Indian heritage on one side of my family, the role of science and technology – here, teargas – in Britain's imperial history is also of personal

---

<sup>15</sup> Robert Harris and Jeremy Paxman, *A Higher Form of Killing: The Secret History of Chemical and Biological Warfare* (London: Random House, 1982); Malcolm Dando, *A New Form of Warfare: The Rise of Non-Lethal Weapons* (London, Washington: Brassey's, 1996); Neil Davison, *"Non-Lethal" Weapons* (Basingstoke; New York, NY: Palgrave Macmillan, 2009).

fascination to me; my grandmother sometimes recounted to me her memories of British soldiers using teargas in India in the run up to India's independence.

*What do I mean by 'Teargas'?*

A key question – perhaps the key question – to ask at the outset of such an undertaking is 'what is teargas?' What do we mean by it? What is it that this thesis is tracing a historical sociology of? As shall become clear, part of the objective of the thesis is itself to pose this very question through the lenses of history, sociology, and STS. Nevertheless, some kind of preliminary discussion of the question is certainly required here. In short, I use 'teargas' as a collective term for a number of harassing agents (now also termed riot control agents, RCAs) known also as lachrymators.<sup>16</sup> Within this collective, the agents that feature most significantly in this project are CN gas (chloroacetophenone, also known as CAP), CS gas (2-chlorobenzalmalononitrile), and BBC gas (bromobenzyl cyanide). However, in defining chemical agents according to their lachrymatory properties, as is the case for 'teargas', one foregrounds particular effects while backgrounding others. Many forms of teargas produce respiratory irritation and pain or skin irritation, for example. Nevertheless, as they all share the effect of temporarily blinding through lachrymation and because their effects are ostensibly temporary, these various agents have come to be classified and understood as teargases in common parlance. In the thematic overview in chapter 1, I discuss in more detail what this act of classifying a chemical means for the STS researcher.

Many aspects of this work engage with how some of these agents came to be defined and understood as lachrymators (or not), or other kinds of things – such as RCAs – at particular times. In Chapter 5 of this project, for example, I examine how CS gas was 'made' into a teargas at the intersection of experimentation at Porton Down (Britain's primary chemical research establishment) and the needs of colonial police authorities. However, what makes the teargas case so interesting is how subject to change, how tractable, these agents have been with regard to their classification. As shall be shown, forms of teargas have been classified as everything from chemical weapons, non-lethal weapons, screening smokes, irritants, substances, riot control agents to drugs, amongst other things. I am aware that using the term 'teargas' might be considered somewhat problematic given that in some cases

---

<sup>16</sup> Lachrymation refers to the chemical's effect of stimulating the lacrimal gland to produce tears, and its effect of inducing blepharospasm (forced and involuntary closure of the eyelids).

historical actors themselves shirked this term in favour of others (for example, ‘tear smoke’). However, some kind of reference point is required – for my readership and myself as a researcher. I therefore use the term ‘teargas’ from an analyst perspective to refer to the chemicals in question in this work, as a way of then investigating how, where, when and by whom, these chemicals were classified and constructed as one or another particular kind of thing (whether gas, smoke, or other).

### *Why is this Work Important?*

It will have become clear, then, that with its multitude of classifications throughout history, teargas occupies an ambiguous space in the landscape of chemical weapons control. Though it is today prohibited as a means of warfare by the 1993 international Chemical Weapons Convention (CWC), many signatory states nevertheless deem it to be a legitimate technology for “law enforcement including domestic riot control purposes” given its classification as a Riot Control Agent (RCA) in the convention.<sup>17</sup> Teargas is also often referred to as part of a category of ‘non-lethal’ weapons (NLWs), weapons of force “intended to incapacitate people without causing death or permanent injury, or to disable equipment with minimal damage to the surrounding environment.”<sup>18</sup> Yet defining what constitutes a NLW is particularly subject to dispute.<sup>19</sup> Within its non-lethal classification, medical researchers have defined teargas as an RCA and an irritant incapacitant.<sup>20</sup> In other instances, medical professionals have classified it as a harassing agent within its RCA designation.<sup>21</sup> In more recent British contexts, toxicologists have designated CS (the most widely employed teargas today) as a “particulate spray” rather than a gas.<sup>22</sup> Indeed, teargas has been re-interpreted and redefined in a variety of ways by governments, institutions, and medical and scientific communities throughout the last century, leading to numerous re-evaluations of national and international policy stances, many of which conflict. Even the most significant landmarks in

---

<sup>17</sup> OPCW, *loc. cit.*

<sup>18</sup> Davison, 1.

<sup>19</sup> Dando; Nick Lewer and Steven Schofield, *Non-lethal Weapons—a Fatal Attraction?: Military Strategies and Technologies for 21<sup>st</sup> Century Conflict* (London: Zed Books, 1997); Brian Rappert, *Non-lethal Weapons as Legitimizing Forces? Technology, Politics, and the Management of Conflict* (London, Portland, OR: Frank Cass, 2003); Davison.

<sup>20</sup> Peter G. Blain, “Tear Gases and Irritant Incapacitants”, *Toxicological Reviews* 22, no. 2 (2003): 103-110.

<sup>21</sup> Jay P. Sanford, “Medical Aspects of Riot Control (Harassing) Agents”, *Annual Review of Medicine* 27, no. 1 (1976): 421-429.

<sup>22</sup> Kari Blaho and Margaret M. Stark, “Is CS spray dangerous?” *BMJ* 32, no. 7252 (2000): 46.

chemical weapons policy, the Geneva Protocol (GP) of 1925 and the 1993 CWC, failed to demarcate clear instances for legitimate use of ‘non-lethal’ chemicals, and there remain divergent interpretations of the regulations they set forth.<sup>23</sup> A critical history of how teargas came to occupy this space – one that interrogates where, when, how and by whom these various constructions of teargas first came to afford it a role in policing – is severely needed. This work seeks to fulfill that need.

### **Structure of Project**

Chapter 1 provides the broader context for the project. It is split into two parts, which can loosely be understood as addressing the historical and sociological components of the related literature respectively. In short, the historical overview situates the limits of the thesis question within the current literature on the history of teargas, serving both as a non-comprehensive timeline of the overall trajectory of teargas technology in the twentieth century, and as a means of highlighting the gaps and areas in the historical literature that this project contributes to – the literature most relevant to the place of teargas in twentieth century Britain and its empire. By contrast, this second overview performs a thematic overview of the more sociological and theoretical STS-orientated literature that relate to this analysis of teargas.

Within my analysis, I identify six key thematic areas of focus:

- Classification
- Power, Biopolitics and Orders of Subjectivity
- Co-production and Civic Epistemology
- Sociotechnical Imaginaries and Technological Legitimacy
- Care
- Experimentation

I continue to attend to these themes throughout the empirical analysis of the project’s core three chapters, which involve both linear historical narrative, and more layered, puzzle-piece theoretical analysis that comes together across the project in a less linear fashion. In Chapter 2 I provide an overview of my methodological approach in this project; discussing

---

<sup>23</sup> In many instances this has enabled misuse, see Michael Crowley, “What Counts as a Chemical Weapon? The Category of Law Enforcement in the Chemical Weapons Convention,” in Mankoo and Rappert, *Chemical Bodies*, 125-150.

how I gathered my sources, how I analysed them, and the relationship between these two processes. I account for why I conducted the project the way I did, why I used the sources I did, and the methodological advantages and limitations of my approach.

The empirical core of the PhD – Chapters 3 through 5 – is broken into three parts orientated around particular shifts in the place of teargas in British (and British imperial) society and policy:

- 1) The first empirical chapter (Chapter 3) addresses the initial transition of teargas in British policy from a military technology to a civilian technology of colonial policing – this took place during the interwar years solely in the colonial empire. That chapter therefore centres upon the circumstances under which the British Cabinet first authorised colonial police to use teargas for the purposes of crowd control and maintaining social order. This authorisation did not, however, result in the actual use of teargas for such purposes in this period.
- 2) The second empirical chapter (Chapter 4) focuses on the first adoption and use of teargas upon crowds and populations within the United Kingdom (as opposed to the empire). This took place in World War Two (WWII), during which civil defence authorities used teargas in gas tests and exercises designed to train both the public and defence workers to be prepared for enemy gas raids and made familiar with gas defence technologies. This was the first instance of widespread teargas use on British soil, and in the empire.
- 3) The third empirical chapter (Chapter 5) starts by examining when colonial police began to actually use teargas for crowd control in the British Empire, and then follows the momentum and consequent spread of police teargas use for crowd control throughout the empire. Though the chapter initially picks up in 1939, it predominantly investigates the post war period up until 1965 and the early Vietnam War. It examines the range of applications that teargas found in this period, and most notably explores Britain's shift away from CN teargas to CS gas as its chemical agent of choice for crowd control, which took place in the late 1950s and early 1960s.

The final chapter of the project (Chapter 6) then links the narrative at the end of Chapter 5 with the recent literature on British teargas policy in the late 1960s and early 1970s with regard to its use in Northern Ireland. It also demonstrates how the project's argument

sits alongside late twentieth century developments in teargas policy, such as the use of CS sprays by British police during the 1990s and the 1993 Chemical Weapons Convention. Then, drawing across the empirical chapters to highlight the ‘big picture’ arc of the PhD’s co-productionist argument, I ultimately contend that we can understand the emergence of CS as a ‘non-toxic’ riot control agent as situated within a British imperial ‘imaginary’ of non-lethal chemical control. I then turn to the implications of my work, highlighting what contributions and considerations the case of teargas poses for the field of STS – particularly with regard to my core themes of classification, care and experimentation – while also pointing to routes for potential future research. I address how the critical approach of the PhD might inform the fields of arms control policy and activism more generally, particularly in light of recent misuse of RCAs and the growing industry of RCA dispersal mechanisms, which are increasingly of concern to many working in arms control and disarmament today. In concluding, I offer reflections on why the history of teargas offers crucial insight into governance of the future of chemical agents in our contemporary moment.

## 1 Literature Overview

### **Part One: The Historical Overview**

One of the most common questions I am asked in casual conversation about my PhD is “When was teargas invented?” After all, it seems the natural place to start a history of a technology. Yet the answer to such a question hinges upon what one takes both ‘teargas’ and ‘invention’ to be - the laboratory synthesis of a particular chemical compound with lachrymatory properties? The first time societies began to harness the natural world in such a way that it produced lachrymatory effects? When governments first recognised and categorised lachrymatory agents as weapons of their own particular kind?

The central question of this project centres upon how and when ‘teargas’ came to be so entangled with its role in British civil policing and riot control, and therefore leans toward the final approach to the question. I begin the historical overview by briefly reflecting upon the roles of lachrymatory agents in the ancient world, as a means of showing why this approach to the question demands a focus on the twentieth century. I then discuss the literature on the role of teargas as a military technology and means of warfare in World War One (WWI), the first time teargas was used on a wide scale for any purpose. Next, I situate the PhD within the CBW literature relating to the same period as the project (1925-1965), before finishing by discussing the scholarship bookending the latter historical end of the PhD. In doing so, the historical overview demonstrates how much ‘teargas’ became concomitant with ‘riot control’ in British policy over the course of the twentieth century. The empirical chapters of the project then serve to explain how this came to be.

#### *The Ancient World*

In a formal sense, in government and military institutions, the category of lachrymatory agents came into being in the early twentieth century. Nevertheless, Adrienne Mayor has identified the use of non-lethal weapons in the ancient world “to tranquilise, disorient, or knock out enemies” as part of her study of chemical and biological (CB) warfare by the ancients.<sup>24</sup> Mayor’s work suggests that both the use of CB warfare and the associated

---

<sup>24</sup> Adrienne Mayor, *Greek Fire, Poison Arrows & Scorpion Bombs: Biological and Chemical Warfare in the Ancient World* (Woodstock: Overlook Books, 2003), 26. Although Mayor’s book has more of a focus



opprobrium against their use were not confined to the twentieth century onward. She focuses on what CBW meant to the ancients, and how they understood and recorded events involving CB warfare. In that respect, both CBW in general and teargas specifically, were ontologically distinct in the ancient world from how they existed in the twentieth century and continue to exist in our contemporary moment. Raising Mayor's work here, then, is not intended as argument for a universal conception of teargas or CBW that has prevailed over centuries. Rather, it is to highlight how the entities that we might take today to be teargas (and CBW) have historically been situated within many cultures as technological means to exert power and control.

For instance, Mayor points out that toxic, asphyxiating smokes and clouds (aerosols) were used in battle in antiquity: Ancient Chinese writings (as early as the seventh century BC) included directions for preparing irritant fumes. She lists a number of times in ancient history when poison gases, smokes and clouds were used to choke and flush enemies out of tunnels and caves, specifically instances of defensive application in China (dating back to the fourth century BC) and Ancient Greece (AD189), and offensive application by the Romans (80BC) and Chinese (AD178). Indeed, this technique of flushing enemies out of tunnels was not dissimilar to the way in which US forces used CS teargas as a 'force multiplier' during the Vietnam War thousands of years later. However, the notion of a 'force multiplier' rests upon the idea that NLW can enhance the efficacy of conventional 'lethal' weaponry, whereas the cases that Mayor mentions involve gases being used for the purposes of provoking enemy surrender or retreat (which did not necessarily entail increased lethality). Later in the book, Mayor argues that the Chinese used an early form of teargas made from lime dust to quell riots.<sup>25</sup> The dust, blown according to the wind, was directed into the path of rioters using bellows in horse-drawn chariots. The Romans similarly employed limestone powder as an irritant, using their horses to kick up clouds of the dust placed at the entrances of caves in which their enemies hid, as the prevailing wind gathered force.<sup>26</sup> Finally, her work also notes

---

on biological or biochemical weapons, many of the examples she examines are akin to non-lethal chemicals and irritants in the contemporary sense.

<sup>25</sup> Mayor, *Greek Fire*, 225.

<sup>26</sup> By contrast, Mayor also notes that the ancient Indian teacher and philosopher Kautilya recommended that troops using poisonous smokes applied protective salves as on their eyes as defensive measures against blowback caused by winds. In the twentieth century, defensive innovations to protect against CBW have taken the form of the gas mask and other defensive strategies (such as

that one of the major functions of irritant gases and poisons in antiquity was to terrify, demoralise and disorientate foes. This fascination with the psychological power of gas and poisons, and their effect on morale, will also be apparent within my research here. In the twentieth century, military leaders, policy makers, colonial police amongst other groups, have all been interested in the potential impact teargas could have on the morale of those it is used upon.

However, as political scientist Richard Price noted in *The Chemical Weapons Taboo*, the use of chemical weaponry in the ancient world, and the use of poisons until the twentieth century, lie in contrast with the formal classification and governance of chemical weapons as a distinct category in the twentieth century.<sup>27</sup> Therefore, rather than covering every instance of chemicals in warfare and conflict since ancient history, the remainder of this historical overview begins at the outset of the twentieth century, when nations began to identify chemicals as a particular kind of weapon of war to be governed (and controlled) by the ‘civilised’ powers of the world through international treaties.

#### *The Early 20<sup>th</sup> Century, 1900 – 1914*

In Chapter 3, I will trace out how the British Cabinet came to authorise the use of teargas by police for the purposes of crowd control for the first time, authorisation they gave specifically to colonial police rather than those at home. Yet, in the two decades prior to that decision, teargas had predominantly occupied the role of a military weapon alongside other forms of CW, used by many of the warring nations on the battlefields of WWI. Yet it was after the war, at a time when many nations were signing interwar international agreements pertaining to the prohibition of chemical weapons – the Washington Treaty of 1922, and then the GP of 1925 – that teargas came to be classified and controlled as something distinct and unique from those agents deemed to be more lethal forms of chemical force. Many nations began to consider, experiment with, and utilise the possibilities that teargas might offer for domestic policing or colonial control. That the Washington Treaty and the GP only restricted the use of “asphyxiating, poisonous or other gases” as means of warfare became increasingly significant, as advocates of teargas, especially in America and Britain, began pointing to its

---

those protestors have used in attempts to protect themselves from the effects of teargas e.g. applying substances like toothpaste to the eyes, the manufacture of makeshift gas masks).

<sup>27</sup> Richard Price, *The Chemical Weapons Taboo* (Ithaca and London: Cornell University Press, 1997).

potential peacetime applications. Thus, in order to interrogate how teargas came to be a technology of crowd control for Britain, we must begin with an understanding of what teargas ‘was’, in a sociological sense, before then. Which institutions were the first to define and develop lachrymatory agents? Who first conceived of their military or domestic application? When did Britain first recognise and use these agents accordingly?

Price traces out the genealogy of the moral taboo attributed to chemical weaponry throughout the twentieth century, drawing from Foucault and Nietzsche to argue that this opprobrium was deeply political. He suggests that the taboo accorded to this category of weaponry was intimately related to the establishment and maintenance of the legitimacy of dominant state powers, rather than because of any inherent capacity of chemical weapons to kill more or because of their lack of military utility. He credits the Hague Peace Conferences of 1899 and 1907 as marking the beginnings of the twentieth century chemical weapons taboo, which involved “the anticipatory proscription of a whole category of weapons among a self-designated society of civilised nations.”<sup>28</sup> The First Hague Peace Conference of 1899, held at Russia’s invitation, put to the world nations the task of finding “without delay means for putting a limit to the progressive increase of military and naval armaments.”<sup>29</sup> There, the delegates agreed to “abstain from the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases.”<sup>30</sup>

Price makes two observations of particular significance here. Firstly, he demarcates the taboo on modern chemical weapons from what he identifies as a more longstanding taboo associated with poison weapons that dates back to the sixteenth and seventeenth centuries.<sup>31</sup> Though he acknowledges the significant influence the poison taboo had upon the institutionalised prohibition of asphyxiating shells in the Hague Declarations, he notes a crucial difference:

“The poison taboo originated in securing the purview of social relations of authority and excluding an indefensible weapon from the contestation of power. Its extension to chemical weapons represents a different purpose of mutual self-denial by the dominant powers

---

<sup>28</sup> Price, *The Chemical Weapons Taboo*, 43.

<sup>29</sup> Reprinted in James Brown Scott (ed.) *The Reports to the Hague Conferences of 1899 and 1907* (Oxford: Clarendon Press, 1917).

<sup>30</sup> Reprinted in James Brown Scott (ed.) *The Reports to the Hague Conferences of 1899 and 1907, vol. 2: Documents* (Baltimore: Johns Hopkins Press, 1909).

<sup>31</sup> Price, *The Chemical Weapons Taboo*, Chapter 2.

themselves as a marker of civilization, which meant eschewing a new possible generation of means of domination by the industrial state.”<sup>32</sup>

Secondly, Price points out that at the time of the Hague Conferences, such asphyxiating shell weapons had yet to be developed by the powers in question; CW was still a largely experimental proposition.

With this in mind, we can read the production of an internationally regulated category of chemical weapons in general (and its associated taboo) as simultaneously an assertion of the superior identity of the ‘civilised nations’ through their technological superiority to ‘uncivilised’ nations. This was unlike the poison taboo, which condemned a weapon ostensibly being used by the weak against the powerful that threatened the institution of warfare “as a circumscribed and personalised contest of force by those in control of the most powerful means of force.”<sup>33</sup> The construction of CW, on the other hand, was largely contingent upon an assumption that, through scientific enterprise, the nations at the Hague had the legitimacy and knowledge to decide how these weapons might be distinguished, used, and controlled in the first place. Applying the restriction on these new forms of weapons upon themselves was thus also a means to uphold their identity as ‘civilised’ nations. This is not to say that the Hague prohibitions were necessarily robust – the use of CW in WWI would show that they were not. Rather, it is to highlight how the designation of particular kinds of chemical as prohibited was also a means to define and order the ‘civilised’ and ‘uncivilised’ through the Hague international agreements. The convening powers had yet to identify or produce teargas specifically, nor did they make any demarcation between lethal and non-lethal asphyxiating weapons. However, as shall be shown, these demarcations of civilised/uncivilised, humane/inhumane, lethal/non-lethal would come to significantly shape the way in which teargas would traverse from the broader category of prohibited chemical weapons into a multifaceted role in domestic policing over the course of the twentieth century.

There is some ambiguity as to the early development and use of teargas as a means of state chemical force. A number of works, including Julian Perry-Robinson and Milton Leitenberg’s contribution to the authoritative multi-volume SIPRI account of the history of CBW, attribute the first use of gas to the French gendarmerie’s use of 26mm ethyl

---

<sup>32</sup> *Ibid*, 43.

<sup>33</sup> *Ibid*, 25.

bromoacetate cartridges (fired from cartridge-throwing rifles) to apprehend a gang of notorious bank robbers, the Bonnot gang, at Choisy-le-roi in 1912.<sup>34</sup> Appendix 1 details the early history of teargas development in France before and during this time. One of the earliest English language references to the use of teargas at Choisy-le-roi dates back to an account in *Science* of the “history of poison gases” by Major Clarence J. West, a major of the US Chemical Warfare Service Reserve Corps.<sup>35</sup> Historian Ludwig Fritz Haber<sup>36</sup>, however, disputes the claim that teargas was used on this occasion on the grounds that press reporting on the incident was prosaic and had no mention of gas. He argues that if gas had been used, it would have assuredly featured in these reports given that this occurred at a time when the successful use of teargas would have been an invaluable propaganda tool for its proponents.<sup>37</sup>

Nevertheless, Haber notes that around this period the French chemists Messrs. Kling and Florentin, who were interested in riot control, did investigate the utility lachrymatory agents might have for such applications, and recommended them to the French police. According to Haber, while the French police did not adopt teargas before the war, supplies were prepared for the French corps of engineers and then issued to the troops following the outbreak of war. German military historian Rolf-Dieter Müller similarly notes that while

---

<sup>34</sup> Kim Coleman, *A History of Chemical Warfare* (New York: Palgrave Macmillan, 2005); Neil Davison, *“Non-Lethal” Weapons* (Basingstoke; New York, NY: Palgrave Macmillan, 2009); Julian Perry Robinson and Milton Leitenberg, *The Problem of Chemical and Biological Warfare: A Study of the Historical, Technical, Military, Legal and Political Aspects... - Vol I: The Rise of CB Weapons* (Stockholm, New York: Humanities Press, 1971). Robinson and Leitenberg’s work for the Stockholm International Peace Research Institute (SIPRI) remains one of the most widely cited CBW histories to this day. This volume was partly intended to be an account of all known instances of wartime CBW use, or alleged use, from 1914 to 1970. The study as a whole, comprised of six volumes, is not only an account of the development of CBW technologies and their use, but also a summary of international law regarding CBW, disarmament negotiations, and methods of CBW prevention and verification up until the 1970s. As a peace research institute commissioned study, they remain landmark texts for advocates of CBW disarmament and prevention.

<sup>35</sup> Clarence J. West, “The History of Poison Gases,” *Science* 49, no. 1270 (May 2, 1919): 412–17; See also Augustin Mitchell Prentiss and George J. B. Fisher, *Chemicals in War: A Treatise on Chemical Warfare* (New York: McGraw-Hill, 1937).

<sup>36</sup> Haber (1921-2004) was the son of Nobel Prize winning German chemist Fritz Haber (1868-1934), who developed and weaponised chlorine gas for Germany in WWI and was involved in its release at Ypres. Fritz Haber is often called the ‘father of chemical warfare’. He won his Nobel Prize in 1918 for his work inventing the Haber-Bosch process (to synthesise ammonia).

<sup>37</sup> Ludwig Fritz Haber, *The Poisonous Cloud: Chemical Warfare in the First World War* (Clarendon Press, 1986). For reporting on the incident in question, see “Siege of the Paris Bandits”, *The Times*, 29 April 1912, 8; for French reporting, *Le Temps* and *Le Figaro* of 29 April 1912. In “The Nogent Siege”, *The Times*, 16 May 1912, 5, there is an account of a siege against the bandits Garnier and Vallet at Nogent-sur-Marne, in which the police used a Melinite charge (picric acid).

Britain, France and Germany had tested the military applications of gas before the war (with “unremarkable results”), only the French army had decided to procure several thousand teargas shells, hoping that these would be useful against fortifications and entrenched enemies.<sup>38</sup>

Britain, too, was interested in the possibilities of gas with non-permanent effects at that time. Haber notes that the War Office (WO) enquired of the Foreign Office (FO) as to “whether it was ‘permissible’ under the Second Hague Convention to employ ‘preparations giving rise to disagreeable fumes without causing permanent harm’...the Foreign Office ruled [it]...admissible ‘in view of indications that the subject was being considered in other countries.’”<sup>39</sup> Indeed, from 1913-14, the WO investigated the use of the lachrymatory agents chloroacetone and benzyl chloride, but the work stopped a month after the Superintendent of Research reported unfavourably on the research.

#### *The First World War and its Aftermath*

It was the First World War that saw significant quantities of chemical weapons used on an international scale, by many of the contending nations, for the first time. This included large amounts of teargas, though in both the ‘public’ mind and histories of CBW the war is most often recalled as the birthplace of the battlefield horrors produced by chlorine, mustard or phosgene gas. I remember reciting English poet Wilfred Owen’s *Dulce et Decorum Est* in school assemblies growing up, as we solemnly contemplated the horrors experienced by those who had fought in the Great War. “As under a green sea, I saw him drowning,” was, like many others I imagine, perhaps my first introduction to the concept of chemical warfare.<sup>40</sup> It was in this context, of a world shocked by the horrors of chemical warfare, that the armies of the war’s belligerents first used teargas on a wide scale.

---

<sup>38</sup> Rolf-Dieter Müller, “Total War as a Result of New Weapons? The Use of Chemical Agents in World War I,” in Roger Chickering and Stig Förster (eds.) *Great War, Total War: Combat and Mobilization on the Western Front, 1914-1918* (Cambridge: Cambridge University Press, 2000), 96. Müller also notes that “additional orders by the French army and the introduction of a tear-gas shell with a greater payload capacity indicate that intensified use was planned for the spring of 1915.”

<sup>39</sup> Haber, 21.

<sup>40</sup> Wilfred Owen, *Poems* (New York: Viking Press, London: Chatto & Windus, 1921), 15.

It is generally accepted that it was the French who first used teargas in WWI, in August 1914.<sup>41</sup> According to military historian Ulrich Trumpener, French forces were using ethyl bromoacetate *cartouches suffocantes* (small gas-diffusing projectiles) on the Western front as early as 1914.<sup>42</sup> Intended for attacks on fortifications, these were launched by twenty-six-calibre rifles (*fusils lance-cartouches éclairantes*). By February 1915, ethyl bromoacetate hand grenades had been added to French gas munitions, and some of these *grenades suffocantes* were used against German troops in the Argonne from mid-March on. Some commentators have suggested the first French use of teargas in August 1914 was with the teargas xylyl bromide, although most agree that this involved ethyl bromoacetate.<sup>43</sup> In November 1914, French forces then used a different form of teargas, chloroacetone, and were soon followed by Germany and Russia.<sup>44</sup>

In 1915 Germany used the Tappen shell (containing explosives and xylyl bromide, known as *T-Stoff*) on the Eastern Front against Russia.<sup>45</sup> Although Germany at this time was primarily concentrating on the development of irritant agents, they also launched gas cylinder attacks with more 'lethal' gases, for example with chlorine against the French at Rheims in October 1915.<sup>46</sup> They also introduced teargas projectiles for infantry use in the form of trench mortar bombs. Germany justified its use of chemical weapons (CW) in WWI by stating that the French had broken the Hague Peace Conference Conventions first with their use of teargas, and that the conventions "only pertained to projectiles whose sole purpose was the diffusion of asphyxiating or deleterious gases and that it did not cover gases released by

---

<sup>41</sup> Richter, however, claims that the Germans were the first to use gas in combat, suggesting that German propagandists during and after the war muddied the waters regarding the initial use of gas. He suggests that explosive charges and badly detonated shells (traces of picric acid) caused the smell that German soldiers mistook for poison gas; Donald Richter, *Chemical Soldiers: British Gas Warfare in World War I* (Lawrence: University Press of Kansas, 1992), 6.

<sup>42</sup> Ulrich Trumpener, "The Road to Ypres: The Beginnings of Gas Warfare in World War I," *The Journal of Modern History* 47, no. 3 (September 1, 1975): 460–80.

<sup>43</sup> Vogel states, "the very first (and unsuccessful) attack in [August] 1914 by the French with xylyl is mostly unknown. See Hermann Vogel, "Weapons of Mass Destruction, WMD," *European Journal of Radiology* 63, no. 2 (2007): 211. Most other scholars agree that this was ethyl bromoacetate, see Robinson and Leitenberg; L. Szinicz, "History of Chemical and Biological Warfare Agents," *Toxicology* 214, no. 3 (2005): 167–81; Douglas B. Walters, Pauline Ho, and Jasper Hardesty, "Safety, Security and Dual-Use Chemicals," *J. Chem. Health Safety* 22, no. 5 (2015): 3-16.

<sup>44</sup> Robinson and Leitenberg; Szinicz.

<sup>45</sup> Walters, Ho, and Hardesty.

<sup>46</sup> Robinson and Leitenberg, 32-33.

cylinders.”<sup>47</sup> According to the SIPRI history, bromoacetone was the most extensively used irritant in WWI, although many others were developed during and at the end of the war. These included a-bromobenzyl cyanide (CA), by the French, and then chloroacetophenone (CN) by the Americans.<sup>48</sup> Appendix 2 includes a table of lachrymatory irritants used in WWI, compiled by modifying Robinson & Leitenberg’s table with those compiled by Szinicz, Beswick, and Hilmas, Smart & Hill, Jr.<sup>49</sup>

### *Porton Down*

There were two particular developments related to the war that are of most interest and relevance to this project. Firstly, the war saw the founding of Porton Down, Britain’s chemical weapons defense establishment, in 1916, primarily in response to the German use of lethal gas in 1915.<sup>50</sup> After Germany used chlorine gas at Ypres (they did so initially against the French on the 22 April, which is often cited as the beginning of modern chemical warfare)<sup>51</sup>, the British Commander-in-Chief, Sir John French, asked the War Office to take immediate steps “to supply similar means of most effective kind for use by our troops.”<sup>52</sup> The attack left the Allied forces reeling with shock; the British estimated that it had killed thousands and

---

<sup>47</sup> Walters, Ho, and Hardesty, 5.

<sup>48</sup> Robinson and Leitenberg, 40.

<sup>49</sup> Robinson and Leitenberg, 42; F.W. Beswick, “Chemical Agents Used in Riot Control and Warfare,” *Human & Experimental Toxicology* 2, no. 2 (April 1, 1983): 249; Szinicz, 171; Corey J. Hilmas, Jeffery K. Smart and Benjamin A. Hill, Jr., “History of Chemical Warfare” in Shirley D. Tuorinsky (ed.) *Medical Aspects of Chemical Warfare* (US Government Printing Office, 2008), 38-41.

<sup>50</sup> For a considerable period of the 20<sup>th</sup> century the Porton Establishment was in fact two (and between 1946-73, three) distinct entities. The two areas were the chemical warfare and defence area, active from 1916, and the biological warfare and defence area, active from 1940-1979. All the establishments were part of a directorate with a London based headquarters. For a chronological timeline of the stations, departments and establishments at Porton in the twentieth century, see G.B. Carter, *Porton Down: 75 Years of Chemical and Biological Research* (London: HMSO, 1992), 2-3. From 1916-1929 the chemical warfare department of Porton was named the Royal Engineers Experimental Station; from 1929-1930 the title changed to the Chemical Warfare Experimental Station; then from 1930-1948 to the Chemical Defence Experimental Station (CDES); from 1948-1970 to the Chemical Defence Experimental Establishment (CDEE); from 1970-1991 to the Chemical Defence Establishment; and from 1991-1995 the Chemical and Biological Defence Establishment (CBDE) before being merged into the Defence Evaluation and Research Agency in 1995. Today the CBDE falls under the Ministry of Defence, within the Defence Science and Technology Laboratory (Dstl).

<sup>51</sup> For example, see Rob Evans, *Gassed: Behind the Scenes at Porton Down* (London: House of Stratus, 2000), 21-22.

<sup>52</sup> Carter, 6.



injured even more.<sup>53</sup> The War Minister, Lord Kitchener, nominated civilian scientists John Scott Haldane (father of J.B.S Haldane) and Herbert Baker to investigate the site of gas use in France.<sup>54</sup> They reported back to Prime Minister Herbert Asquith, encouraging him to “do his damndest” to ensure that Britain could retaliate.

In May 1915, the British Army charged Major Charles Howard Foulkes with the task of co-ordinating Britain’s ‘gas reprisals’ against Germany.<sup>55</sup> To use Porton’s official historian Gradon Carter’s words, both “retaliation in kind and the means of defense were immediate needs.”<sup>56</sup> Needing a space to expand both its industrial and experimental capabilities with regard to chemical weapons, Britain set up its chemical research establishment across Southern Wiltshire and the Salisbury plain, a “ground for experimental purposes.” Carter writes of how Porton enabled Britain to make “real progress” in research on chemical agents through proper evaluation “by scientific means,” including developments regarding the precision and flexibility of dispersal mechanisms.<sup>57</sup> Carter also notes how “data on the lethality of gas...critical to a proper understanding of gas poisoning and its treatment,” became increasingly important at Porton toward the end of the war.<sup>58</sup> Scientists at Porton turned to experiments with both animals and human subjects to acquire such data, using “the human observer [Porton’s term for human experimental subjects] who was unmasked but with his respirator at the ready, to act as the ultimate sensor and recorder of the effects on man” of chemical agents.<sup>59</sup>

It was against this backdrop “of experiment and imitation conducted on a background of uncertainty and hurriedly assembled arrangements for both development, production, and use” that Britain began large-scale development and production of teargases for the first time.<sup>60</sup> During the war, Porton expanded significantly both in terms of physical size and

---

<sup>53</sup> However Haber, Chapter 10, notes the ambiguity and complexity involved in determining casualty figures, suggesting that belligerents usually overstated total casualties, particularly when making propaganda claims and counter claims. By contrast, Harris and Paxman, 34-35, argue for the underestimation of casualty figures.

<sup>54</sup> Ulf Schmidt, *Secret Science: A Century of Poison Warfare and Human Experiments* (Oxford: Oxford University Press, 2015), 26.

<sup>55</sup> Evans, 22.

<sup>56</sup> Carter, 6.

<sup>57</sup> *Ibid*, 11.

<sup>58</sup> *Ibid*, 15.

<sup>59</sup> *Ibid*, 17. See also Tal Bolton, “Putting Consent in Context: Military Research Subjects in Chemical Warfare Tests at Porton Down, UK”, *The Journal of Policy History* 23, no. 1 (2011): 53-73.

<sup>60</sup> Carter, 25.

workforce - by November 1918 it had a staff of 1,500, and had doubled in size following the addition of another 3,000 acres of land to the establishment.<sup>61</sup> Systematic programmes of human experimentation, in which scientists subjected ‘observers’ to dangerous and painful exposures to chemical agents, became key components of Porton’s work. These exposures included various forms of teargas. A considerable amount of this work was defensive; observers (many of which were from the Royal Engineers Experimental Company) had to wear gas masks in various toxic gases to test whether masks were effective, for example. Chapter 4 of this project examines a different kind of gas mask testing, one that rather involved the British public en masse during WWII. According to investigative journalist Rob Evans, the human exposures to chemical agents at Porton during the war would have numbered in the thousands. In their renowned book on the secret history of CBW, Robert Harris and Jeremy Paxman describe this period as a “chemical arms race...in which there was no time to worry about ethics.”<sup>62</sup>

In his history of twentieth century poison warfare and human experimentation in Britain, the USA, and Canada, Ulf Schmidt notes that the precedent set by the recruitment of scientists like Haldane and Baker in chemical warfare research “ushered in a period of scientific innovation and reform which saw the employment of chemists and physiologists to conduct research into offensive and defensive aspects of chemical warfare.”<sup>63</sup> He explains how teamwork was an essential ingredient of Porton’s developing institutional life and culture in its early years, giving scientists and military personnel incentive to join the research effort - a collaborative spirit of unity and of purpose that “strengthened the belief that they belonged to an exclusive group of professionals who were tasked by the government to develop defensive and offensive chemical weapon technologies.”<sup>64</sup> These scientists established their own informal networks and channels of communication through which they coordinated their work during the war, and advanced their careers following it.

Schmidt also explains how lethality was not necessarily the objective of this research: “Research had at first concentrated on assessing toxic agents for their ability to kill within forty-eight hours, though experts soon discovered the ‘casualty producing effects’ of certain gases. Chemical warfare, they realised, was not so much about killing people but about

---

<sup>61</sup> Evans, 26.

<sup>62</sup> Harris and Paxman, 21.

<sup>63</sup> Schmidt, 29.

<sup>64</sup> *Ibid*, 33–34.

incapacitating them for the duration of combat activity.”<sup>65</sup> During WWI, teargas was but one of a range of many chemical agents, all of which had potential military utility because of their ability not just to kill, but also to incapacitate. There were not yet associations between lines of lethality - or the power to incapacitate – and lines of military and domestic application. Teargas was still a military weapon; it had not yet been made into a technology of civil policing or colonial control.<sup>66</sup> Chapter 3 of this project examines how, for Britain, teargas transitioned into a technology for colonial control during the interwar years, which contrasted with the contemporaneous transition it made into a technology of domestic policing within the USA.

Carter discusses the “conflicting views” on CW in the Services after the war – some pressed for the urgent development of gas warfare for future wars, others were concerned with the damage it could cause and irreparable change it might bring to military doctrine in general. Still others denounced it for humanitarian reasons, or because of the horrors of personal experience. Most notably, Carter explains that the proponents, as well as the detractors, of chemical warfare argued for it on humanitarian grounds. They suggested that “short-term incapacitation from chemicals was the rule, rather than death and that, apart from the deaths associated with the early cloud attacks against unprotected or poorly protected troops, gas warfare had not resulted in a large proportion of casualty deaths.”<sup>67</sup> These advocates included military strategist Major-General John Fuller, biologist JBS Haldane, and soldier and military historian Captain Basil Liddell Hart.<sup>68</sup>

With the armistice of November 1918, staffing numbers at Porton dwindled significantly and the station’s future became somewhat uncertain. Nevertheless, the Holland Committee, appointed by the Government in May 1919 to determine the nation’s future chemical warfare policy (with members that included Foulkes), agreed that gas was “a legitimate weapon in war.”<sup>69</sup> They believed that its future use was “a foregone conclusion.” In Evans’ words, Porton “came out very well from the Holland Committee,” which centralised

---

<sup>65</sup> *Ibid*, 40.

<sup>66</sup> Richard Price points out that belligerents did not use gas on the civilian populations of their enemies, which he suggests enabled CW to accrue greater power as weapons “before which all were defenseless.” See Price, 67-69.

<sup>67</sup> Carter, 26.

<sup>68</sup> J.F.C. Fuller, *The Reformation of War* (London: Hutchinson & Co., 1923); J.B.S. Haldane, *Callinicus: A Defence of Chemical Warfare* (London: Kegan Paul, Trench, Trubner & Co., 1925); B.H. Liddell Hart, *The Remaking of Modern Armies* (London: John Murray, 1927).

<sup>69</sup> Harris and Paxman, 34.

all Britain's CW activities at the station, and tasked it with both producing chemical weapons and developing defensive measures against them.<sup>70</sup> Harris and Paxman note that, unlike the public relations campaigns associated with the peacetime purposes of chemical weapons in the United States (see Chapter 3), British gas warfare instead became subject to "a policy of strict official secrecy." At the same time, in the interwar years Porton sought to employ a higher proportion of scientists (rather than simply servicemen), particularly those "of high standing" and "independent of outside inspection and criticism."<sup>71</sup> Though human experiments stopped briefly with the onset of peacetime, by the early 1920s the number of tests began to rise once again. Porton Down studied CN teargas extensively from 1924, with British scientists testing CN on human subjects as early as 1919.<sup>72</sup> CN was also used to test gas masks and to train armed forces to recognise teargas in battle. According to Evans, around 4,000 human subjects were exposed to teargases in tests at Porton between 1925 and 1936.<sup>73</sup>

Furthermore, in the early interwar years Britain began to outsource research to laboratories it controlled overseas, which also enabled it to deflect public attention away from its growing CW programme.<sup>74</sup> It established research facilities in India and Australia in the 1920s, such that British scientists could investigate the effects of climate conditions on CW agents, and whether CW effects varied amongst different population groups. As Chapter 3 of this project shall show, Britain utilised its colonies as sites to conduct a considerable degree of experimentation with teargas, in particular investigating its efficacy for police purposes including crowd control or apprehending barricaded criminals. Undertaking its experimentation, and use, of teargas in territories far away from the scrutiny of the public at home, Britain put its imperial power, and subjects, to the service of its own chemical weapons strategies, both military and (what would become) domestic.

---

<sup>70</sup> Evans, 47-48.

<sup>71</sup> Schmidt, 47. Initially, staffing and uncertainty over the station's future remained such that civil scientists were appointed only on a temporary basis.

<sup>72</sup> Evans, 438.

<sup>73</sup> *Ibid*, 64.

<sup>74</sup> Schmidt, 58-60.

### *International Treaty Prohibitions*

Related to Porton's uncertain future and temporary decline in the immediate post-war period was another significant consequence of the war – the League of Nations' conception of international treaties that formalised prohibitions on the use of chemical weapons as means of warfare. International condemnation of chemical weapons matched the spirit of British public opinion only to an extent. While in some respects, Wilfred Owen's words quoted earlier were both generative and indicative of a broader national sentiment of disgust toward chemical warfare that developed in Britain and Europe during and following the war, this feeling was not ubiquitous. In the SIPRI history, Robinson & Leitenberg write, "In 1919, then, those of the general public who could recall anything of the wartime publications on CW might have adopted any one of a number of assessments: gas as a humane weapon, gas as a terror weapon, gas as just another weapon as horrible as any other...there was certainly no consensus of opinion."<sup>75</sup> In fact, "little or no homogeneity of attitudes existed at the international level or even within different sectors of society, be it the general public, the military or political elites."<sup>76</sup> In Britain, this was perhaps partly because of government desire to keep public discussion of chemical warfare research highly discreet.<sup>77</sup>

During the Washington Conference on the Limitation of Armament in November 1921, the Five Powers (USA, Britain, France, Italy, Japan) agreed that laws regarding poison gases should be discussed by their own subcommittee, in what Price has described as "a continuation of the practice begun at the Hague of disaggregating gases from the more general considerations of the laws of warfare and thus [furthering] the isolation of gas as a particular weapon of concern apart from other 'conventional' weapons of war."<sup>78</sup> Within a much wider set of disarmament proposals (including the use of submarines in war), the resultant Washington Treaty of 1922 prohibited "the use in war of asphyxiating, poisonous or other gases, and all analogous liquids, materials or devices, having been justly condemned by

---

<sup>75</sup> Robinson and Leitenberg, 234.

<sup>76</sup> Price, 72. For more detailed discussion of the various attitudes, see also Shoul; Robinson and Leitenberg, 231-267.

<sup>77</sup> Carter, 42, elaborates: "Unlike the situation in the United States and Germany, there were very few openly available authoritative British texts on chemical warfare by former soldiers or officials, due to an attitude in the 1920s and 1930s that the public should not be disturbed by knowledge of the potential of gas in future wars."

<sup>78</sup> Price, 75.

the general opinion of the civilized world.”<sup>79</sup> Most notably, the subcommittee did not consider the possibility of distinguishing between ‘permissible’ and ‘non-permissible’ – or lethal and non-lethal – gases. Price suggests that, in doing so, they bypassed the “alleged special humanitarian qualities of gas...as the pivotal criterion for basing restrictions on CW.”<sup>80</sup> He contends that the legacy of the war was, then, the “practical impossibility of discerning between different gaseous agents in the fog of war.” However, the chemical warfare provisions in the Washington Treaty were never ratified due to France’s refusal to accept the Treaty’s provisions regarding submarines.<sup>81</sup>

Three years later, however, thirty-eight nations signed the 1925 Geneva Protocol, the most decisive and significant international legal constraint on CB warfare until the Chemical Weapons Convention came into force in 1997. The GP maintained the same language on CBW as the Washington Treaty (see above), and included the declaration that “the High Contracting Parties...accept this prohibition, agree to extend this prohibition to the use of bacteriological methods of warfare and agree to be bound as between themselves according to the terms of this declaration.”<sup>82</sup> Robinson and Leitenberg have dubbed the signing of the GP the “high-water mark of hostility of public opinion towards CW.”<sup>83</sup>

These considerations, then, perhaps go some way to explaining British abstinence from exploring the use of teargas in the 1920s, even though its use was by then widespread in the USA and would have had the support of certain individuals in the UK military and government. Shoul delves into this in greater detail, explaining that this was in large part due to public relations fears in the British government. As a result, Britain was not able to establish a significant teargas industry at home in the interwar period and instead had to rely on importing gas and equipment from the USA.<sup>84</sup> Nevertheless, a plant (owned by Imperial Chemical Industries Ltd from 1926) for the manufacture of CN was erected in Britain in 1923, with CN output increasing twentyfold by 1927.<sup>85</sup>

---

<sup>79</sup> Treaty relating to the Use of Submarines and Noxious Gases in Warfare, Washington, 25 L.N.T.S. 202 (1922), URL: <http://hrlibrary.umn.edu/instree/1922a.htm> (accessed 20 August 2018).

<sup>80</sup> Price, 77.

<sup>81</sup> Coleman, 45.

<sup>82</sup> Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, Signed at Geneva, 17 June 1925, URL: <https://www.un.org/disarmament/wmd/bio/1925-geneva-protocol/> (accessed 20 August 2018).

<sup>83</sup> Robinson and Leitenberg, 247.

<sup>84</sup> Shoul.

<sup>85</sup> Evans, 264.

As Chapter 3 shall show, teargas was not used in mainland Britain during the interwar years, but in the late 1920s and early 1930s numerous colonial authorities requested permission to use gas against riotous mobs and crowds. In 1933, the Cabinet made the decision to grant the High Commissioner of Palestine authorisation to use teargas “in dealing with mobs and riots in cases where it would otherwise be necessary to shoot.”<sup>86</sup> By 1936, the British government had extended this permission to the colonial governments in general, granting them permission to purchase supplies of teargas without prior reference to the Secretary of State. By 1959, Porton had determined CN to be capable of causing permanent damage to humans, but British police continued to use it in the colonies until 1965.

While the 1925 GP prohibited the use of CBW in war and international armed conflicts, many of the signatory states only ratified the protocol under the conditions that it was a ‘first use’ prohibition – i.e. that if a country attacked them with chemical or biological weapons, they would be permitted to retaliate in kind – and did not prohibit the use of CBW against states that had not ratified the protocol. Nor did the GP prohibit researching or stockpiling chemical weapons, or address their use in civil conflicts. Moreover, both the USA and Japan refused to ratify the Protocol (it was not binding until they had) in the interwar period, while other nations did so tentatively (France, Britain, and the USSR, for instance, only did so under the reservations mentioned above).<sup>87</sup> The US government and police forces in particular had become increasingly attracted to the idea of using teargas in peacetime following an increase in crime rates and urban gangster warfare and, more importantly, a powerful lobbying campaign championed by the CWS. These developments, discussed in more detail in Chapter 3, significantly contributed to the USA’s refusal to ratify the protocol, which was not completed until 1975.<sup>88</sup> Britain ultimately ratified the agreement on 9 April 1930.

---

<sup>86</sup> The National Archives (hereafter TNA), CO 733/248/24, Extract from Proceedings of the Cabinet, 20 December 1933.

<sup>87</sup> France ratified first in 1926, Italy and the USSR in 1928, and Germany in 1929. Japan did not ratify until 1970.

<sup>88</sup> CBW historian Edward Spiers has detailed the foundering of disarmament efforts in the 1920s, highlighting not just the technical difficulties but also the host of economic and political priorities that hindered the task for the signatory nations. See Edward M. Spiers, “Gas Disarmament in the 1920s: Hopes Confounded,” *Journal of Strategic Studies* 29, no. 2 (2006): 281–300.

### *Military Use of Teargas in the Interwar Years*

While nations differed in their positions with regard to whether the GP covered the use of chemical agents such as teargas by police, there was general agreement that it prohibited using them as military weapons and means of warfare. Despite this, military forces from a number of nations used teargas, and other chemical weapons, in conflicts around the world between 1919 and 1939. Revill and Favero detail a number of these cases in a recent chapter on the colonialist nature of chemical warfare in the interwar years – the Bolshevik use of CW in the Tambov (1921), Spanish use against the Rif tribespeople in Northern Morocco (1921-27), Italian use against Ethiopian forces in Abyssinia (1935-36), and Japanese use against China in Manchuria (1937).<sup>89</sup>

Teargas – alongside other chemical weapons – featured in many of these conflicts. Italian aircraft dropped teargas grenades against Ethiopian troops in Abyssinia in December 1935 and employed teargas throughout the war in Ethiopia from 1935-1936.<sup>90</sup> The Japanese employed teargas extensively against the Chinese in the Sino-Japanese war (1937-1945), using aircraft bombs, artillery shells and toxic candles (used on a large scale to disseminate irritant agents). According to US military reports, this included CAP (in aircraft bombs, shells, generators and grenades), bromoacetone (in hand grenades), and BBC teargases.<sup>91</sup> Japan, however, claimed that they did not consider the use of irritant agents as being prohibited by international law because they did not cause death or permanent injury.<sup>92</sup> Nonetheless, the use of teargas in the military conflicts in this period received considerable international condemnation. British Prime Minister Stanley Baldwin called the Italian use of gas in Abyssinia (which included both mustard gas and teargas) a “peril...to the world” in April 1936.<sup>93</sup> The chemical weapons taboo identified by Price had by the end of the interwar period become associated with boundaries between the international and the national, military use

---

<sup>89</sup> James Revill and Marcos Favero, “Lesser Appreciations: A History of Interwar Chemical Warfare,” in Mankoo and Rappert, *Chemical Bodies*, 41-58.

<sup>90</sup> Robinson and Leitenberg, 143. Teargas was also reportedly used in August 1936 by government artillery in the civil war in Spain, when the guns had fired tear gas shells against insurgent positions on the Guadarrama front. See *Ibid*, 146-47.

<sup>91</sup> United States, War Department, Military Intelligence Division, *Tactical And Technical Trends Nos. 1-20* (1942), No 9: 14, URL: <http://archive.org/details/TacticalAndTechnicalTrendsNos1-20> (accessed 20 August 2018).

<sup>92</sup> Coleman, 51. Robinson and Leitenberg, 151, suggest that the Japanese CW techniques in the Sino-Japanese war also involved the first modern application of irritants for purposes other than simple harassment of the enemy – similar to techniques to be later used by the USA in Vietnam.

<sup>93</sup> “Mr. Baldwin’s Speech”, *The Times*, 20 April 1936, 8.



and non-military use. As such, military use of chemicals during the interwar years garnered international condemnation, while domestic use such as that of US police forces was left relatively uncontested, instead finding a role in the governance of ‘civilised’ society.

In Weimar Germany, however, the Nazis used teargas in efforts to suppress radical art and opinion in theatres.<sup>94</sup> This was particularly striking given that the Nazis were not yet in power in government; teargas was not being used by police or military associated with the State (the Weimar government). Nonetheless its purpose was still repressive: “the Nazis were prepared to go to any lengths to stop what was happening inside the theatre.”<sup>95</sup> Teargas was also used by Weimar police infantry, however, to combat rioting by the Nazi SA (the paramilitary wing of the Nazi party) in the lead up to the Reichstag elections in July 1932.<sup>96</sup> These military uses of CW, however, are not the focus of this project, so they remain a cursory glance here. The purpose of their mention is rather to indicate the context in which a separation began to emerge throughout the world between military use and domestic use of chemical agents, teargas in particular.

### *Chemical Warfare and Colonialism*

The interwar period was also home to another, perhaps even more crucial development in the history of teargas: its colonial role. It has been well documented how, throughout the 1920s and 1930s, the colonial powers felt they had a duty to bring civilisation to ‘savage people’, tied with the belief that European technology and values were a more advanced form of human development. To use the words of colonial and Spanish political historian Sebastian Balfour, who has worked extensively on the 1920s Spanish use of CW in Morocco, colonial conquest was driven by commercial competition and foreign policy such that “the civilising mission was above all a rationalisation of these imperious needs.”<sup>97</sup> The notion that colonial powers were bringing advancement to their conquests provided imperial expansion with a persistent rationale – that it could be humane to treat those resisting

---

<sup>94</sup> James Jordan, “Audience Disruption in the Theatre of the Weimar Republic,” *New Theatre Quarterly* 1, no. 3 (August 1985): 283. See also William Grange, *Cultural Chronicle of the Weimar Republic* (Plymouth: Scarecrow Press, 2008), 395.

<sup>95</sup> Jordan, “Audience Disruption”, 287.

<sup>96</sup> Michael Zalampas, *Adolf Hitler and the Third Reich in American Magazines, 1923-1939* (Ohio: Bowling Green State University Popular Press, 1989), 20-21.

<sup>97</sup> Sebastian Balfour, “Secret Wars in Forgotten Africa,” *The Journal of Romance Studies* 1, no. 3 (2001): 122.

advancement with what one policy maker called a ‘firm hand’ because it would teach them the advantages of civilisation and help them see the error of their ways, furthering their societies. Balfour suggests that this rationale led many politicians and military authorities to deplore the idea of using chemical weapons against Europeans, but accept and even encourage their use against colonial populations in the mission of civilisation. As Colonial Secretary, Winston Churchill in particular advocated the use of teargas in the colonies, stating: “I do not understand this squeamishness about the use of gas. I am strongly in favour of using poison gas against uncivilised tribes.”<sup>98</sup> Similarly Foulkes, who was by 1919 Secretary of State for India, believed that colonial populations fell outside the remit of the international laws that applied to the ‘civilised’ world, exclaiming, “it has been pointed out that tribesmen are not bound by the Hague Convention and they do not conform to its most elementary rules.”<sup>99</sup> For many policy makers in imperial Britain, the humanity of teargas was proof of the power and necessity of Western scientific progress, while itself gaining legitimacy in being used for that very enterprise.

Balfour’s history of colonial violence charges the ‘European conscience’ with ignoring their histories of violence and replacing them with ones of progressive development.<sup>100</sup> He points out that the greatest advocates of CW at the beginning of the interwar period were “liberal politicians and progressive colonial officers...behind it was also the contemporary notion that technological innovation was by definition progressive.”<sup>101</sup> While traditional military officers favoured “glorified hand-to-hand combat”, progressives welcomed new technological methods of warfare. However, there was still apprehension on political, if not moral, grounds to the use of gas in the colonies at this time. In his history of British counter-insurgency, Townshend notes that fervour for the British use of CW in the Iraq uprising of 1921-22 was dampened by the fact that these weapons would be met with disapproval from the League of Nations.<sup>102</sup> While the British considered using teargas during their mandate in Iraq (Mesopotamia), European historian Ray Douglas claims that it is unlikely they actually

---

<sup>98</sup> David E. Omissi, *Air Power and Colonial Control: The Royal Air Force, 1919-1939* (Manchester: Manchester University Press, 1990), 160.

<sup>99</sup> Harris and Paxman, 44.

<sup>100</sup> Balfour, 125, finds it difficult to discern which chemical weapons the Spanish used, as his sources (military reports) increasingly failed to specify what kind of bombs were being deployed.

<sup>101</sup> *Ibid*, 126.

<sup>102</sup> Charles Townshend, *Britain’s Civil Wars: Counterinsurgency in the Twentieth Century* (London, Boston: Faber & Faber, 1986), 98.

did so, because circumstances requiring its use never coincided with its availability in the province and official sanction to use it.<sup>103</sup> In recent work Anna Feigenbaum has examined how both political (fear of contravening the GP) and economic (the lack of a home manufacturing market to supply demand) factors hindered the British use of teargas in the colonies throughout the interwar period, even after Cabinet authorisation.<sup>104</sup>

Despite these fears, during this period Winston Churchill, as Colonial Secretary, did authorise the supply of SK teargas grenades in a conflict much closer to home. In July 1922, he permitted the supply of SK to the Free State forces (pro-treaty) in Ireland for the purposes of controlling what is known as the 'Irish Civil War' (between pro and anti Anglo-Irish treaty factions), though these supplies were never used.<sup>105</sup> The FO believed the prohibitions of that year's Washington Treaty did not apply to the case for two reasons: first, it had not yet been ratified and was therefore not in force, and second, it referred only to the use of gas in war. They stated, "what has been going on in Dublin is not war."<sup>106</sup> However, War Secretary Sir Laming Worthington-Evans retorted: "if the use of poison gas is condemned in war, its use is all the more to be condemned in peace between people who are not at war with each other."<sup>107</sup>

According to Waldren, the issue was put to bed. Nevertheless, the episode in Ireland is of special significance for my analysis here. First, it indicates that from the early years of the interwar period, some British policy makers did indeed begin to refer to the boundaries of 'use in war' as a means of demarcating permissible and impermissible purposes of gas use. Given the outcome, this position was clearly not unanimous; many officials, like Worthington-Evans, felt the condemnation was universal. Furthermore, as both Shoul and the SIPRI account have pointed out, public opinion was at the time building momentum in its condemnation of CW in general, such that the use of gas in what the FO framed as a civil

---

<sup>103</sup> Douglas. Douglas's article is an attempt to correct the claim that Britain did use teargas in Iraq, which originated with Charles Townshend, "Civilization and 'Frightfulness': Air Control in the Middle East between the Wars," in Chris Wrigley (ed.) *Warfare, Diplomacy, and Politics: Essays in Honour of A. J. P. Taylor* (London: H. Hamilton, 1986), 148. This claim was later referenced by Omissi and then Geoff Simons, *Iraq: From Sumer to Saddam* (Basingstoke: Macmillan, 1994), 179, who contend that gas was used against the Iraqis rebels in 1920.

<sup>104</sup> Anna Feigenbaum, "Tear Gas and Colonial Bodies in the British Interwar Period," in Mankoo and Rappert, *Chemical Bodies*, 151-164; see also Feigenbaum, *Tear Gas*, Chapter 3.

<sup>105</sup> Waldren, 4-5.

<sup>106</sup> *Ibid*, 5.

<sup>107</sup> *Ibid*.

conflict might be highly controversial. With the signing of the Washington Treaty that year, and the Geneva Protocol soon after, the political environment proved too contrarian for the government to authorise gas use in Ireland. As Chapter 3 shows, until the 1930s, the general official sentiment was that, whether or not the GP formally prohibited teargas use outside of war, the potential for accusations of contravention in the event of its use posed too much of a political problem for the government. While the Ireland case did entail a separation of military use and a kind of civil use in official discourse, Britain had yet to carve out discrete notions of the legitimate applications of teargas outside of war – a space that, as we will see, was later shaped by scientific and medical authority, empiricism through experiment, and the expertise of particular groups (such as police authorities).

Second, and related to the first point, the episode highlights how the legitimacy of teargas as a domestic technology was tied to the preservation of imperial control in the interwar period. While officials condemned the use of gas in war, and dismissed the idea of using teargas on populations within Britain (as the United States was), its use in colonial policing was a much more open subject for discussion. Notwithstanding, then, is the contested place of Ireland in Britain's history of colonialism, as what Michael Hechter has termed an "internal colony" of Britain.<sup>108</sup> As an 'internal colony', gas use in Ireland could have been called anything from civil war, war, or domestic policing on the international stage, while the 'internal' part of this status perhaps meant that gas use (though colonial in a sense) still remained a little too close to home. This was certainly not the case in Palestine or India, as Chapter 3 shall show.

---

<sup>108</sup> Michael Hechter, *Internal Colonialism: The Celtic Fringe in British National Development* (London: Routledge & Kegan Paul, 1975). On the debate regarding the status of Ireland as a British colony, see David Lloyd, "After history: Historicism and Irish Postcolonial Studies," in Clare Carroll and Patricia King (eds.), *Ireland and Postcolonial Theory* (Notre Dame: University of Notre Dame Press 2003), 48-49; Raphaël Ingelbien, "Irish Studies, the Postcolonial Paradigm and the Comparative Mandate," in James P. Byrne, Pádraig Kirwan, and Michael O'Sullivan (eds.) *Affecting Irishness: Negotiating Cultural Identity Within and Beyond the Nation* (Bern: Peter Lang, 2009), 21-41. Many scholars have deemed Ireland a colonised territory, in which the Irish were a national group subjected to (and resisting) British imperialism. See Timothy J. White, "The Impact of British Colonialism on Irish Catholicism and National Identity: Repression, Reemergence and Divergence," *Études irlandaises* 35-1 (2010): 21-37; Kevin Kenny, "Ireland in the Empire", in Kevin Kenny (ed.), *Ireland and the British Empire* (Oxford: Oxford University Press, 2004), 90-122; Stephen Howe, *Ireland and Empire* (Oxford: Oxford University Press, 2000); David Miller "Colonialism and Academic Representations of the Troubles," in D. Miller (ed.) *Rethinking Northern Ireland: Colonialism, Power and Ideology* (London: Longman, 1998), 3-39.

## *World War II*

Historians of teargas and CBW often state that none of the belligerents' military forces used teargas during WWII. This was certainly the case for the European and Pacific theatres, though not in China, which I shall turn to shortly. Harris and Paxman suggest that this was more so because favourable circumstances did not arise for any belligerent rather than because of the international prohibitions on chemical weapons.<sup>109</sup> Given that the use of teargas would have likely served as a justification for retaliation with more powerful gases, it is unsurprising to find no use on the WWII battlefields in Europe – if a nation were to be the first to use chemical weapons, from a military perspective the element of surprise would have benefited more deadly gases such as phosgene or mustard gas, rather than teargas. The nations still built up substantial stockpiles of CW during the war, spurred by a combination of suspicion and reticence according to CW historian Kim Coleman:

“...a major constraint on the initiation of chemical warfare during the early part of the war was both a lack of the necessary material capability among the belligerents, and a general disinclination to acquire it...at the end of 1939 each of the major belligerents suspected its enemies were prepared to initiate chemical warfare, whereas, in fact, none of them were willing to do so.”<sup>110</sup>

Japan, however, continued to use teargas amongst other CBW in China, continuing in the war the operations that it had begun in 1937. Conversely, Japanese forces did not employ chemical weapons in their combat against the USA in the Pacific theater. Historian of Asian science Walter Grunden argues that the perceived ability of the enemy (the USA) to retaliate in kind deterred Japan from doing so.<sup>111</sup> Nevertheless, China's attempts to hold Japan to account for its use of CBW from 1937-1945 in the postwar 1946-1948 Tokyo Trial were stunted by the beginnings of cold war politics; Jeanne Guillemin has recently shown how the American delegation to the trial obstructed and obscured Japan's use of chemical weapons

---

<sup>109</sup> Harris and Paxman, 137. The reasons that Harris and Paxman cite regarding the lack of gas use include limited military and industrial resources, lack of military intelligence, fear of public opinion, and concern that gas was not a strategic enough weapon from a military perspective.

<sup>110</sup> Coleman, 76-77.

<sup>111</sup> Walter E. Grunden, “No Retaliation in Kind: Japanese Chemical Warfare Policy in World War II” in Bretislav Friedrich, Dieter Hoffman, Jürgen Renn, Florian Schmaltz, Martin Wolf (eds.), *One Hundred Years of Chemical Warfare: Research, Deployment, Consequences* (Cham: Springer, 2017), 259-271.

throughout the tribunal to gain an advantage over the Soviet Union and to maintain their own national security programmes.<sup>112</sup>

Although chemical weapons were not used elsewhere on the battlefields of WWII, military research and development flourished in the war and huge amounts of work were undertaken by national research facilities in developing chemical weapons.<sup>113</sup> Britain manufactured large amounts of lachrymators during the war, with scientists at Porton and Imperial College seeking an alternative, more effective, teargas to CN or BBC, albeit unsuccessfully. At the advent of the war, Porton expanded considerably, orchestrating an influx of scientists and technologists from universities and industry.<sup>114</sup> During the war, Porton's primary concern with regard to CW was increasing the development of new chemical weapons and munitions – Britain needed to be ready to retaliate in kind to any chemical attack, given the 'first use' nature of the GP.

By the end of the war, Britain had large stockpiles of chemical agents both overseas and at home. Lachrymators were produced under secrecy in Agency Factories, overseen by the Ministry of Supply. Across WWII, Britain produced 14,042 tons of phosgene and teargases and 40,719 tons of mustard gas, amounting to a total cost of £24m.<sup>115</sup> This expansion also involved significant spatial relocation. During the war, CW stocks were moved onto both battlefields and colonies (in France, North Africa, the Far East, the Middle East, Italy and the Russian Front), while tens of thousands of scientists, technicians and workers were stationed in gas factories to contribute to the war effort.<sup>116</sup>

More specifically, British police around the empire began to use teargas to control mobs and demonstrations and apprehend criminals, though during the war this remained relatively rare.<sup>117</sup> Chapter 5 of this project begins by examining what was likely the first police use of teargas in the empire, in Burma, just before the war in early 1939. It then investigates how the use of teargas spread across the colonial empire from that time onward into the mid 1960s, when it was widespread (being used on at least 124 occasions between 1960 and

---

<sup>112</sup> Jeanne Guillemin, *Hidden Atrocities: Japanese Germ Warfare and American Obstruction of Justice at the Tokyo Trial* (New York: Columbia University Press, 2017).

<sup>113</sup> However, this is not to forget the German use of chemical weapons in concentration camps and gas chambers.

<sup>114</sup> Carter, 39.

<sup>115</sup> *Ibid*, 44.

<sup>116</sup> Harris and Paxman, 109.

<sup>117</sup> For example, Bombay police (trained in the British Punjab schools) used teargas to disperse a large crowd at the Gowalia Tank Maidan, a park in central Bombay, on 9 August 1942. See Waldren, 17.

1965).<sup>118</sup> Moreover, British colonial authorities began to reframe teargas as ‘tear smoke’ during WWII. Arnold notes that, when teargas was introduced in Madras in 1940, authorities used the term ‘tear smoke’ rather than gas so as to avoid any association with the use of CW by the Italians in Ethiopia.<sup>119</sup> The use of teargas in colonial policing during wartime reflected policy makers’ shift toward thinking of the wartime and domestic applications of gas as separately governed practices.

Indeed, the use of the term ‘smoke’ rather than ‘gas’ sidestepped some of the potential associations teargas might have had to CW and the GP, as Britain had in 1930 taken the position that teargas was prohibited by the protocol while screening smokes were excluded. During the war, the Commander in Chief and the WO often insisted that British forces in colonial territories use the term “tear smoke” rather than “gas”.<sup>120</sup> These concerns were even more pertinent in wartime as any use of gas could be construed as providing hostile nations with justification for retaliation in kind on the battlefield. For example, in March 1944 the High Commissioner for Palestine, seeking permission for police to use teargas in disturbances during the war, wrote to the UK Secretary of State for the Colonies: “I have accepted the GOC’s [General Officer Commanding’s] view that its use during the war might have dangerous repercussions, e.g. accusations by the enemy that we had used gas for military purposes, and that it should therefore be prohibited altogether.”<sup>121</sup> However, throughout 1944 the High Commissioner, the Commander in Chief, the Colonial Office, became increasingly concerned about deteriorating internal security in Palestine and continued to pressure the War Cabinet on the topic. They claimed that the legal position was that the GP did not prohibit the use of teargas for police purposes.<sup>122</sup> Consequently, in November 1944 the Cabinet authorised the use of “tear smoke” in the suppression of civil disturbances, which supposedly covered use by both police and military forces.<sup>123</sup> Over the next year, requests came from Egypt, Java, and Malaya for authorisation to use teargas in similar circumstances. The Cabinet approved use in Java and Malaya, again correcting the term to “tear smoke”, however

---

<sup>118</sup> During WWII, the United States’ police, on the other hand, continued to use teargas at home.

<sup>119</sup> David Arnold, “The Armed Police and Colonial Rule in South India, 1914—1947,” *Modern Asian Studies* 11, no. 01 (February 1977): 116.

<sup>120</sup> TNA, WO 106/5176, Telegram to C in C Middle East from War Office, 22 December 1944.

<sup>121</sup> TNA WO 106/5176, Telegram to S of S Colonies from Palestine, 28 March 1944.

<sup>122</sup> TNA CO 968/144/3, War Cabinet, Use of Tear Gas in Palestine, Memorandum by the Secretary of State for War and the Secretary of State for the Colonies, 8 November 1944.

<sup>123</sup> *Ibid*, Telegram to Palestine from S of S Colonies, 16 November 1944.

authorisation in Egypt posed a more complex question.<sup>124</sup> The Cabinet deemed that British forces should only be prepared to use tear smoke when acting in support of Egyptian police (rather than when not assisting, or in opposition, to them).<sup>125</sup>

To return to the mainland, police within Britain also began using teargas for siege operations during the war, specifically in Hampshire in 1940, East Dulwich in 1943, and Chatham in June 1951.<sup>126</sup> According to Waldren, the teargas grenades used were likely CN that the police borrowed from the army. He claims that these remain the earliest instances on record of teargas being borrowed from the army and used by police. Chapter 4 of this project, however, examines a slightly different undertaking – namely, the first use of teargas within mainland Britain on public populations and crowds (rather than on criminals during sieges, for instance). Civil defence authorities used teargas throughout the war in public gas tests, conducted in attempts to train both local publics and civil defence workers to be prepared for enemy gas raids. This more widespread use of teargas on public crowds, as opposed to the selective, less common, use by police in siege operations is the focus of this project. That indiscriminate use of gas on public crowds en masse, which both brings to mind and contrasts with contexts associated with teargas use in our contemporary moment, has not yet been studied in detail in any history that I have found. Thus, Chapter 4 of this project, as well as being an STS analysis of these events, is the first history of these extensive teargas tests.

#### *Post War: Expanding the Colonial Gas Experiment*

After WWII, the presence of teargas in contexts of civil unrest, rioting, and protest became an increasingly global phenomenon. From the 1960s onwards, it was regularly used by colonial or newly post-colonial governments (for the British Empire, see Chapter 5). In 1948, Colonial Secretary Arthur Creech-Jones encouraged the colonial governments to use teargas as a means of force, writing in a circular: “One of the most effective and humane weapons available against rioting crowds is tear smoke.”<sup>127</sup> The Chiefs of Staff (COS) had also insisted, in 1945, upon the use of the term ‘tear smoke’ to avoid any damaging political implication

---

<sup>124</sup> *Ibid*, Telegram to Rear SACSEA from Cabinet offices, 9 November 1945.

<sup>125</sup> *Ibid*, Telegram to C in C Middle East from War Office, 22 December 1944.

<sup>126</sup> Waldren, 21.

<sup>127</sup> TNA, CO 537/2712, Methods of Dealing with Civil Disturbances, from A. Creech Jones, 24 June 1948.



associated with using any kind of gas.<sup>128</sup> It was not long until teargas became a common method for handling riots and restoring order in the post war British colonies.

However, increasing instability across the colonial empire WWII led to concerns regarding the efficacy of the standard issue CN teargas. Officials felt rioters were becoming ‘teargas conscious’, having had previous experiences with teargas and finding ways of countering its effects.<sup>129</sup> CN was no longer powerful enough to deter demonstrators for long periods after its use. Through their respective operations in Cyprus (and elsewhere) and Korea in the early 1950s the British and Americans determined that CN “would not drive back fanatical rioters.”<sup>130</sup> As a result, in 1956 the WO tasked Porton Down with searching for a more powerful gas for use against rioters, in the hope of finding an agent with a stronger incapacitating power than CN, a quick onset (of pain and incapacitation), and more delayed recovery after exposure. After testing 91 compounds, Porton decided on CS gas as the best replacement for CN.<sup>131</sup> A significant section of Chapter 5 focuses on this shift from CN to CS gas, investigating Porton’s experimentation on CS and its ultimate construction of CS as a scientific alternative to CN. I argue that this process at Porton ‘made’ CS into a teargas.

---

<sup>128</sup> David French, *The British Way in Counter-Insurgency, 1945-1967* (Oxford: Oxford University Press, 2011), 134. See TNA, WO 106/5176, Cabinet Offices to Rear SACSEA, 9 November 1945.

<sup>129</sup> Evans, 267–71.

<sup>130</sup> United States Chemical Corps, *Summary of Major Events and Problems: Fiscal Year 1959* (Army Chemical Center, Maryland: US Army Chemical Corps Historical Office, January 1960), 96. URL: <https://rockymountainarsenalarchive.wordpress.com/category/u-s-army-chemical-corps/> (accessed 21 August 2018). US forces used tear gas to break up and subdue resistant prisoners of war in the Koje-Do Camp during the Korean War (the prisoners had seized control of the camp). See Walter G. Hermes, *Truce Tent and Fighting Front* (Washington, DC: Center of Military History, US Army, 1966), Chapter XI: Koje-do, URL: <http://www.history.army.mil/books/korea/truce/ch11.htm> (accessed 21 August 2018) and Allan R. Millett, “War Behind The Wire: Koje-Do Prison Camp,” *Military History Quarterly* (January 20 2009), URL: <http://www.historynet.com/war-behind-the-wire-koje-do-prison-camp.htm> (accessed 21 August 2018).

<sup>131</sup> CS gas was first discovered in 1928, by American scientists Ben Corson and Roger Stoughton (hence, ‘CS’) at Middlebury College, Vermont. See Ben B. Corson and Roger W. Stoughton, “REACTIONS OF ALPHA, BETA-UNSATURATED DINITRILES,” *Journal of the American Chemical Society* 50, no. 10 (October 1928): 2825–37. Corson and Stoughton were investigating the reaction between carbonyl compounds and malononitrile, and synthesised several new compounds, one of which was CS. Page 2829 of their report notes, “certain of these dinitriles have the effect of sneeze and tear gases. They are harmless when wet but to handle the dry powder is disastrous.” Porton had performed tests with CS on human subjects in late 1934, finding the lachrymatory and irritant properties of CS to be ‘interesting.’ See TNA, WO 188/452 and WO 188/476 for the reports of these experiments. However, their interest apparently waned at that time, and it was not until 1956 that it was rekindled.

The chapter also addresses the British plan to use BBC teargas against communist insurgents in Malaya (during what is known as the ‘Malayan Emergency’).<sup>132</sup> In April 1953, Porton airdropped teargas on Tenggol, an island off Malaya, as part of experimental trials to determine whether the gas might be used in the conflict.<sup>133</sup> Ultimately, the British never used gas in the conflict in Malaya, due to limited stocks of BBC and fear of criticism if news of gas use became public.<sup>134</sup> While other authors have examined the Malaya trials in brief detail, Chapter 5 here is the first examination of this experimentation – predominantly on non-white subjects – of a more thorough kind.<sup>135</sup>

With Porton’s investigation of CS, and Britain’s subsequent decision to replace CN with CS, experimentation on teargas intensified. Evans, for example, describes how from 1956 CS was tested on human subjects and details the initial – and highly unpleasant – experiences of these volunteers.<sup>136</sup> After the British Army first tested CS ‘in the field’ in Cyprus during 1958, the British reported its efficacy as a riot control agent at the September 1958 Tripartite Conference with Canada and the USA.<sup>137</sup> The classification of ‘riot control agent’ dated back to (at least) 1956, when Porton’s Chemical Defence Experimental Establishment was first tasked with finding “a riot control agent physiologically more potent and therefore more effective than CN.”<sup>138</sup> Part of Chapter 5 examines this search. It was not long until the ‘riot control agent’ term appeared in other national discourses as well, especially following the Tripartite conference. Rappert notes its use in a 1959 symposium by the US Defense Science Board Task Group on CBW Development, whilst the US Chemical Corps regularly used the term in their 1959 annual summary.<sup>139</sup> When US Secretary of Defense Robert McNamara referred to the 1958 British use of riot control agents in Cyprus during a press conference in 1965, the British Defence Ministry nevertheless responded that it “could not confirm the report that the British Army had used gas in Cyprus” but that they had “used

---

<sup>132</sup> Waldren, 19, points out that the British choice to term the conflict an ‘emergency’ as opposed to a ‘war’ meant that use of gas could be classified as a police action rather than a military one.

<sup>133</sup> British officials wanted to use teargas in the jungle to deny bandits parts of the jungle and divert them to other spaces, a precursor to the future use of CS gas in Vietnam for area-denial purposes.

<sup>134</sup> Evans, 267.

<sup>135</sup> Evans, 266-67; Schmidt, 301-3; Waldren, 18-19.

<sup>136</sup> Evans, 268–73.

<sup>137</sup> Paxman and Harris, 197. The Tripartite Conferences were meetings on Toxicological Warfare that focused on offensive and defensive CBW collaboration between the UK, the USA and Canada.

<sup>138</sup> TNA, WO 195/14415, Porton technical paper no. 651.

<sup>139</sup> Brian Rappert, *Non-Lethal Weapons as Legitimizing Forces?*, 246; United States Chemical Corps.

tear gas to a limited extent in internal-security roles.”<sup>140</sup> At the Tripartite conference, the USA, UK and Canada made a commitment to concentrating on “the search for incapacitating and new type lethal agents [nerve agents].”<sup>141</sup> Non-lethality had become a point of international military scientific research, and this included the development of new forms of nonlethal weapons and teargases.

Britain was also profiting from exporting teargas to both its dwindling colonial empire and elsewhere. During the 1960s, the British government sold CS gas to a British firm that then exported the gas to 60 countries under government issued export licences.<sup>142</sup> Between 1962 and 1964 the UK made £350,000 – approximately £6m in real terms) in export sales to Hong Kong, Indonesia, Kenya, Malaysia, Nigeria, Portugal, Rhodesia and Singapore.<sup>143</sup> While these stocks of teargas were not used for police purposes within the UK, in exporting them elsewhere the British government nonetheless provided a form of support for their potential domestic application.

### *Vietnam*

Historically, teargas, and specifically CS gas, is most often remembered for the role it played in the Vietnam War throughout the 1960s. The USA initially supplied irritant agents including CN and DM grenades to the South Vietnamese government from as early as 1962.<sup>144</sup> It was not until late 1964 that the US forces in Vietnam were equipped with chemical agents, when they were armed with the more advanced CS gas. The USA justified its use of CS in Vietnam in large part by arguing that CS was only being used in situations involving or analogous to riot control as opposed to chemical warfare, and was therefore a ‘riot control agent’ rather than a chemical weapon under the remit of the GP.

---

<sup>140</sup> Jack Raymond, “Decision On Gas Not President’s, White House Says,” *New York Times*, 24 March 1965, 1. I have been unable to locate archival files on these particular tests. Numerous reliable sources attest to their occurrence however, see George Bunn, “Banning Poison Gas and Germ Warfare: Should the United States Agree?” *Wisconsin Law Review* 1969 (1969): 375; Robinson and Leitenberg, 212; William Fowler and John Norris, *NBC: Nuclear, Biological and Chemical Warfare on the Modern Battlefield* (London ; Herndon, VA: Brassey’s, 1997), 25; Paxman and Harris, 197.

<sup>141</sup> United States Chemical Corps, 95.

<sup>142</sup> “HC Debate: CS Gas”, 19 June 1968, vol 766 col 147, Hansard.

<sup>143</sup> Anna Feigenbaum, “A Hundred Years of Toxic Humanitarianism,” openDemocracy, 24 July 2013, URL: <https://www.opendemocracy.net/opensecurity/anna-feigenbaum/hundred-years-of-toxic-humanitarianism> (accessed 22 August 2018).

<sup>144</sup> Robinson and Leitenberg, 185.

In 1965, the US Commander in Vietnam, General Westmoreland, began to explore the efficacy of CS as a way of driving the Viet Cong from bunkers. These operations involved spraying CS gas to force the enemy from bunkers in the jungle where they would be more vulnerable to the second stage of B52 carpet-bombing. Then, US soldiers equipped with gas masks would be sent in to deal with any survivors.<sup>145</sup> According to Rappert, almost 16 million pounds of CS was procured for operations in Vietnam between 1964 and 1970.<sup>146</sup> In the press, the use of CS was justified by reference to its humanitarian possibilities. Secretary of State Dean Rusk claimed:

“Under the circumstances in which this gas was used in Vietnam, the desire was to use the minimum force required to deal with the situation to avoid death or injury to innocent people...we do not expect that gas will be used in ordinary military operations... the anticipation is, of course, that these weapons be used only in those situations involving riot control or situations analogous to riot control.”<sup>147</sup>

As the war progressed, US forces began to use CS in more diverse and more offensive ways. The SIPRI account explains,

“the increased deployment of CS during 1968 was not due to an increasing number of intermingled situations. Rather it was due to an increasing interest among field commanders in the combat possibilities of CS... thus, whatever US spokesmen at home or abroad might be saying, the US military was assessing the value of CS not in terms of its humanitarian applications but in terms of its contribution to the overall effectiveness of US forces in Vietnam.”<sup>148</sup>

Indeed, the US Army Training Circular TC 3-16 set out the recommended uses of riot control agents (RCAs) in counter guerrilla operations, including for the temporary disablement of hostile troops (or their fire), to make hostiles abandon positions, to flush out enemy troops from concealed positions, for defensive purposes, in perimeters, and for area-

---

<sup>145</sup> Paxman and Harris, 197-98.

<sup>146</sup> Rappert, *Non-Lethal Weapons as Legitimizing Forces?*, 128.

<sup>147</sup> “Excerpts from transcripts of Rusk news parley on use of gas in Vietnam.” *New York Times*, 25 March 1965. Air spraying and carpet bombing notwithstanding, apparently lives were saved in some cases – Dando, 77, notes the case of a marine who “used CS grenades to remove 400 civilians and some enemy soldiers from a cave, without injury to the civilians.”

<sup>148</sup> Robinson and Leitenberg, 197.

denial.<sup>149</sup> Area-denial involved using CS to contaminate terrain or and render it uninhabitable for an extended period of time (even up to several weeks). According to Blumenfeld and Meselson, employment of CS for area-denial purposes accounted for the chief proportion of overall CS consumption in Vietnam.<sup>150</sup>

Around this time in Britain, the MOD began formally making distinctions between ‘incapacitating agents’ and ‘riot control agents’ (RCAs). While they deemed both RCAs and incapacitants as producing temporary, physically disabling effects, the temporal duration of these effects was to be in the scope of minutes for RCAs and hours for incapacitants.<sup>151</sup> Furthermore, the MOD classified incapacitating agents as ‘chemical agents’ by definition, but RCAs as ‘substances’, stating that incapacitating agents could risk causing permanent injury whereas RCAs did not carry significant risk of doing so. Such questions of classification were vital, simultaneously defining whether or not use of the agent might be acceptable in war, which related to British interpretations of the GP (incapacitating agents would have certainly been prohibited). In 1969, Harold Wilson’s Labour Government was grappling with the question of whether the use of RCAs in war was prohibited by the GP – particularly pertinent given that declaring this to be the case would have entailed openly criticising the US use of CS gas in Vietnam. When, in November 1969, President Nixon announced the USA’s intention to re-submit the GP for ratification, the American position excluded RCAs and herbicides, both of which it was using extensively in Vietnam.<sup>152</sup>

In 1965, in contrast to its original 1930 interpretation of the GP (which took smokes to be excluded but teargases as prohibited), legal opinion in the British FO had shifted to the view that the illegality of teargas use in Vietnam was “uncertain.”<sup>153</sup> Alex Spelling points out how Britain used the term “other” to refer to gases outside of the “asphyxiating or poisonous” gases prohibited in warfare by the GP. While Britain did view these “other gases” (including

---

<sup>149</sup> US Department of the Army. Employment of riot control agents, flame, smoke, antiplant agents and personnel detectors in counterterrorist operations. April 1969 (Department of the Army training circular TC3-16).

<sup>150</sup> Stewart Blumenfeld and Matthew Meselson, “The Military Value and Political Implications of the Use of Riot Control Agents in Warfare” in *The Control of Chemical and Biological Warfare* (New York: Carnegie Endowment for International Peace, 1971), 64-93.

<sup>151</sup> John R. Walker, *Britain and Disarmament: The UK and Nuclear, Biological and Chemical Weapons Arms Control and Programmes 1956-1975* (Farnham, Surrey; Burlington, VT: Ashgate, 2012), 21.

<sup>152</sup> Alex Spelling, ““Driven to Tears”: Britain, CS Tear Gas, and the Geneva Protocol, 1989-1975,” *Diplomacy & Statecraft* 27, no. 4: 706.

<sup>153</sup> *Ibid*, 705.

lachrymators) as prohibited in 1930, FO Under-Secretary Hugh Dalton excluded “screening smokes” from the Protocol in a Parliamentary response in February of that year.<sup>154</sup>

By 1969, the MOD insisted that “in scientific terms CS was a smoke and not a gas” and therefore would only be covered by the GP if it was “significantly harmful or deleterious to man” (which they rejected).<sup>155</sup> Furthermore, they equated the distinction between smoke and gas with the American distinction between incapacitating chemical and riot control agents.<sup>156</sup> The Attorney General, however, disagreed, believing teargases to be significantly harmful and deleterious to man. Ultimately, in February 1970, the UK announced its position that “CS and other such gases...[were] outside the scope of the Geneva Protocol” on the grounds that CS was “not significantly harmful to man in other than wholly exceptional circumstances... CS is in fact less toxic than screening smokes.”<sup>157</sup>

Thus, from a haze of divergent interpretations regarding the legality of CS gas in war, the UK came to an official position – shaped in large part by the MOD – that used notions of non-lethality and toxicity as means to determine its (re)interpretation of the GP. By classifying CS as less harmful and of lower toxicity compared to agents that were excluded from the original 1930 interpretation of the GP (screening smokes), the British position effectively constructed the legality of CS as something both scientific (CS as distinct from other chemical agents) and humane. The MOD thus categorised CS, and similar gases, as “qualitatively different from the agents whose use the Protocol had been intended to prohibit.”<sup>158</sup> They did so despite the fact that, according to the Home Office, the purpose of CS was “to produce effects sufficiently harmful as seriously to incapacitate people.”<sup>159</sup> Both the public and certain officials were very dissatisfied with the UK position. Ronald Hope-Jones, head of the Foreign and Commonwealth Office’s Disarmament Department, who had exclaimed, “toxicity is not the right criterion, and the attempt to apply it only leads to absurdity,” stepped down as a result.<sup>160</sup>

---

<sup>154</sup> *Ibid*, 703.

<sup>155</sup> Walker, 33. At one point, the MOD also stated that “CS was not a derivation of teargas – it was unrelated to CN.” See Spelling, 709.

<sup>156</sup> Spelling, 710.

<sup>157</sup> Walker, 35.

<sup>158</sup> Spelling, 711.

<sup>159</sup> *Ibid*, 710.

<sup>160</sup> *Ibid*, 712. Hope-Jones had also made the point that “CS’s principal advantage was that it CS was the most irritating, with the lowest tolerance and, therefore, the most effective,” with effects “qualitatively similar to those of CN” but “10 times as potent.” As teargases were used for irritant

*Riot Control, Northern Ireland and the Himsworth Report*

In summary, by the 1970s, teargas featured prominently in three contexts: first, in colonial and postcolonial settings, as a method for (imperial) authorities to control political dissent and disturbances; second, as a tactical weapon, used most notably by the USA in the Vietnam War; and finally, as a technology for civil policing and domestic riot control (predominantly, but not exclusively, in the USA). This third context will now be given more consideration. Today, the use of teargas in domestic riot control is the most familiar, being now inextricably linked with protest movements and demonstrations.<sup>161</sup> During the 1960s, and particularly the Vietnam War, the use of CS gas by American police rose to unprecedented prominence in the media and the public eye.<sup>162</sup> In 1965, supporters of Martin Luther King Jr.'s march for civil rights from Selma to Montgomery appeared in national and international press when police (both state and local) attempted to violently suppress their demonstration using teargas and clubs. In 1968, riot police tear-gassed protestors during the Democratic Convention in Chicago, and in 1969, National Guard helicopters showered both students and bystanders during an anti-war protest in Sproul Plaza at Berkeley. Similar practices were going on elsewhere worldwide. Police in West Berlin used teargas in 1969 to confront student protests; French authorities regularly used teargas in 1968 to suppress student and worker uprisings.<sup>163</sup>

1969 also marked the first use of teargas by British forces to quell rioting within the United Kingdom, in Northern Ireland.<sup>164</sup> Beginning late at night on 12 August, following months of mounting tension between Irish loyalists and nationalists, loyalists embarked on an annual commemorative march routed through the nationalist Bogside area of Derry (on the

---

rather than toxic effects, he argued that it was therefore easier to justify CS's prohibition and CN's exclusion from the protocol. Hope-Jones had stepped down because he felt it was "morally intolerable" to continue (714). According to the 1970 British position, CN was prohibited by the GP while CS was excluded.

<sup>161</sup> For a deeper examination of this relationship between teargas and protest movements, see Anna Feigenbaum, "Resistant Matters: Tents, Tear Gas and the 'Other Media' of Occupy," *Communication and Critical/Cultural Studies* 11, no. 1 (2014): 15–24; Anna Feigenbaum, Fabian Frenzel, and Patrick McCurdy, *Protest Camps* (London: Zed Books, 2013).

<sup>162</sup> For various high profile examples, see Feigenbaum, *Tear Gas*, Chapter 4.

<sup>163</sup> Klaus Weinhauer, "Controlling Control Institutions: Policing of Collective Protests in 1960s West Germany" in Wilhelm Heitmeyer, Heinz-Gerhard Haupt, Andrea Kirschner and Stefan Malthaner (eds.) *Control of Violence: Historical and International Perspectives on Violence in Modern Societies* (New York: Springer Science & Business Media, 2011), 221.

<sup>164</sup> Again, however, the contested "internal colony" status of Ireland must not be overlooked. See footnote 104.

border between Northern Ireland and Republic of Ireland). Taunts from both sides developed into stone throwing by afternoon, which turned into mass rioting and destruction of property by night. It was then that the Royal Ulster Constabulary (RUC), the loyalist police force, used grenades and CS cartridges to teargas citizens of the Bogside for 36 hours.<sup>165</sup> The incident led to outcry from the media and the public and prompted Home Secretary James Callaghan to establish a committee to investigate the “evidence relating to the lasting medical effect, if any, of the CS control agent upon persons exposed.”<sup>166</sup> The committee, chaired by the British scientist Harold Himsworth (secretary of the Medical Research Council from 1949-68), was composed of various medical experts, some with military connections.<sup>167</sup>

Balmer, Spelling and McLeish examine the work of the Himsworth Committee from an STS perspective, especially interrogating the “weapons as drugs” approach the committee adopted in its investigation. This approach was outlined in the initial Himsworth report, which concluded with the statement: “In our opinion, from the point of view from which the effects of any such agent should be studied should be more akin to that from which we regard the effects of a drug than to that from which we might regard a weapon.”<sup>168</sup> Similarly, Feigenbaum has shown that, in doing so, the Himsworth Committee gave credence to experimental results from clinical and laboratory studies whilst downplaying the significance of personal testimony and human experience.<sup>169</sup> Consequently, the report utilised scientific evidence to construct CS as safe for use, as long as use was in accordance with terms of drug safety. In Feigenbaum’s words, “CS got its clearance for use during civil disturbances. It was labelled safe for the young and old, as well as pregnant women; some warning was given that it should be used with strict guidance in enclosed locations.”<sup>170</sup>

Balmer, Spelling and McLeish also point out how the smoke/gas distinction became an issue of focus in the deliberations of the Himsworth Committee.<sup>171</sup> In its second report, the committee argued that CS was a “smoke or fog of suspended droplets or particles,” a

---

<sup>165</sup> See Feigenbaum, *Tear Gas*, Chapter 5 for a more detailed account of the Bogside incident.

<sup>166</sup> Brian Balmer, Alex Spelling and Caitríona McLeish, “Tear Gas Epistemology: The Himsworth Committee and Weapons as Drugs,” in Mankoo and Rappert, *Chemical Bodies*, 106.

<sup>167</sup> For example, committee member Professor Robert Thompson was also chair of the Chemical Defence Advisory Board, which provided technical advice to the Chemical Defence Experimental Establishment at Porton.

<sup>168</sup> Balmer, Spelling and McLeish, 107.

<sup>169</sup> Feigenbaum, *Tear Gas*, Chapter 5.

<sup>170</sup> *Ibid*, 115-16.

<sup>171</sup> Balmer, Spelling and McLeish.



distinction that was important from a “medical point of view.”<sup>172</sup> This was important because “humans had evolved mechanisms for filtering smoke and other larger particles from the upper respiratory tract,” implying that smoke was naturally less harmful than a gas.<sup>173</sup> Balmer, Spelling and McLeish suggest that the Himsworth report may have been the grounds for the MOD’s claim during that time that CS was a smoke, non-toxic and less harmful than CN.

The Himsworth Report will be returned to in greater detail at various points in this project. I have mentioned it here in order to highlight some of the scholarship that focuses on, and picks up from, the moment where I see the broad historical arc of my argument culminating. I will suggest that various aspects present in previous British approaches to defining and categorising teargas – as examined in Chapters 3, 4, and 5 – effectively came together to underpin the approach that the Himsworth Committee adopted in evaluating CS. This approach was at once technical, geopolitical, and cultural. In this respect, the Himsworth Report represents a defining moment of co-production (see the thematic overview for a discussion of co-production), where the ‘safety’ of CS was co-produced with the social legitimacy and power accorded to police forces, and assumptions regarding when, where, and how police could use gas on crowds.

## **Part Two: The Thematic Overview**

The previous section situated the PhD in the historical literature on teargas. Now, I wish to grapple more deeply with the sociological – and STS – aspects that relate to my argument and analysis. The history of teargas is an intriguing case for STS investigation, raising questions regarding classification, power, knowledge production and construction, imagined futures of science and technology, the relationships between care and control, and experimentation. This section therefore highlights the theoretical areas in the field that this project engages with, and contributes toward.

To begin, I wish to return to the question “What do I mean by teargas?” In recent work on the relations between chemical weapons, bodies and transgression, Brian Rappert and I write: “Distinctions matter. They cordon off parts of the world from each other in order to distinguish events, objects, locales and so on. Events, objects and so on must have

---

<sup>172</sup> *Ibid*; TNA CJ 3/66, Report on the Enquiry into the Medical and Toxicological Aspects of CS (Orthochlorobenzylidene Malonitrile). Part II. Enquiry into Toxicological Aspects of CS and its use for Civil Purposes. 1971.

<sup>173</sup> Balmer, Spelling and McLeish, footnote 52.

their limits if the world is not to be treated as one indistinguishable goo.”<sup>174</sup> Drawing lines, such as the 1930 British position to exclude smokes from the GP but not teargas (and the subsequent re-drawing of that line in 1970), enable actors to identify where one thing ends and another thing begins. The act of defining, classifying and sorting any ‘thing’ in the world – in this case ‘teargas’ – is an act of making relations between that thing, ourselves, and other objects, people, groups, institutions, and so forth, relations that at the same time shape how we choose to live in the world. To use the words of Geoffrey Bowker and Susan Leigh Star, from their seminal work on how standards and classifications produce the ways we understand and live in the world, the “thicket of classifications is both operative (defining the possibilities for action) and descriptive.”<sup>175</sup>

The thicket of classifications is indeed apparent in the history of teargas. As we have seen, forms of teargas have been categorised as everything from a chemical weapon or chemical agent, to a substance, a riot control agent, or a smoke. Each of these classifications has been intimately linked to their advocates’ understanding of the place of teargas in the world – whether it was prohibited or excluded from the Geneva Protocol (smoke vs. gas), for example, or permitted under the CWC (as a riot control agent). Moreover, these have implications for where the bounds of other distinctions in the world lie. For example, defining something as a riot control agent entails both defining what an RCA is and is not, as well as defining where the distinctions between ‘law enforcement including domestic riot control’ and military or prohibited law enforcement applications lie.

As has been apparent from the historical overview, and will become increasingly apparent throughout this project, there is therefore a great deal at stake in how one chooses to define ‘teargas’. I am aware that I too am making particular commitments by using this as my titular term. By doing so, I am leaving a host of other incapacitating agents or irritants outside of my analysis. Nevertheless, teargas remains to this day – and has been throughout the twentieth century – the most prominent type of chemical that law enforcement bodies have used upon crowds and populations. I choose to focus on it because I am interested in engaging with the construction of that relationship. How is something ‘made’ into ‘teargas’ in

---

<sup>174</sup> Brian Rappert and Alex Mankoo, “Transgressive Chemicals” in Mankoo and Rappert, *Chemical Bodies*, 3.

<sup>175</sup> Geoffrey C. Bowker and Susan Leigh Star, *Sorting Things Out: Classification and its Consequences* (Cambridge, MA: MIT Press, 1999), 326.

a sociological sense? And how have conceptions of ‘teargas’ developed with notions of particular kinds of law enforcement and crowd control?

*Classifying Chemicals: What Kind of Thing is Teargas?*

This approach to technology is far from new. STS has a rich history of interrogating how technologies, knowledge production (especially within scientific disciplines) and knowledge itself are both social and technical. In short, STS treats knowledge as a social institution. Since the mid twentieth century, STS has offered a plethora of ways of doing so. To discuss all of them here would be an insurmountable task, and one increasingly irrelevant to the task at hand.<sup>176</sup> Rather, my intention is to trace out the genealogy of literature that has most influenced my approach here, and to which my project can most contribute. For part of a 2011 masters dissertation, I adopted Keith Grint and Steve Woolgar’s ‘onion’ model of technology as a way to examine the various layers of social construction that make up ‘teargas.’<sup>177</sup> Grint and Woolgar use their onion model as a means of refuting what they call essentialism, that is, the idea that “technical attributes derive from the internal characteristics of the technology...these internal characteristics are (often) supposed to have resulted from the application of scientific method or from the linear extrapolation and/or development of previous technologies.”<sup>178</sup> They posit that if one thinks of technologies like onions – with

---

<sup>176</sup> For such overviews, see Edward J. Hackett, Olga Amsterdamska, Michael Lynch and Judy Wacjman (eds.), *The Handbook of Science and Technology Studies*, third edition (Cambridge, MA: MIT Press, 2008); Ulrike Felt, Rayvon Fouché, Clark A. Miller and Laurel Smith-Doerr (eds.), *The Handbook of Science and Technology Studies*, fourth edition (Cambridge, MA: MIT Press, 2017); Sergio Sismondo, *An Introduction to Science and Technology Studies*, Second edition (Oxford: Blackwell, 2010); Steven Yearley, *Making Sense of Science: Understanding the Social Study of Science* (London: Sage, 2005); Massimiano Bucchi, *Science in Society: An Introduction to Social Studies of Science* (London: Routledge, 2004).

<sup>177</sup> Keith Grint and Steve Woolgar, “Computers, Guns and Roses: What’s Social about Being Shot?” *Science, Technology & Human Values* 17, no 3 (1992): 366-380; see also Keith Grint and Steve Woolgar, *The Machine at Work: Technology, Work and Organisation* (Cambridge: Polity Press, 1997), Chapters 4 and 6. For my MSci dissertation, see Alex Mankoo, “Teargas – We haven’t got the foggiest: Deconstructing the Ambiguities of Creeping Legitimation”, MSci Dissertation, Department of Science and Technology Studies, University College London (2011).

<sup>178</sup> Keith Grint and Steve Woolgar, “On Some Failures of Nerve in Constructivist and Feminist Analyses of Technology,” *Science, Technology, & Human Values* 20, no 3 (1995): 288. Grint and Woolgar distinguish between two approaches to technology: essentialism and anti-essentialism. They state that anti-essentialism encompasses “a broad church of perspectives...that share the view that technological artifacts do not possess capacities by virtue of extrapolation from previous technical states of affairs but rather that the nature, form, and capacity of a technology are the upshot of various antecedent circumstances involved in its development (mainly taken to include design, manufacture, and

‘layers’ of social construction but essential technical ‘cores’ – and attempts to then determine what this technical ‘core’ is, one finds that this core is in fact illusory. Instead, one will see that there is an indefinite number of ‘layers’ of socially constructed phenomena; there is no determinate core. I used this approach to highlight the ‘interpretive flexibility’ of teargas (the numerous ways of understanding what it is and does), and argued that doing so brought to light harmonies, tensions and ambivalences between these viewpoints, which could enable a more democratic governance of the technology.<sup>179</sup>

Now, I believe that there is much more to the story. I do not think that approach on its own engages enough with what is truly at stake here; it fails to adequately reveal the power relations, inequalities, and subjectification that has existed through the history of teargas. As a way to grapple with this, I now turn to how STS more generally has dealt with questions of ontology. In doing so, I will stray slightly from the topic of teargas, but I do so with the caveat that the relation of the ensuing talk of kinds and world-making to teargas shall become clear.

Two years after Grint and Woolgar’s book, philosopher Ian Hacking contended, “Any idea that is debated, assessed, applied, and developed is situated in a social setting. It is therefore vacuous to say that every idea is constructed.”<sup>180</sup> He did so in a chapter where he argued that the idea of child abuse was what he termed an ‘interactive kind’, an idea that emerged at a particular time, place and from certain authoritative people, which accordingly gained new connotations and moral weight, became part of legislation, practices and transformed professional activities. Hacking suggested that the ‘kind’ of child abuse altered how people see the world and their place in it; certain kinds of things – such as child prostitution – became demarcated from child abuse. In Hacking’s account, child abuse emerged as a medicalised problem, rather than social issue one, such that ‘child abuse’ as “sickness” enabled both political parties in the USA to “act in unison to combat it.”<sup>181</sup> The kind of ‘child abuse’ was made and moulded along with the world it came to exist in. That

---

production).” Their onion model was in part an attempt to address anti-essentialists who were leaving room for aspects of essentialism in their analyses.

<sup>179</sup> The notion of ‘interpretive flexibility’ was first developed in detail by Trevor Pinch and Wiebe Bijker in the constructivist Social Construction of Technology (SCOT) programme. See Trevor J. Pinch and Wiebe E. Bijker, “The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other,” *Social Studies of Science* 14 (1984): 399-441.

<sup>180</sup> Ian Hacking, *The Social Construction of What?* (Cambridge, MA: Harvard University Press, 1999), 125.

<sup>181</sup> *Ibid*, 138.

making of the world rendered certain populations victims of child abuse, others child abusers, and others perpetrators or victims of different crimes, each to be dealt with by the relevant legislations or institutions. Certain harms became more visible, whilst others (such as social inequities) became obscured, jettisoned to be dealt with elsewhere.

In her investigation of the ‘ontological politics’ of atherosclerosis, Annemarie Mol shifts from asking how medicine comes to know its objects (in her case, atherosclerosis and the body) to how it enacts them – how “bodies are shaped, and lives are pushed and pulled into one shape or another.”<sup>182</sup> Mol’s work engages not simply with the construction of the meaning of things, but with how “ontologies are brought into being, sustained, or allowed to wither away in common, day-to-day sociomaterial practices,” practices in which “each event . . . turns some “body” (some disease, some patient) into a lived reality and thereby evacuates the reality of another.”<sup>183</sup> In this line, ontologies – the kinds of things that exist in the world – are “not given in the order of things,” but made real through practices as well as their relation to other things.<sup>184</sup> Crucially, however, in her conception of ontological politics, Mol asks what is at stake, pointing out that not only are the practicalities of detecting a disease at stake, but also “reality effects” – the way in which both a disease, and its related objects, are performed. Using the example of systems of detecting anaemia, she therefore suggests that it is not just the reality of anaemia at stake, but also doctor-patient conversational interactions, “the needle, the ex-corporation of blood, the controlled infliction of pain.”<sup>185</sup> Mol’s approach helps to draw out both the material and the political in Hacking’s ideas of kinds. Bringing

---

<sup>182</sup> Annemarie Mol, *The Body Multiple: Ontology in Medical Practice* (Durham and London: Duke University Press, 2002), viii. Mol derives the term ‘ontological politics’ from John Law; see Annemarie Mol, “Ontological politics. A word and some questions,” *The Sociological Review* 47, no 1 (suppl, 1999): 74-89, and John Law, *Aircraft Stories, Decentering the Object in Technoscience* (Durham: Duke University Press, 2002).

<sup>183</sup> Mol, *The Body Multiple*, 6.

<sup>184</sup> One of the biggest legacies of the Actor-Network Theory (ANT) tradition in STS is how it demonstrated how the ‘making’ of meaning, and the world, is established and performed through the various relations between human and non-human actors and actants. See Bruno Latour, *Science in Action: How to Follow Scientists and Engineers Through Society* (Cambridge, MA: Harvard University Press, 1987); Bruno Latour, *Reassembling the Social: An Introduction to Actor-Network Theory* (Oxford: Oxford University Press, 2005); Michel Callon, “Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay,” *The Sociological Review* 32, no 1 (suppl, 1984): 196-233; John Law, “Notes on the theory of the actor-network: Ordering, strategy, and heterogeneity,” *Systems practice* 5, no 4 (1992): 379-393.

<sup>185</sup> Mol, “Ontological politics”, 81.

ontologies – ‘kinds’ – into being involves enacting them out in a material sense, such that these ontologies change with the contexts they are situated in.

Let us now return to the case of teargas as a way of making these ideas palpable. In a broad sense, we have already seen multiple ontologies across the history of teargas (as CN, as CS, as a chemical weapon, a riot control agent, a spray, substance), each of which has then been enacted differently (the hand-held spraying protocols of British police; US strategies of aerial spraying and area denial in Vietnam, for instance). Yet, ontological multiplicity exists here in a finer sense too. For example, the designation of teargas as a ‘riot control agent’ has itself been enacted in a number of ways – for example, the USA used CS in Vietnam as an RCA, yet also as an RCA in domestic policing; erstwhile Britain tied RCAs to colonial policing. These multiple ontologies and their enactments – the worlds they make and shape – are deeply political. In making some realities real, others are “evacuated”, to use Mol’s phrasing.

Thus, the ‘evacuation’ of one reality for another is not just a matter of metaphysics. Across the post-war British Empire, the designation of CN gas – and then CS gas – as ‘humane’ and ‘non-lethal’ resulted in the rampant tear-gassing of colonial populations by imperial police forces. At Porton Down, and in colonial field experiments, the strategic applications of teargas (and many other chemicals) led scientists to use them upon servicemen and human subjects who had not consented to their use. In Selma in 1965, and in Ferguson in 2014, US police forces used substantial amounts of teargas upon crowds of civil rights protestors, predominantly people of colour. To truly grasp what is at stake in these ‘reality effects’, I think that we must have some awareness of *whose* reality effects they might be. In short, the analysis of the classifications of teargas needs some account of the power relations at play. Who profits, who is silenced? Whose ideas gain legitimacy? Who becomes subject to whom? In accounting for these questions of power and subjectification, I now turn to the literature of biopolitics.

### *Power, Biopolitics and Orders of Subjectivity*

In discussing his concept of biopolitics, Michel Foucault used the term ‘biopower’ to describe the emergence of “numerous and diverse techniques for achieving the subjugation of bodies and the control of populations.”<sup>186</sup> To contextualise his idea of biopolitics, in brief

---

<sup>186</sup> Michel Foucault, *The History of Sexuality, Vol. 1: An Introduction* (New York: Pantheon Books, 1978), 140.

terms, Foucault contended that up until the seventeenth century, one of the characteristic privileges of sovereign power was the right to decide life and death. By contrast, he argued that, power over life from the seventeenth century onward evolved into two forms: the first, into power to discipline the body into machine, extort it, optimise its capability and integrate it into systems of economic control; the second, the power to control the mechanics of life and biological processes (births, mortality, health, life expectancy, the social conditions of life), the population body, through social structures, interventions and regulatory controls. It is this second transformation that Foucault calls “the biopolitics of the population.”<sup>187</sup>

Foucault states that the techniques of biopolitics (e.g. counting, measuring, disciplining, profiling) exist at every level of the social body and are used by a plethora of social institutions (the police, the family, administrative institutions) to sustain the instruments of the state (institutions of power) that ensure the means of production (the disciplining of the body into machine). Thus these techniques, as exercises of biopower, sustain those institutions that transform the body into capital, that discipline it into machine, optimise its capability and integrate it into systems of economic circulation. Foucault also used a concept of “governmentality” to refer to “the ensemble formed by institutions, procedures, analyses and reflections, calculations, and tactics that allow the exercise of this very specific, albeit very complex, power that has the population as its target, political economy as its major form of knowledge, and apparatuses of security as its essential technical instrument.”<sup>188</sup>

The biopolitical character of teargas has not evaded scholars in STS and critical security studies. In a recent article, Miguel de Larrinaga contends that, in transforming from, first, something indistinguishable from other abhorred chemical weapons in WWI to, second, something developed and deployed as part of governmental apparatuses that produce and maintain order, “tear gas can be seen as an instrument of biopower that acts upon bellicose relations within the social and staves off “war” as it is conventionally understood.”<sup>189</sup> In other words, as a means to restrict the conditions of life rather than end it, teargas has been

---

<sup>187</sup> *Ibid*, 139.

<sup>188</sup> Michel Foucault, *Security, Territory, Population: Lectures at the College de France, 1977-78* (Basingstoke: Palgrave Macmillan, 2009), 108. Foucault also used the concept to mean two additional things: to refer to a mentality throughout the West that affords pre-eminence to ‘government’ over all other types of power, and also to refer to (the result) of the process “by which the state of justice of the Middle Ages became the administrative state in the fifteenth and sixteenth centuries” – being gradually “governmentalized.” See *Ibid*, 108-109.

<sup>189</sup> Miguel de Larrinaga, “(Non)-Lethality and War: Tear Gas as a Weapon of Governmental Intervention”, *Critical Studies on Terrorism*, 9, no. 3 (2016), 527.

historically, in Larrinaga's account, a means to "patrolling the borders" between classifications such as the civilised and the barbarian (in the colonial context), and of reframing the sphere of the international (and the national) in imperial terms.<sup>190</sup> However, extending this thought, we can also consider how teargas not only operates to patrol these borders, but performs a key role as part of a sociotechnical assemblage that constructs and sustains these borders (of the international/national, lethal/non-lethal, military/domestic, civilised/barbarian, and so on).

Today, teargas is commonly articulated as a technological means by which the state enforces a level of control over social movements, protests or demonstrations that seek to question the legitimacy of the state, its actions or its authority. Conversely, in some contexts, it has also become a means by which such movements subvert state control.<sup>191</sup> Thus, Larrinaga argues that its use, as part of governmental attempts to order populations and their movements, is "also about circulation: about the ordering of movements and interactions . . . with the aim of fostering good circulation while mitigating the bad."<sup>192</sup> He is here referring to conceptions of good and bad circulation used by Foucault, in which circulation is a key instrument and target of governing processes – a sphere of operation with which populations can be secured.<sup>193</sup> Larrinaga suggests, "The rationalities behind the planning of both teargas and lethal gas use is about the environment – the geography, the climate and the physical givens – and the human species and its existence in this environment."<sup>194</sup>

In this reading, teargas is a way of making particular spaces unlivable or less livable (for particular populations), rather than simply a means of killing. Philosopher Peter Sloterdijk has classified this as forming part of what he calls 'atmosterrorism'. Provocatively, he argues that we can understand modern 'chemical war' in the twentieth century as an emergence of the targeting not of enemy bodies but of their environment, as what he dubs atmosterrorism – "when the body of the enemy can no longer be liquidated with direct assault, the possibility presents itself to the attacker of making his existence impossible, by immersing the enemy in

---

<sup>190</sup> *Ibid*, 528.

<sup>191</sup> For example, in the creation of "chains of global accountability." See Feigenbaum, "Resistant Matters", 20-22.

<sup>192</sup> Larrinaga, 529.

<sup>193</sup> Foucault, *Security, Territory, Population*, 18; Claudia Aradau and Tobias Blanke, "Governing Circulation: A Critique of the Biopolitics of Security", in Miguel de Larrinaga and Marc G. Doucet (eds.) *Security and Global Governmentality: Globalization, Governance and the State* (London: Routledge, 2010), 44-58.

<sup>194</sup> Larrinaga, 529.



an unlivable milieu.”<sup>195</sup> The idea is contentious, and risks overlooking longstanding environmental practices and histories related to warfare, such as those of setting fire and polluting. Sloterdijk employs his argument as a rejection of the idea that contemporary terror can be understood as “the weapon of the weak” in confrontations between unequal forces (such as non-state combatants versus state armies). Instead, he suggests, “the history of terror in the 20<sup>th</sup> century shows that it was states, and among them the strongest, that were the first to have recourse to terrorist methods and means,” citing Germany’s use of chlorine gas at Ypres as the first example of atmosterrorism.<sup>196</sup>

Larrinaga builds upon Sloterdijk’s approach by arguing that the use of teargas in civil contexts of domestic policing can be understood as ‘atmosterror’ insofar that it makes “war...the primary grid of intelligibility of social relations,” and contributes to the blurring of lines between war and peace.<sup>197</sup> Tying Sloterdijk’s work with Foucault’s, Larrinaga situates teargas within broader apparatuses of security and environmental governance with which states exercise bio-power over their populations, and shape the spaces and bounds between war and peace, the military and police, and the international and national. However, we might also treat teargas as not only a feature of these ambiguous spaces, but a means to order and define them. The history of teargas demonstrates a number of such instances, which the empirical chapters of this thesis will attest to.

To take an example from the historical overview, the Himsworth Report’s framing of ‘CS’ as a drug enabled authorities to circumvent the ambiguous status of the conflict in Northern Ireland, instead highlighting the legitimacy of teargas as a means to bring order to the scenario because of its low toxicity from a medical point of view. Balmer, Spelling and McLeish show how this framing again rendered entire populations subjects for chemical intervention; the ‘weapons as drugs’ approach “meant that any division between violent and

---

<sup>195</sup> Peter Sloterdijk, ‘Airquakes’, *Environment and Planning D: Society and Space*, 27, no. 1 (2009), 44; see also Peter Sloterdijk, *Terror from the Air*, trans. Amy Patton and Steve Corcoran (Los Angeles: Semiotext(e); Cambridge, MA: MIT Press, 2009).

<sup>196</sup> While I refer to Sloterdijk’s work in making this point, I do not situate my work as building on his in any strict sense. For example, in “Airquakes”, he also makes the contentious claim that “the discovery of the ‘environment’ took place in the trenches of the First World War.” (45) While aspects of his concept of ‘atmosterror’ sit nicely alongside Foucault’s biopower, I am not interested in engaging with these broader discussions regarding terrorism and the environment here.

<sup>197</sup> Larrinaga, 538.

non-violent protestors within a crowd became elided throughout the Himsworth report. Everyone participating in protest was tacitly assumed to be a legitimate target.”<sup>198</sup>

There is work in STS that can offer further insight on this relationship between technology and social ordering, and the construction of populations as subjects for technological intervention. I turn to this literature in the next section. However, I think it is first appropriate for me to explain why I am adopting the term ‘orders of subjectivity’. I derive this term from similar terminology used by postcolonial philosopher Edward Said in his landmark book *Orientalism*, where he referred to Orientalism as:

“...a style of thought based upon an ontological and epistemological distinction made between ‘the Orient’ and (most of the time) ‘the Occident’...poets, novelists, philosophers, political theorists, economists, and imperial administrators, have accepted the basic distinction between East and West as the starting point for elaborate theories, epics, novels, social descriptions and political accounts concerning the Orient, its people, customs, ‘mind,’ destiny, and so on.”<sup>199</sup>

Said, who drew from Foucault, describes how ‘Orientalism’ enabled imperial administrators to make their subjects (the populations they ruled over) knowable, rendering ‘Orientals’ subjects for “proper study.”<sup>200</sup> In doing so, it provided imperial knowledge with value, setting up an “order of sovereignty...from East to West, a mock chain of being.” For Said, this ‘mock chain of being’ existed in colonial visions of a seat of power in the West – “a great embracing machine” – sustained by the knowledge, materials, and people being ‘fed’ into it from its branches in the East, whilst also commanding these branches. The knowledge, material, and people, fed back to the West are in turn processed by the machine and converted into more power, giving it greater command over these subject populations.

In this thesis, I wish to modify Said’s phrase ‘order of sovereignty’ to suggest the term ‘orders of subjectivity’ as a means of delineating three things that can shed light on the history of teargas. First, shifting focus from sovereignty to subjectivity opens up the opportunity to discuss how different aspects of sovereign power persist or transform in the hands of those subjected to it. Moreover, speaking of subjectivity as an order highlights how this relationship

---

<sup>198</sup> Balmer, Spelling and McLeish, 111.

<sup>199</sup> Edward W. Said, *Orientalism* (New York: Vintage Books, 1979 edition; originally published 1978), 2-3.

<sup>200</sup> *Ibid*, 45.

is not simply a ruler-subject binary but a network of relations made hierarchical. In this process, both power and subjectivity become enacted all the way down by those within this order. Let us take an example from the history of teargas. While in 1948 British Colonial Secretary Creech Jones had encouraged colonial police authorities to use teargas in controlling their territories, Chapter 5 shall show that these police authorities then re-interpreted this power locally according to their own knowledge, priorities and interests, and enacted it accordingly upon their colonial populations. So too with these colonial populations. In being rendered subjects for chemical intervention, they enacted this role as a means to resist.

My second reason for adopting ‘orders of subjectivity’ reflects a more enforced conception of the subject. One can think of subjectivity as both enforced – or ‘disciplined’ in Foucault’s terminology – and agential. The first point above speaks somewhat more to the latter ‘agential’ conception of subjectivity. Working at the intersection of STS and anthropology, Kaushik Sunder Rajan has by contrast investigated what he terms ‘subject-constitution’ – “the ‘always already’ created subject whose agency is structured in culturally and historically specific ways.”<sup>201</sup> This fits well with a conception of subject agency that is nonetheless still part of an exercise of biopower. Sunder Rajan explains, “the subject may be constituted by many things...but, crucially, the subject is also constricted in a relationship to the state as well as capital – and thus is constructed in potentially very different ways in the emergent relationships between state and capital in different regions of the world.”<sup>202</sup> Indeed, this is particularly relevant for the case of teargas, where – as we will see – regional contexts shaped the state construction of the ‘subject’ significantly.

My final reason for using the term ‘orders of subjectivity’ relates to ‘subjectivity’ as a form of knowing and living in the world. On the previous page I stated, “speaking of this as an order highlights how this relationship is not simply a ruler-subject binary but a network of relations made hierarchical.” Thinking of the ‘subjective’ in terms of how the world exists in relation to the perspective of an agent (rather than the subject as an experimental subject being acted upon), then the ‘order of subjectivity’ can therefore be conceived of as an

---

<sup>201</sup> Kaushik Sunder Rajan, “Two Tales of Genomics: Capital, Epistemology, and Global Constitutions of the Biomedical Subject” in Sheila Jasanoff (ed.) *Reframing Rights: Bioconstitutionalism in the Genetic Age* (Cambridge, MA: MIT Press, 2011), 195.

<sup>202</sup> In Sunder Rajan’s comparative study of consumer genomics in India and the USA, this was crucial because “the neoliberal state configures the possibilities for [the subjects of consumer genomics] in ways that are very different in India and the United States.” *Ibid*, 196.

ordering of various ways of knowing and living in the world. This ordering is often (but not always) undertaken by states upon the subjectivities of their citizens.

For example, in imperial governance, Western ways of knowing and living in the world (manifested in institutions, social structures, the production of knowledge) were ordered above the approaches of the native populations. This ‘ordering’ functioned both as a way organising certain things/objects/people in(to) particular places, and in the sense of constructing a hierarchy of power. This has occurred within national contexts as well; US police use of teargas upon antiwar protests in the 1960s and 70s, for example, gave authority to a subjectivity that afforded legitimacy to both the use of teargas in Vietnam and the reason for the war itself, while rendering subversive those subjectivities that contested the legitimacy of these actions. Thinking in terms of ‘subjectivities’ illustrates exactly how much is at stake in such contestations by focusing on whose way of knowing is made authoritative in the institutions of society. Indeed – to return to Mol’s “reality effects” – constructing certain subjectivities as authoritative legitimates and de-legitimates the various ways related objects and knowledges can be performed within other subjectivities (e.g. peaceful protest/citizenship/police-citizen interactions).

Work at the intersection of STS and security has shown how processes of anticipation and pre-emptive action operate as forms of subjectification. DNA databases and database trawling processes, for example, socially and legally construct particular populations as ‘suspects’ – individuals who pose potential future threats as well as past ones.<sup>203</sup> Similarly, Louise Amoore has demonstrated how contemporary security derivatives – security algorithms used to analyse and flag risks in large, disaggregated datasets – operate as pre-emptive security measures that are “not centred on who we are, nor even on what our data say about us, but on what can be imagined and inferred about who we might be – on our very proclivities and potentialities.”<sup>204</sup> In these contexts, such pre-emptive constructions of populations are deeply concerning because of the way in which they disproportionately “profile, police and punish” more vulnerable populations, thus exacerbating social

---

<sup>203</sup> Simon A. Cole and Michael Lynch, “The Social and Legal Construction of Suspects,” *Annual Review of Law and Social Science* 2 (2006): 39-60.

<sup>204</sup> Louise Amoore, “Data Derivates: On the Emergence of a Security Risk Calculus of Our Times,” *Theory, Culture & Society* 28, no 6 (2011): 24-43.

inequalities.<sup>205</sup> Data scientist Cathy O’Neill has termed such algorithms “predatory” for their capacity to take advantage of the vulnerable and create destructive “feedback loops.”<sup>206</sup> Examining pre-emption at a broader societal scale, Melinda Cooper has argued that the ‘biological turn’ in US defence policy during the War on Terror was characterised by “speculative pre-emption” – a mobilisation against “emergence [of bio-threat] itself” – which involved a deliberate self-transformation of defence that threatened “to blur the difference between real and imagined threat.”<sup>207</sup>

Others have pointed out how subjectivities constructed by these socio-technical processes vary across geography and culture. Kaushik Sunder Rajan shows how a genomics biotechnology company in the USA, promising the advantages of personalised medicine, “configures subjects as sovereign consumers,” whilst a genomics company in India instead configures them as “experimental subjects.”<sup>208</sup> In doing so, he highlights “the ways in which a seemingly unmarked analysis of neoliberalism in fact is located within deep colonial histories and postcolonial inequities.”<sup>209</sup> Tino Plümecke, on the other hand, has shown how concerns about genetic discrimination come to prominence for some groups over and above others.<sup>210</sup> He argues that research studies and laws often centre upon genetic discrimination against “asymptomatic individuals” (people who have not, or not yet, fallen ill) to the extent that this particular definition of discrimination becomes the grounds “for refusing to recognise the discriminatory experiences of affected individuals.”<sup>211</sup> Thus, this kind of pre-emptive construction renders invisible areas of ambiguities – the spectrum of experiences of possible ‘symptoms’ – by demarcating two categories of people, ill and healthy. Yet these forms of anticipative security, subjectivity, erasure, and power are not restricted to novel technologies like data analytics and biotechnology. Across the thesis I will show how, in the history of teargas, a similar anticipatory relationship exists between Britain’s pursuit of the ‘civilising’

---

<sup>205</sup> Virginia Eubanks, *Automating Inequality: How High-Tech Tools Profile, Police and Punish the Poor* (St. Martin’s Press: New York, 2018).

<sup>206</sup> Cathy O’Neil, *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy* (London: Allen Lane, Penguin Random House UK, 2016).

<sup>207</sup> Melinda Cooper, “Pre-Emptying Emergence: The Biological Turn in the War on Terror”, *Theory, Culture & Society* 23, no. 4 (2006): 113-135.

<sup>208</sup> Kaushik Sunder Rajan.

<sup>209</sup> *Ibid*, 197.

<sup>210</sup> Tino Plümecke, “Genes, symptoms, and the “asymptomatic ill”: toward a broader understanding of genetic discrimination,” *New Genetics and Society* 35, no 2 (2016): 124-148.

<sup>211</sup> *Ibid*, 142.

empirics of science and technology and its assertion of power over its colonial dependencies. I now turn to work in STS that grapples with what is at stake in the relationship between technology and social ordering.

### *Co-production & Civic Epistemology*

In the introduction to her book *States of Knowledge*, STS scholar Sheila Jasanoff uses the term “co-production” to describe:

“...the proposition that the ways in which we know and represent the world (both nature and society) are inseparable from the ways in which we choose to live in it...Scientific knowledge, in particular, is not a transcendent mirror of reality. It both embeds and is embedded in social practices, identities, norms, conventions, discourses, instruments and institutions – in short, in all the building blocks of what we term the *social*. The same can be said even more forcefully of technology.”<sup>212</sup>

Jasanoff suggests that, by taking natural and social orders as being produced together, co-production provides explanatory power regarding the “texture of any historical period, and perhaps modernity most of all, as well as of particular cultural and political formations.” Co-production offers, then, a framework with which to critically evaluate how ontologies (the kinds of things determined to exist in the world) and normativity (the governance of the world through institutions, and their techniques of biopower, ordering, subjectification) emerge at the same time.

Unlike Grint and Woolgar’s strong social constructivist approach discussed earlier, co-production opens up an analysis of teargas and its legitimacy as a domestic policing technology that appreciates knowledge as a ‘social’ institution without doing away with the technology’s crucial technical and material aspects. With co-production, we might interrogate how and why particular institutions, practices and ‘orders of subjectivity’ have emerged with ontological and epistemic demarcations regarding lethality, toxicity, or riot control in the history of teargas. This approach avoids pushing toward universalising the history of teargas as a technology produced within a broad context of twentieth century global governance. Co-production instead addresses the ways particular cultural and societal formations have shaped

---

<sup>212</sup> Sheila Jasanoff, *States of Knowledge: The Co-Production of Science and the Social Order* (London, New York: Routledge, 2004), 2-3; Sheila Jasanoff, “Beyond Epistemology: Relativism and Engagement in the Politics of Science,” *Social Studies of Science* 26, no. 2 (1996): 393–418.

the emergence of divergent ways of classifying, knowing and enacting teargas technology. In other words, co-production has the potential to account for the ‘teargas’ multiple (to borrow Mol’s term), such that a co-productive historical analysis would entail treating the history of teargas as somewhat more like a web of emergent, divergent and convergent articulations of the technology, rather than a linear story.

Though not extensively, some scholars have already identified the value of this approach for examining the governance of teargas specifically. Balmer, Spelling and McLeish write of how the Himsworth committee oscillated “between deferring to or challenging the authority of the police training manual and practical expertise” when discussing how CS gas might or might not be deployed. They conclude:

“...this discursive manoeuvring shows how the safety of tear gas and its circumstances of use (i.e. whether or not instructions would be obeyed) were co-produced in the report. Additionally, labelling CS as safe, an ostensibly scientific decision, would possibly contribute to more widespread use... further [demonstrating] that scientific and social considerations could not be isolated from each other.”<sup>213</sup>

In this case, the committee co-produced safety of CS with the authority and legitimacy of police forces, and the host of scenarios upon which teargas could, and should, be used upon crowds.<sup>214</sup>

Chapter 3 of this PhD shows how the respective British and the US approaches to teargas in the interwar period illustrate the emergence of two unique configurations of ‘teargas’ with its role in policing in the two different cultural contexts.<sup>215</sup> Working within her idiom of co-production, Jasanoff has offered the term “civic epistemologies” to describe “culturally specific, historically and politically grounded, public knowledge-ways” of modern nation

---

<sup>213</sup> Balmer, Spelling and McLeish, 111-12.

<sup>214</sup> Elsewhere, Brian Rappert and I have argued for the value of conceptualising chemical agents and bodies as existing within a co-constitutive relationship in attempts evaluate the impact of definition, research and control of chemical weapons technologies upon (a variety of notions of) the body, and vice versa. That approach drew considerably from the idea of co-production. See Alex Mankoo and Brian Rappert, “‘Chemical Bodies’ and the Future of Control” in Mankoo and Rappert, *Chemical Bodies*, 185-204.

<sup>215</sup> This is not to say that the two contexts had no relation to one another. On the contrary, as Chapter 3 will show, discourse about teargas and approaching to policing traversed from one context to another – the US use of teargas certainly influenced British policy makers’ decisions to consider teargas. However, this approach treats those discourses and practices as markedly different things within the specific sociotechnical configurations of alternative cultural contexts.

states.<sup>216</sup> In an extensive comparative analysis of the emergence of biotechnology regulation in the UK, Germany, and the USA, in the late twentieth century, she argues that knowledge, technology, and power come to be situated within unique “cultures of action and decision.” She contends that political culture matters in understanding the shaping of regulation, scientific evidence and its interpretation, expertise, risk management, and the production of public knowledge, amongst other social practices. These cultures constitute ‘civic epistemologies’.

Jasanoff contrasts how ‘facts’ regarding biotechnology have been established in US and European regulatory contexts, arguing that US agencies, operating without the civil service traditions and legal protections of European organisations, have historically sought “objectivity based on numerical calculations” in order to establish their actions as demonstrably rational. European approaches, she suggests, have instead tended to invoke “delegated authority or superior expertise.” Jasanoff stresses how “the implicit logic of the market...drove many US legal outcomes...it was the interests of the service, purchasing, and usually economically and socially better situated, parties that [courts] wrote into the law as the ‘natural’ order of things.”<sup>217</sup> Britain’s policy culture, however, held a far more “pragmatic, empirical orientation” predicated upon assumptions of trust from publics, in which “seeing is believing,” particularly if ‘seen’ with the aid of expert judgment.

While Jasanoff introduces her model of civic epistemology to examine the emergence of biotechnology in US, UK and German policy during the late twentieth century, she specifically engages with the culturally variable relationship between democratic processes and scientific and technological change, including the character of political accountability. Such concerns are not unique to biotechnology. By providing a rubric with which to “inquire into how the classic political categories of participation, deliberation, and representation” are energised or transformed through national attempts to make policy for a given scientific and technological issue, Jasanoff’s approach helps piece apart how such issues come to be issues (and specifically issues of science and technology) from culture to culture.<sup>218</sup>

The emergence of teargas as a technology of policing is such an issue. As has been seen from the historical overview, studies of the history of teargas have tended to explain its

---

<sup>216</sup> Sheila Jasanoff, *Designs on Nature: Science and Democracy in Europe and the United States* (Princeton: Princeton University Press: 2011).

<sup>217</sup> Jasanoff, *Designs on Nature*, Chapter 6.

<sup>218</sup> *Ibid*, 273.



adoption, development, control and (non-)use both internationally (in the CWC for example) and within national contexts through the lens of related sociopolitical and geopolitical developments. I therefore wish to adopt an STS approach that can speak to this literature and build upon it – offering a means to contextualise these particular developments pertaining to political culture alongside a critical analysis of the technological and scientific knowledge (and forms of knowledge production) that accompanied these developments. In short, the concepts of co-production and civic epistemology take both the social and technical seriously. In using these approaches, I can engage both with more critical and sociological orientated approaches to the topic of teargas – such as Larrinaga’s and Balmer, Spelling and McLeish’s – as well as the more straightforward engagement with politics found in the chiefly historical literature.

### *Co-construction, Sociotechnical Imaginaries and Technological Legitimacy*

Co-production – indeed by name – focuses on moments of knowledge production, emergent ontologies, and thereby emergent ways of governing and living in the world. As such, it helps to explain why advances in science and technology come hand in hand with new regulatory regimes and forms of governing. For clarity’s sake, however, I think it important to note that I see co-production as something different to (or at least more than) simply the mutual shaping of science and the social, and what some STS scholars have termed ‘co-construction.’<sup>219</sup> While these approaches do take science and technology as co-constructed with certain social values and interests – i.e. they acknowledge the relationship between the social and technical – they are orientated toward understanding how “science helps to make material reality, social reality and knowledge match through processes of mutual adjustment and reinforcement.”<sup>220</sup> In other words, they aim to show how the material, the social, and technical knowledge align to generate meaning in the world, particularly for scientists. For example, we might consider how certain scientific knowledge sharing practices (networks at Porton, for instance) aligned with particular understandings of chemical agents to produce shared categories of knowledge. This, however, differs from co-production, which focuses on what is produced by these emergent knowledges, classifications, and social orders –

---

<sup>219</sup> Peter Taylor, “Co-Construction and Process: A Response to Sismondo’s Classification of Constructivisms,” *Social Studies of Science* 25, no. 2 (1995): 348–59; Sergio Sismondo, “Reply to Taylor,” *Social Studies of Science* 25, no. 2 (1995): 359–62.

<sup>220</sup> Sismondo, “Reply to Taylor”, 359.

particularly with respect to governance and democracy. To adopt a classification of gas as ‘non-lethal’ within a policy document, for example, entails giving precedence to that particular way of knowing and defining the world and therefore certain ways of living in and governing the world.

Co-production is thereby a means to focus on what is at stake in knowledge production and its governance – the ways in which it remakes the world. Co-construction, on the other hand, asks how, “as science is being made, the importance of something... is a function of the other things with which it is being linked.”<sup>221</sup> The mutual shaping of knowledge with social values therefore does not negate the fact that knowledge production itself also entails new social orders in the world and ways of governing. Thus, we can talk of co-construction without dismissing the idea that knowledge and social order are co-produced, because co-construction and co-production are not trying to tackle the same problem.

To take an example, in an analysis of the regulation of CS sprays within the UK during the 1990s, Brian Rappert notes how British officials based their reassurances of the safety and robustness of CS sprays on references to the controls in place for monitoring pharmaceutical drug safety.<sup>222</sup> This was not the first instance in which CS was classified as a drug; in Britain, this dated back to the Himsworth Committee in 1970. Nevertheless, this way of categorising CS (in this case, in spray form) once again emerged with the notion that it was safe. Moreover, Rappert shows how, despite the reading of CS as a drug, claims that it had been regulated as such were highly questionable, relying on problematic assumptions regarding tests with CS that had been conducted in a limited scenario on their own (not within a context of use, or monitoring long term effects, for example), and not in spray form. Thinking of these instances as ‘constructions of legitimate force’, as Rappert has termed them, “illustrates the importance of interpretative dynamics involved in the use of force... a robust analysis of the CS sprays require consideration of the clash between different views held about their necessity and appropriateness.”<sup>223</sup>

Rappert’s example helps to point out the relationship between co-production and co-construction. CS sprays were co-constructed as legitimate force by police forces, conceptions

---

<sup>221</sup> Taylor, 353.

<sup>222</sup> Brian Rappert, “Safety in policing: lessons from the regulation of CS sprays in the UK,” *Social Science & Medicine* 56 (2003): 1269-1278.

<sup>223</sup> Brian Rappert, “Constructions of Legitimate Force: The Case of CS Sprays,” *Brit. J. Criminol.* 42 (2002): 704.

of drug safety, and experimental trials, as well as Britain's prior co-production of safety with CS's drug status in Himsworth. At the same time, we can also view this as an instance of the co-production of knowledge regarding the CS sprays (the emergence of the ideas about the spray, specifically, as 'safe'). In this respect, I view the co-production of knowledge and social order as an iterative process, one that shapes and is shaped by related moments of co-construction.

In this iterative process, why do some visions of scientific and social order – of 'remaking the world' – then gain dominance over others? How can we understand co-production when situated within technological development and change over time? In what manner do these iterations of knowledge and social order go on to shape societies, institutions, communities, and so on? Conversely, which are transient? In such a project as this, which spans a period of 40 years, these are questions of some importance, given that this history provides an opportunity to trace out what these impacts might be. In *Dreamscapes of Modernity*, Jasanoff and Sang-Hyun Kim address this temporal aspect of the idiom of co-production with their notion of 'sociotechnical imaginaries': "collectively held, institutionally stabilized, and publicly performed visions of desirable futures, animated by shared understanding of social life and social order attainable through, and supportive of, advances in science and technology."<sup>224</sup> These imagined futures both justify investment, research and development in science and technology and legitimate their creators and performers (nation states, powerful institutions or companies, expert bodies, domains of expertise).

Throughout the thesis, I suggest that the most significant collectively held, institutionally stabilized, and publicly performed vision within Britain's history of teargas was one that imagined that lethal force in policing and imperial control could be replaced with non-lethal chemical force, especially through developments in science and technology. Thinking of co-production as occurring within this particular sociotechnical imaginary is a way of making sense of a broader kind of narrative arc within this project. Other means of interpreting and contesting the dominant understanding of teargas technology (and its non-lethality) did exist, just as with the case of CS sprays that Rappert has highlighted, however in operating outside of this particular sociotechnical imaginary and its instruments of state power,

---

<sup>224</sup> Sheila Jasanoff, "Future Imperfect: Science, Technology, and the Imaginations of Modernity" in Sheila Jasanoff and Sang-Hyun Kim (eds.), *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power* (Chicago: University of Chicago Press, 2015), 4.

these did not gain the support or traction to become formally embedded in institutional, legal, or scientific practices and discourse. The making of collective visions of scientific and social order, and the development and adoption of technologies to achieve these visions, thus require them achieving legitimacy across certain social groups and institutions. This legitimacy is often tied to power relations, however, as hegemonic actors have a major influence on the visibility of particular visions, the value attributed to them, and the messages built into them.

The discussion so far perhaps suggests a rather neat proposition that teargas is co-produced in a particular identifiable ontological-normative form – for example, as a non-lethal chemical alongside particular modes of policing – in a given socio-cultural context. This is not quite so. On the contrary, there is messiness to the world, and in the making of ontologies and their governance. Contemplating Mol's ontological multiplicity, ontologies shift in and out of being across context, time, and place – and nevertheless have to interact with the 'reality effects' in the world derived from their 'prior' or alternative iterations. Thus, the adoption of one particular reading of technology can entail both expected and unexpected transgressions across lines of natural and social order. Balmer, Spelling and McLeish point out how the findings of the Himsworth committee could not be entirely coherent, acknowledging that while in certain respects the committee would treat CS as a drug rather than a weapon, the administration of drugs and CS also had significant differences. The committee therefore had to accept both the tensions and the harmonies of their reading of CS as a drug with its enactment across a range of contexts. From such a scenario, we can see how a transgression at one time might not be one at another (or from another perspective).<sup>225</sup>

Hence, my later historical narrative and analysis will by no means be an attempt to remove dissonance or messiness. Rather it endeavours to ask what these forms of dissonance and mess reveal in terms of the imaginations, politics, and power at play in governing technology. These moments of transgression can rather be read as norms in their own right, as actors' articulations of distinctions (both technical and social) that should or should not be crossed. In short, deciding what counts as a transgression is also an act of power. These ideas resonate with STS literature elsewhere. For instance, in their study of the ethics of organ

---

<sup>225</sup> Klaus L. Hoeyer and Anja M.B. Jensen, "Transgressive ethics: Professional work ethics as a perspective on 'aggressive organ harvesting'", *Social Studies of Science* 43, no. 4 (2012): 598-618.

harvesting, Hoeyer and Jensen argue that “boundaries are not there waiting to be transgressed; they are sensed and enunciated through ‘transgressive practices’.”<sup>226</sup>

### *Teargas in Matters of (Taking) Care*

It will have been apparent from the historical overview (and will become clearer through the PhD) that those who have advocated for the legitimacy of teargas have almost always done so on the basis of some conception of ‘humanity’ related to distinctions between lethal and non-lethal forms of force. Accordingly, these notions of humanity have justified the use of teargas as a means of controlling populations, in the name of protecting them from the killing, pain, or permanent injury often framed as caused by an enemy (for example, potential German raids in WWII) and/or the populations themselves (for example, in helping to ‘civilise’ the ‘uncivilised’). These notions of humanity and protection suggest that we can think of the legitimacy of the use of teargas as being wrapped up with a particular articulation of care for citizens or populations, into which is sewn the state’s role in providing, or creating the means to provide, such care.

My interest in ‘care’, however, needs some elaboration. While researching Chapter 4 of this PhD, which is centred upon the use of teargas in public gas tests by civil defence authorities upon populations around the country during WWII, I found myself increasingly struck by how much teargas – this chemical agent, this previously toxic gas, which had been no less than a chemical weapon in Britain’s 1930 interpretation of the GP – was being articulated within a sociotechnical assemblage of care. Notably, as will be demonstrated in Chapter 4, the type of ‘care’ expressed was not singular; it matched both conceptions of what Sam Weiss Evans and Emma Frow have identified as two common understandings of ‘taking care.’ They write, “[Taking care] can...involve making an issue invisible or finding ways to take it off the mind. This is ‘taking care of’ a problem by simplifying it, or getting rid of it, treating it as readily manageable. But taking care can also mean attending to and ‘caring for’ a particular matter, by investing in it in an ongoing or sustained fashion.”<sup>227</sup>

This observation raises questions regarding the relationship between care and control, care and coercion, and how the cases of teargas use and authorisation to be examined in this

---

<sup>226</sup> *Ibid*, 612-613.

<sup>227</sup> Sam Weiss Evans and Emma K. Frow, “Taking Care in Synthetic Biology,” in Brian Rappert and Brian Balmer (eds.) *Absence in Science, Security and Policy: From Research Agendas to Global Strategy* (Basingstoke: Palgrave Macmillan, 2015), 135.

thesis might offer a means to attending to a range of understandings of care, highlighting where these understandings converge, diverge, emerge and vanish. The examination of care, matters of care, and taking care, has been of considerable interest to STS in recent years.<sup>228</sup> In the Prologue to *The Logic of Care*, Mol contemplates, “Is ‘care’ a soft form of ‘force’ or might something entirely different be going on?”<sup>229</sup> Elsewhere, Mol, Moser and Pols draw together work in the field in an effort “to contribute to disturbing the care-technology distinction...[and] similar distinctions too. Care and control; care and economics; care and killing.”<sup>230</sup> In their approach, they insist “on the irreducibility of mixtures” between care and technology, rejecting notions that (warm, loving) care is ‘other’ to (cold, rational) technology, and instead critically examining how caring practices include technology, how technologies depend on care work, and how care is itself “infused with experience and expertise.”<sup>231</sup>

María Puig de la Bellacasa has interrogated care by drawing from feminist work on ethico-politics and affect, arguing for “a vision of care as an ethically and politically charged practice...an affective state, a material vital doing, and an ethico-political obligation.”<sup>232</sup> In contemplating Puig de la Bellacasa’s point that it is important to think about who practices care, from what perspective, and with what expertise and resources, Weiss Evans and Frow note, “paying attention to who has the power or authority to frame or articulate matters of concern is something to be *careful* about.”<sup>233</sup> They point out that what some might see as caring for neglected issues could be interpreted as subversive or disruptive by others who are more concerned with ‘taking care’ of safety and security issues. Introducing the notion of care to this project’s analysis provides a bridge between literature in STS that is more concerned with the machinations of power and exclusion (much of what has been discussed so far in this

---

<sup>228</sup> Annemarie Mol, *The Logic of Care: Health and the Problem of Patient Choice* (London, New York: Routledge, 2008); Annemarie Mol, Ingunn Moser, Jeannette Pols (eds.) *Care in Practice: On Tinkering in Clinics, Homes and Farms* (Bielefeld: Transcript, 2010); María Puig de la Bellacasa, “Matters of care in technoscience: Assembling neglected things,” *Social Studies of Science* 41, no. 1 (2011): 85-106; María Puig de la Bellacasa, “‘Nothing comes without its world’: thinking with care,” *The Sociological Review* 60, no. 2 (2012): 197-216; Natalie Gill, Vicky Singleton, and Claire Waterton, *Care and Policy Practices Sociological Review Monograph* (London, UK: Sage, 2017); Gail Davies, Beth Greenhough, Pru Hobson-West and Robert G.W. Kirk, “Science, Culture, and Care in Laboratory Animal Research: Interdisciplinary Perspectives on the History and Future of the 3Rs,” *Science, Technology, & Human Values* 43, no. 4 (2018): 603-621; Weiss Evans and Frow.

<sup>229</sup> Mol, *The Logic of Care*, xii.

<sup>230</sup> Mol, Moser and Pols, 15.

<sup>231</sup> *Ibid*, 14.

<sup>232</sup> Puig de la Bellacasa, “Matters of care in technoscience”, 90.

<sup>233</sup> Weiss Evans and Frow, 134.

chapter) and what is known as the new materialist literature, which embraces the affective and ‘ethico-onto-epistemological’ aspects of knowledge, its production, and its practices, to use Karen Barad’s term.<sup>234</sup> Puig de la Bellacasa writes, “turning a thing into a matter of care doesn’t need to be about technology dominating humans or about ready-made explanations for blaming oppressive powers, but rather about how a sociotechnical assemblage can reinforce asymmetrical relations that devalue caring.”<sup>235</sup>

The WWII British gas tests held by Air Raid Precautions Departments present, then, a unique opportunity to examine such a sociotechnical assemblage. The British Red Cross, itself an organisation that many would identify as a powerful purveyor of care in our contemporary moment, describe the ARP Department as “Caring on the Home Front” in a historical website devoted to the stories of volunteers in the war.<sup>236</sup> Indeed, WWII gas tests were articulated by both the state (and local authorities) as ways of caring for populations, yet equally could be interpreted as ‘devaluing’ care when contemplated as ‘matters of care’ in and of themselves. Such an opportunity would perhaps entail what Puig de la Bellacasa has called turning a ‘matter of fact’ into a ‘matter of care.’<sup>237</sup> Moreover, I will argue that authorities tied the suitability of teargas for these tests to its temporary effects and non-lethality – elements that were entangled with the affective experiences of local populations as well as air raid services (and were represented in media coverage). Sometimes this generated responses to gas use that are starkly different to those found in protests or the media today – for example, excitement, laughter, and community. As such, this thesis provides a case with which to interrogate how care and coercion come together, and how care operates as a legitimating instrument (with a logic that operates differently to the ‘logic of choice’, as Mol explores). It speaks to how there are “specific needs for caring in each situation, instead of...only one way

---

<sup>234</sup> Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Durham, London: Duke University Press, 2007); Donna Haraway, “Situated knowledges: The science question in feminism and the privilege of partial perspective,” in Donna J. Haraway (ed.) *Simians, Cyborgs, and Women: The Reinvention of Nature* (New York: Routledge, 1991): 183–201; see also Nisha Shah, “Gunning for war: infantry rifles and the calibration of lethal force,” *Critical Studies on Security* 5, no. 1 (2017): 81-104, who has recently applied Barad’s ideas to the case of weaponry, specifically the infantry rifle.

<sup>235</sup> Puig de la Bellacasa, “Matters of care in technoscience”, 94.

<sup>236</sup> British Red Cross in partnership with St. John Ambulance, “Air raids”, Caring on the Home Front – Volunteer memories from World War Two. URL: <http://www.caringonthehomefront.org.uk/stories/air-raids/> (accessed 30 August 2018).

<sup>237</sup> Puig de la Bellacasa, “Matters of care in technoscience”; Puig de la Bellacasa, “Nothing comes without its world”.

of caring.”<sup>238</sup> These considerations are perhaps most relevant to the middle empirical chapter of this work, though I think they can offer some considerations elsewhere throughout the project as well, and accordingly I have ‘taken care’ to flag them along the way.

### *Experimentation*<sup>239</sup>

We have almost laid the groundwork for grasping the project’s theoretical engagements and contributions. The historical overview pointed to the extensive role that experimentation has played in research and development programmes around the world. Such experimentation (on humans and animals) has been the subject of a sizeable amount of recent scholarship.<sup>240</sup> It also speaks to the aforementioned theme of ‘orders of subjectivity’, raising questions of what or who becomes a research subject, and where/when/which subjects become more or less noteworthy and legitimate. Examining the aftermath of the South African CBW research programme, Rappert and Gould have argued that more attention has been paid to certain subjects of human experimentation (for example, enemy combatants and political opponents) over others (members of the voluntary South African Defence Force).<sup>241</sup> Thus, some victims – such as those understood as weak compared to an offender, blameless and a stranger to their reproachable offender – are more ‘ideal’ (in a constructed sense) than others.<sup>242</sup> Such interpretations are co-constructed with how experimental ‘problems’ are identified, and how technology is defined and governed. Bonneuil, Joly and Marris have argued regarding the case of genetically modified crops:

---

<sup>238</sup> Puig de la Bellacasa, “Matters of care in technoscience”, 96.

<sup>239</sup> Parts of the following section draw from two chapters I co-authored with Brian Rappert – see Mankoo and Rappert, “Transgressive Chemicals”; Rappert and Mankoo.

<sup>240</sup> Bolton; Evans; Schmidt; Carter; Guillemin, *Hidden Atrocities*; Brian 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* (John Hopkins Press: Baltimore, 2003), 27-52; Brian Balmer, “How does an accident become an experiment? Secret science and the exposure of the public to biological warfare agents”, *Science as Culture* 13, no. 2 (2004): 197-228; Peter Williams and David Wallace, *Unit 731: The Japanese Army’s Secret of Secrets* (New York: Free Press, 1989); Sheldon Harris, *Factories of Death: Japanese Biological Warfare, 1932–1945, and the American Cover-up* (New York: Routledge, 2002); Emma Newlands, “‘They Even Gave Us Oranges on One Occasion’: Human Experimentation in the British Army During the Second World War”, *War & Society* 32, no. 1 (2013): 19-63; Susan L. Smith, “Mustard Gas and American Race-Based Human Experimentation in World War II”, *J. Law Med. Ethics* 36, no. 3 (2008): 517-21; Brian Rappert, Kathryn Smith and Chandré Gould, “Opening Spaces through Exhibiting Absences: Representing Secretive Pasts” in Mankoo and Rappert, *Chemical Bodies*, 77-102.

<sup>241</sup> Brian Rappert and Chandré Gould, *The Dis-eases of Secrecy* (Johannesburg: Jacanda, 2018).

<sup>242</sup> Nils Christie, “The Ideal Victim” in E. Fattah (ed.) *From Crime Policy to Victim Policy*, (Basingstoke: Macmillan, 1986), 17–30.



“Different definitions of the same problem designate different potential victims or concerned publics, construct different plots and precedents, and make links between localized and/or specific controversies to national or international issues that have wider appeal, thus transforming a local malaise into an injustice or scandal as defined by universal values and norms.”<sup>243</sup>

To tie this excerpt to an earlier discussion, we might then consider how the transformations likely to be more successful in such cases are those that are aligned with emerging or established sociotechnical imaginaries.

To situate experimentation within the initial discussion of classification, it often takes place in situations where/when distinctions between what is permitted and necessary and (thinking in terms of co-produced scientific and social order) whose lives count are being actively negotiated and contested. Jeanne Guillemin has shown how justice for captive Chinese prisoners subjected to Japanese human experimentation with CBW in WWII became intimately tied to the legal and geopolitical status of chemical weapons use in the 1946-48 Tokyo Trial.<sup>244</sup> Guillemin highlights how the US delegation to the trial underplayed Japanese CW use – and therefore obscured the suffering of the Chinese victims – in an attempt to maintain a strategic advantage with regard to the CW in the early Cold War. Similarly, I shall show that the function of civil defence gas tests as a form of human experimentation was facilitated by the fact that usual distinctions of ‘domestic’ and ‘military’ were in a state of wartime suspension. The legitimacy of the use of chemicals to protect and experiment with the bodies of British publics was heavily entangled with the geopolitical through Britain’s wartime agenda. Furthermore, I suggest that by thinking with the notion of the ‘population body’ as Balmer has elsewhere, it becomes possible to view these experiments on local populations (and individual bodies) as part of a broader attempt to care for a national population body.<sup>245</sup>

The history of teargas also features instances of more figurative forms of experimentation. To use a secondary example, we might consider whether the Himsworth

---

<sup>243</sup> Christophe Bonneuil, Pierre-Benoit Joly and Claire Marris, “Disentrenching Experiment: The Construction of GM–Crop Field Trials as a Social Problem”, *Science, Technology, & Human Values*, 33, no. 2 (2008): 206.

<sup>244</sup> Guillemin, *Hidden Atrocities*; Jeanne Guillemin, “From Reviled Poisons to State Arsenals: The Un(necessary) Proliferation of Chemical Weapons” in Mankoo and Rappert, *Chemical Bodies*, 23-40.

<sup>245</sup> Balmer, “Using the Population Body to Protect the National Body”.

Committee, by classifying CS as a drug, constructed prospective use of CS gas on protestors as potential medical experimentation. Certainly, this classification itself entailed a form of experimental simulation – one that used “observations from the Northern Irish and other geo-political events and [combined] them with experimental data to create predictions of the effects of CS in any situation.”<sup>246</sup> Moreover, Balmer, Spelling and McLeish point out how the evidence used to determine threshold levels of CS exposure was, itself, drawing from experiments on animals as well as reports from Northern Ireland (and elsewhere).

Work in STS has also characterised experimentation as a form of control. Drawing from Hans-Jörg Rheinberger’s work on the epistemology of experimentation, Stilgoe suggests that experimental systems are ways of “reducing complexity and controlling uncertainty. They are manifestations of what is known but designed to generate new surprises...failure and error are accepted as part of the process, although an experienced experimenter will seek to control their bounds.”<sup>247</sup> Examining the politics of experimentation in the context of growing efforts in geoengineering, Stilgoe uses what he terms a slightly ‘tightened up’ conception of experiment: an experiment “involves the deliberate use or observation of a system in which certain things are controlled in order to measure effects.”<sup>248</sup> Stilgoe argues for a notion of ‘collective experimentation’ (following Latour and others) as a means of democratising experiment, “democratising the asking and answering of the question.”<sup>249</sup> While the cases examined in this thesis are relatively far from democratic, contemplating the tensions regarding why this is the case can be a useful exercise. Balmer has shown, for example, how secrecy operates as a ‘spatial-epistemic’ tool that mediates knowledge about chemical weapons experiments.<sup>250</sup> So too here – what demands in the relevant experimentation obstruct democracy, or rather, devalue democracy? With the unusual case of the teargas tests in WWII, we might ask which conditions of democratisation were fulfilled and denied respectively, and why?

---

<sup>246</sup> Balmer, Spelling and McLeish, 112.

<sup>247</sup> Jack Stilgoe, *Experiment Earth: Responsible Innovation in Geoengineering* (Abingdon, New York: Routledge, 2015), 42; Hans-Jörg Rheinberger, *Toward a History of Epistemic Things: Synthesizing Proteins in the Test Tube* (Stanford, CA: Stanford University Press, 1997).

<sup>248</sup> Stilgoe, 42.

<sup>249</sup> *Ibid*, 48. See also Bruno Latour, “From the world of science to the world of research?” *Science* 280, no. 5361 (1998): 208–209; Ulrike Felt and Brian Wynne, *Taking European knowledge society seriously* (Luxembourg: European Commission, DG for Research, 2007).

<sup>250</sup> Brian Balmer, “A Secret Formula, a Rogue Patent and Public Knowledge about Nerve Gas: Secrecy as a Spatial-Epistemic Tool”, *Social Studies of Science* 36, no. 5 (2006): 691-722.

Conversely, part of Chapter 5 will explore how in some cases the lack of control, and the lack of stable distinctions such as that between non-lethality and lethality, can lead to experimentation. It traces how the deadly outcome of the use of British-supplied teargas in a prison altercation in India led Britain to abandon the development of No. 92 teargas grenades during the 1940s, and begin searching for alternative teargas weapons.<sup>251</sup> Experimentation can therefore be the result of such perceived transgressions, and of messy scenarios that lack order. In this sense, it can be thought of as an act of control (as an attempt to make these things ordered), but also as a demarcation of the limits of what can be controlled. For example, while the need for experimentation is often a reaction to what is perceived by some as a disorderly situation, those individuals and places meant to play the part of subjects in experiments often refuse the role being ascribed to them. In attempting to impose control, experiments often signal the inability of authorities to dictate responses, such that mess and ‘order’ come bundled together. Many experiments fail to live up to ideals of reproducibility and control; others can be understood as intentionally exploratory.<sup>252</sup>

We might also consider how experimentation figures alongside the notion of biopower introduced earlier.<sup>253</sup> Through a biopolitical perspective, Rottenburg examines humanitarian interventions in postcolonial Africa as experiments:

“The exercise of biopower, i.e. governmentality, is realized by a range of technologies that describe and regulate specific populations thus calling into being forms of life that were not known previously. Foucauldian governmentality thus refers to how people are made up by the state...international humanitarian interventions...are tied to conditions that are classified as exceptional and are run like experiments legitimated by these exceptional conditions. Programs are implemented in an experimental way so that lessons can be learned for future interventions. This form of governmentality...makes up people as victims to be rescued by foreign agents; it concentrates on saving lives and upholding human rights...[it] is conceived

---

<sup>251</sup> Feigenbaum also points to this in *Tear Gas*, 64-68.

<sup>252</sup> Harry M. Collins, *Changing order: replication and induction in scientific practice* (Chicago: Chicago University Press, 1992).

<sup>253</sup> It is important to note, however, that we might also think of what counts as ‘experimentation’ as itself being an object of co-production; delineating what counts as an experiment, where and when it begins and ends, who is involved, are also both social and technical. In taking the case of an accident becoming an experiment, see Balmer, “How does an accident become an experiment?”

as a novel form of legitimate domination. It presupposes a state of emergency in humanitarian terms that legitimizes exceptional interventions and calls for urgent measures to save lives.”<sup>254</sup>

The excerpt points to how experimentation can become entangled with notions of care (and coercion) examined in the prior section. Though Rottenburg’s case is topically removed from this study, Chapter 4 will point out how the exceptional circumstances in which gas tests were held (war) similarly led to a programme of national precautions being implemented in an experimental way, in order to learn lessons for future interventions. I will show that these too involved the constitution of (future) British publics – or, rather, the national population body – as something to be rescued and cared for during a state of emergency, with rights to be protected from the enemy, all of which conferred upon gas tests a status of legitimate domination. This project therefore offers considerations on how care and experimentation might also be entwined.

With that, we have covered the chief thematic and theoretical elements and contributions of the project, as well as where it sits within the historical literature on teargas and CW more broadly. The remainder of this thesis will use the aforementioned concepts related to classification, biopolitics and power, co-production, sociotechnical imaginaries, legitimacy, care, and experimentation as ways to explore its central research question: In what ways did actors classify teargas such that it came to occupy its role in British policy as a domestic crowd control technology? In doing so, it also asks: What social orders and judgments were co-produced with these technical classifications and knowledges? How did these forms of classification, and the social institutions that constructed and enacted them, operate as exercises of biopower and legitimation? Whose visions (of what kinds) of scientific and technological futures formed the context of the research programmes that led to the development of teargas for crowd control? How did these particular imaginaries gain broader legitimacy and subsequently shape policy? How do discourses, processes, and institutions of care and experimentation figure in these legitimating sociotechnical assemblages? Finally, what new insights into both STS and the history of teargas can be gained by applying these concepts to the cases here? The next chapter will elaborate on the project’s methods and to some extent its methodology, though the thematic section of this chapter and the early

---

<sup>254</sup> Richard Rottenburg, “Social and public experiments and new figurations of science and politics in postcolonial Africa,” *Postcolonial Studies* 12, no. 4 (2009): 426-27.

discussion of historical sociology have already set out much of my methodology. Following that, it moves to the central empirical section, as three chapters.

## **2 Methods and Methodology**

I shall break down my explanation regarding the project's methods and methodology into two sections: first, gathering my sources, and second, analysing my sources. In doing so, I will also point out the problems posed by trying to conceptually separate these two endeavours: because my analysis of data spoke to the gathering of data, and vice versa. All three chapters used archival sources; Chapter 4 involved the use of newspaper archive sources much more heavily than the other two empirical chapters. The approach throughout the project was therefore not an entirely homogeneous one, the reasons for which I will address in this chapter.

### **Gathering the Sources**

Most of the empirical sources examined for this thesis were declassified archival documents held at The National Archives (TNA) in Kew, United Kingdom. This included correspondence within and between the Colonial Office (CO), the Home Office (HO), the War Office (WO), the Foreign Office (FO), Foreign and Commonwealth Office (FCO), the Air Ministry and Royal Force (AIR), the India Office (IO) and the Cabinet (CAB), as well as circulars, cabinet papers, and minutes and conclusions of cabinet meetings. The dates of these documents approximately span the years of the project's scope (1925-1965). I also examined Hansard reports of the discussions and debates within the House of Commons, which come to prominence toward the end of Chapter 5. Chapter 4 also uses a large number of sources from the British Newspaper Archive's (BNA) online digitised collection, the ProQuest Historical Newspapers archive, the Times Digital Archive, and involved numerous trips to examine local collections at the East Sussex Record Office (ESRO, at The Keep), the Mass Observation Archive (also at The Keep), and archives at Kingston History Centre (both of local newspapers and town council meetings). Finally, though I did not use their archives for primary sources, I travelled a number of times to the Sussex Harvard Information Bank to examine their extensive archive of CBW history and policy documents and secondary sources. This material provided broader historical context for the research.

Given that my research focus was on how, when, why and by whom teargas was first authorised and adopted as a means for controlling crowds in Britain and the empire, archival documents pertaining to its authorisation and use in the colonies were an obvious place to

begin. Notably, in my 2011 MSci dissertation, I had already undertaken some archival research that formed part of the basis for Chapter 3.<sup>255</sup> However, this PhD thesis re-assesses some of the empirical material that featured in my earlier project through alternative, more novel STS perspectives (as discussed in the previous chapter), and situates it within a large amount of empirical material that I had not examined previously.<sup>256</sup> In writing Chapter 3, I further broadened the scope of the documents I examined in both a temporal sense and in a topical sense – examining not only the decision to authorise gas in Palestine (the focus of the MSci), for instance, but also correspondence regarding its authorisation and use across Britain and the empire, as well as discussions about the experimental value of teargas, its manufacture, and its import and export during the interwar period.

In an early stage of the project, I contemplated the value of pursuing oral histories regarding the latter years of my study, but decided against this route because it would most likely be unfeasible and unproductive. Many of the relevant individuals (government officials, or Porton scientists, for example) would likely no longer be alive. Moreover, had they been alive, it was distinctly possible that they would have been unwilling to discuss the topic (due to its potentially sensitive nature). I ultimately determined that this route would require an investment of significant time and effort in exchange for relatively little reward with regard to my research question, and therefore did not pursue it. As such, the project also did not require formal ethical approval, given the sources were all archival.

I will use an anecdote as a means to explain the gathering of both archival and newspaper sources specifically in Chapter 4. During my first year of the PhD, I found that much of the historiography of teargas and CBW gives the impression that Britain had not adopted teargas for use on civilian crowds during the war, except on rare occasions in the colonies and during police sieges both abroad and at home (I was also aware of its use in somewhat limited environments such as gas vans and public gas mask testing chambers during the war).<sup>257</sup> Subsequently, I decided to search the catalogues at the National Archives for references to teargas, riots or chemical use in the colonial empire at this time. However, in my search, I came across a Home Office file – HO 186/481 – titled (in the online catalogue)

---

<sup>255</sup> Mankoo, “Teargas – We haven’t got the foggiest”.

<sup>256</sup> Chapter 3 includes significantly re-worked sections from the MSci dissertation, both empirically (including substantial new archival material) and analytically.

<sup>257</sup> Gabriel Moshenska, “Government gas vans and school gas chambers: preparedness and paranoia in Britain, 1936–1941”, *Medicine, Conflict and Survival* 26, no. 3 (2010): 223-234.

as “FINANCE: Claims for damage arising out of tear gas tests and exercises”. Thinking this perhaps a reference to tests conducted by (and on) military services, or tests at Porton Down (though I wondered why it was not a WO file if so), I nevertheless decided to investigate. To my surprise, the document led me to learn of widespread national teargas use, conducted on public populations – in town squares, shopping centres, high streets, public roads and thoroughfares – by local air raid precautions departments throughout WWII.

I was shocked to have, until then, missed such extensive use of teargas throughout the country, and even more shocked to think that others who might have learned of it had not deemed it significant enough to study in detail on its own terms.<sup>258</sup> I was initially disappointed to find that I could not locate many other files in TNA that discussed the tests, the rationale for them, or how they were monitored, in any great detail. I asked officials working at TNA, as well as various colleagues working on similar topics, whether they knew of more information regarding these tests, only to receive surprised responses in the negative. I deliberated trying a different approach, purchased a membership to the BNA, and began to search for terms like “tear gas” and “gas test” in newspapers published in 1941, especially in the months the few tests mentioned within the original HO document had taken place. To my surprise I found records of not just a few such tests, but hundreds, all over the UK.

I then began to locate and use TNA documents and BNA records in tandem with one another, cross-referencing events, discussions and policy decisions, to determine more details about how the tests were conducted, who was involved in them, where and how they first began, who decided to hold them, and why. In my study of newspaper records, I found that some of the earliest tests to receive coverage took place in Brighton and Kingston (with Brighton often being referred to as the first UK test), and therefore I made trips to their respective local archives. Determining which tests took place first, however, was also a matter of analysis, such that my data gathering and analysis operated hand in hand. Like many others, my research method was iterative; analysis of documents I had gathered led me to locate documents elsewhere (in the ESRO for example).<sup>259</sup> In this respect, Chapter 4 was also

---

<sup>258</sup> *Ibid.* Moshenska mentions a test briefly in his article – when first reading his paper, I had assumed the live test he mentioned was a rare modification of the gas van approach, not part of a regular national programme of similar tests. Now, I realise I had underestimated what he meant by “in other cases”! (*Ibid*, 228)

<sup>259</sup> Alan Bryman, *Social Research Methods*, 3rd edition (Oxford: Oxford University Press, 2008), Chapter 21.



somewhat of a personal experience of historiographical absence, and a subsequent shift to presence through my research. Ultimately, this was also a useful experience, as while researching and writing up the other chapters, I also began cross-referencing events to newspaper records in order to find more detail on or confirm particular events referenced in TNA documents. The anecdote thus encapsulates the spirit of my overall research methodology, which involved pursuing paper trails to particular events or discussion of interest, or even to certain absences or omissions, at which point I would turn to other sources (as such newspaper archives) in order to find further information.

### **Analysis of Sources**

#### *Documents from The National Archives*

The analysis of TNA documents differed slightly from the analysis of documents from the newspaper archives. I located archival files for study through a combination of: online searches (and paper catalogue searches) of TNA's catalogue – both generally and within the relevant governmental departments, recommendations from colleagues or officials at TNA, and through references to other files contained within documents examined. In the online catalogue searches, I used a variety of search terms in order to find relevant documents, such as: 'tear gas', 'teargas', 'chemical warfare', 'non-lethal gas', 'gas tests', 'CS gas', 'CN gas', 'lachrymators', and so on. Appendix 3 discusses the finer details of my approach to cataloguing the relevant entries.

A valuable advantage of studying archival sources lies in how they reveal some of the steps of policy formulation while also highlighting chains of command, how various actors interact over time, and how ideas about teargas emerge with approaches to governance. In adopting a similar methodological approach, Balmer has noted how such archival policy documents “frequently record much negotiation and dispute both before and after the ‘official’ decisions or recommendations are made” such that we can view this process as a flow of decision-making, rather than as decisions being made at particular times.<sup>260</sup> As mentioned already, the minutes attached to files give insight into some of the unofficial interests, concerns and correspondence behind documents. In doing so, they also operate as what Balmer terms “flexible resources” for policy makers, at some points being referred to in

---

<sup>260</sup> Brian Balmer, *Britain and Biological Warfare: Expert Advice and Science Policy, 1930-65* (Basingstoke: Palgrave, 2001), 5.

attempts to constrain actions or promote new actions, at others being ignored or invoked “simply in order to be broken.”<sup>261</sup> These declassified files often contain both draft and final versions of documents. This can be particularly useful in gleaning understanding of actor’s perspectives, concerns, and goals for policy, because edits between the choice of language in draft and final versions of documents provide insight into what language policymakers deem to be the ‘right’ language in official correspondence/documents. Simply studying records such as Britain’s official 1930 interpretation of the GP, for example, may clarify governmental policy stances but it does not reveal the processes by which policy is produced. These documents therefore function as components of governmental “institutional memory”, in turn shaping subsequent policy processes and of events.<sup>262</sup>

However, archival sources also give limited insight in that they only reveal that which policy makers decide to put into writing, rather than shedding light on the conversations that might have been happening at the time. Balmer similarly notes that the nature of such evidence”, which tends to take the form of minutes, notes and memoranda – “can hardly be taken as verbatim or even contextualized accounts.”<sup>263</sup> Many aspects of discussions are not included within these kinds of evidence. Furthermore, in some cases a number of documents within archival files will have been destroyed. There is often no way of knowing what such documents contained, although clues to the contents of these documents may lie in the minutes accorded to them or other documents that reference them. Nor is it possible to know why they were destroyed; the information could have been duplicate, redundant, incorrect, or politically sensitive. In these albeit rare cases, the possibility of following paper trails can be cut short due to such exclusions.

#### *Documents from Newspaper Archives*

As mentioned above, my use of newspaper archives (primarily for the work in Chapter 4) stemmed from an interest in the teargas tests mentioned in a file at TNA. The BNA trawl involved the search terms ‘tear gas’, ‘tear-gas’ and ‘teargas’ within the dates of WWII. Going through the thousands of search results, I used an Excel document to note the results that pertained to teargas usage within the UK, especially within civil defence gas tests

---

<sup>261</sup> *Ibid*, 6.

<sup>262</sup> *Ibid*.

<sup>263</sup> *Ibid*, 5.

and exercises. I downloaded a significant number of these articles (especially detailed accounts of tests or their organisation), and stored them in an archive folder. Within the Excel document, I made a note of the following criteria of each search result: the source, the date of source, the date of the test/exercise referred to, the location of the test/exercise referred to, and made any notes of particular interest (for example if specific street locations, or test times, were given, information about the conducting authorities, outcomes, etc). Often five to ten newspapers would cover the same test (with almost identical if not identical wording); in these instances I did not record the details of every single source to mention the test in the interest of time and efficiency. It need also be noted that my trawls of the BNA archives took place throughout 2016, such that only the records digitised at the date of the searches would have shown up in the searches. Therefore only the records available at that time featured in my Excel database and thus in shaping Chapter 4.

With this Excel table, I was able to:

1. Get a sense of the number of teargas tests that were held across the UK during the War; this numbered in the hundreds rather than just the tens. I was also able to determine when these began in a significant way – or, at least, when coverage of them became commonplace. Equally, I was able to determine when this subsided.
2. Get a sense of where the tests took place around the UK. For example, I cross-referenced the various mentions of gas tests within newspaper coverage to determine the dates and locations of all tests held from the initial Brighton test in February 1941 until the end of June 1941. Using this, I then compiled a crude map using Google My Maps that mapped the locations of gas tests around the UK from February to June 1941 (see Appendix 4).
3. Compile a long form table of newspaper mentions of gas tests during the war years (the number of entries in this are close to 700).

Finally, while I gathered and analysed an extensive number of newspaper sources for Chapter 4 in particular, my intention was not to use them as part of a discourse analysis, content analysis, or an investigation into visual culture - although news values, media, and visual culture obviously played a role in shaping these primary sources.<sup>264</sup> My project is not attempting to make any significant contribution to these approaches; I am not using these

---

<sup>264</sup> Jane Gregory and Steve Miller, *Science in Public: Communication, Culture, and Credibility* (Cambridge, MA: Basic Books, 1998).

sources to argue that a particular media paradigm existed during WWII. Rather, I use these sources (with an awareness that these other approaches exist) to investigate the phenomenon of these gas tests, to contextualise the information found in other archival sources, and to interrogate the construction of public knowledge about gas tests.

In summary, in undertaking my historical sociology of teargas in Britain and the empire I predominantly used policy documents – notes, correspondence, minutes, and memoranda – from Britain’s National Archives, in some cases supplementing this with additional sources from newspaper archives or local archives around the country. Though these documents did not always confer verbatim accounts of events or policy conversations, they did provide valuable and significant insight into what policy makers saw as important (or unimportant) issues, at different times and under different circumstances. They therefore enabled me to construct a cogent interpretation of events regarding teargas technology, though one in which particular contextual events, interests, or actors, would shift in and out of view. The next chapter turns to such a policy story with regard to how the British Cabinet came to authorise the adoption and use of teargas by police forces across the empire during the interwar period.

### 3 Making a Gas of Colonial Control: The Legitimation of Teargas in the Interwar British Empire

This chapter examines how the British Cabinet first came to authorise the use of teargas by police for (colonial) crowd control. The Cabinet gave this authorisation specifically, and only, to police in colonial dependencies as opposed to forces back home in the UK. They initially did so in 1933, authorising police in British Mandatory Palestine to use teargas “in dealing with mobs and riots in cases where it would otherwise be necessary to shoot,”<sup>265</sup> before then moving to permit the use of teargas by police across Britain’s colonial empire. This authorisation took place despite Britain’s ratification of the GP in 1930, which had prohibited “the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices” by signatory nations.<sup>266</sup> From the 1920s and early 1930s, British policy makers had feared that police use of teargas in the colonies would be seen as a contravention of the GP, however by the mid 1930s this sentiment had changed considerably. Policy makers increasingly justified the adoption of teargas on the grounds on humanity, arguing that the chemical was a non-lethal alternative to other forms of force such as shooting.

This chapter interrogates this shift, not just as a historical narrative, but also as an examinable moment for sociological study. I argue that in this process of legitimation British colonial policy makers co-produced a ‘humane’ and ‘non-lethal’ teargas with a system of colonial control that rendered native populations and spaces as bodies and sites for chemical intervention. They bound up the ‘harmlessness’ of teargas, and its transient effects, with normative assumptions regarding its role in the world – its ‘non-lethality’ made it suitable for a role in colonial control given the various advantages this might have for imperial geopolitics. At the same time, this move subjectified colonial bodies as legitimate targets for imperial use of teargas, constructing gas use as an act of both ‘care’ and control, establishing what Edward Said has termed an “order of sovereignty” – and what in Chapter 1, I termed orders of subjectivity – from imperial rulers to colonial populations.<sup>267</sup>

---

<sup>265</sup> TNA, CO 733/248/24, Extract from Proceedings of the Cabinet, 20 December 1933.

<sup>266</sup> Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare.

<sup>267</sup> Said, 45.

Moreover, this examination of the interwar period will reveal how respective contexts of political culture in Britain and America significantly shaped ontologies of teargas and subsequently ideas regarding how it should be used. In the USA, teargas was closely tied up with the mission of the Chemical Warfare Service in peacetime and emerging commercial chemical markets, a product supplied by the CWS and related chemical manufacturers to police forces around the nation (partly with the rhetoric of the Red Scare over communism). On the other hand, in the British context the changing nature of Britain's imperial geopolitics made the conceptualisation and governance of teargas something to be decided by colonial policy makers and governors, who did so at the demand – and drawing from the expertise of – colonial police authorities. Unlike the USA, Britain did not have a significant teargas manufacturing industry. Instead of adopting a more reactive, *laissez-faire* market approach to the question of teargas, British policy makers debated the advantages and disadvantages of gas use until they collectively supported its adoption on the grounds of humanity. In doing so, they furthered a conception of Britain as a 'civilised', technologically advanced, and humane imperial state – adopting a 'we know best' attitude rather than the more pluralistic US mindset. Furthermore, this approach enabled conceptions of humanity and non-lethality associated with teargas to be defined predominantly according to scientific and medical knowledge. The authority that these bodies of knowledge afforded teargas meant policy makers could sidestep underlying issues of inequity, illegitimate power and ideologies of race.

The first part of the chapter examines the status of teargas in Britain and the USA during the early interwar period, particularly around and following the signing of the GP. At this time, Britain maintained that teargas was not to be used for police purposes in the colonies or elsewhere. I then highlight the shift in sentiment toward teargas that occurred in British government in the early 1930s, which led to the Cabinet both authorising teargas for use against crowds in Palestine and for experimental purposes in India by 1933. I then turn to the mid 1930s, when the Cabinet extended their permissions for gas use both to broader applications and to the whole of the empire in general, and examine how policy makers perceived and handled questions regarding public knowledge of gas use. The final part of the chapter examines the early experiments with teargas in the colonies following these Cabinet permissions, attending to how they involved racialised subjectification of colonial populations, and querying the role of scientific and medical knowledge in the construction of the 'non-lethality' and harmlessness of teargas throughout these events.

## The Early Interwar Period: “A Final Argument Against its Employment”

### *Teargas in Interwar America*

As mentioned in Chapter 1, the USA never ratified the GP in the interwar period. Rather, American police forces adopted teargas to combat urban gangster warfare, and as a method of dispersing mobs and dealing with criminals in places of refuge.<sup>268</sup> In 1923, the US Chemical Warfare Service (CWS) was given permission to sell teargas to the National Guard, and assisted private commercial suppliers of teargas throughout the 1920s, such as Federal Laboratories and Lake Erie Chemical Company, who manufactured and marketed these munitions to police departments.<sup>269</sup> A teargas hand grenade was specifically developed for the purpose of civilian crowd control, in addition to the irritants being developed for CW-training purposes (these were CN, a form of teargas, and DM, a vomiting agent).<sup>270</sup> After WWI, the USA devoted significant resources to researching CN. According to Rob Evans, by 1933, Edgewood Arsenal (the US chemical warfare establishment in Maryland) had more experience with CN than any other known agency in the world.<sup>271</sup>

The CWS was a significant lobbying force for chemical weapons research and development, and their peacetime application, throughout the 1920s. Championed by CWS chief Lieutenant Colonel Amos Fries, its efforts included: an extensive PR campaign, repeated requests that the War Department allow police and federal troops to be equipped with teargas, and the aforementioned provision of assistance to private firms manufacturing and selling teargas in the USA. Moreover, former CWS officers and former members of gas services set up many of these firms.<sup>272</sup> During this time, marketing the successful peacetime applications of teargas became an essential part of the survival strategy of the CWS, which initially had little favour with the War Department and suffered huge workforce losses after WWI. By heralding teargas as a valuable new domestic policing technology, the CWS presented its

---

<sup>268</sup> Evans, 263.

<sup>269</sup> Telegram, Adjutant General, for the Secretary of War, to Chief, Chemical Warfare Service, February 12, 1923, Correspondence, Chief CWS; Jones; Julian Perry Robinson, “Disabling Chemical Weapons: A Documented Chronology of Events, 1945-2003” (Harvard Sussex Program, SPRU-Science & Technology Research, University of Sussex, 2003), Annex 5.

<sup>270</sup> M. Furmanski, “Historical Military Interest in Low-Lethality Biochemical Agents: Avoiding and Augmenting Lethal Force,” in A.M. Pearson, M.I. Chevrier, and M. Wheelis (eds.) *Incapacitating Biochemical Weapons: Promise or Peril?* (Lanham, MD: Lexington Books, 2007), 35–66.

<sup>271</sup> Evans, 264.

<sup>272</sup> Faith, “As Is Proper in Republican Form of Government”; Faith, *Behind the Gas Mask*; Jones. Faith also points out that this campaigning contributed to the adoption of lethal gas as a method for administering the death penalty in 1924.

chemical research and development as a necessary and valuable asset to the US Army – and government – in both peace and war. In doing so, they seized the opportunity to both train police forces in the use of teargas and to dispel the public opprobrium toward teargas, which might have been lingering with memories of the War.

A host of military, economic, and political issues thwarted gas disarmament during the interwar period. The CWS lobby significantly influenced the US decision not to ratify the 1925 GP in the interwar period. Furthermore, the USA interpreted the GP to cover only gas use in war, such that police teargas use did not contravene the protocol. While both public opinion and international treaties (such as the GP) condemned the use of chemical weapons, particularly in war, many policy makers agreed that this remained a necessary area of research if nations hoped to retain the possibility of ‘retaliating in kind’ to any power that initiated gas warfare.<sup>273</sup> Nations including the USA, Britain, France, China and the USSR viewed the Protocol as a ‘no-first use agreement’, formally reserving the right to retaliate in kind in the case of its violation by an adversary.<sup>274</sup> Moreover, many gases banned by the Protocol – chlorine, phosgene and hydrogen cyanide for example – had legitimate civilian purposes.<sup>275</sup> Similarly, precursors for the manufacture of war gases – produced and used in many commercial and industrial contexts – were key for the dye, chemical and printing industries. It therefore proved problematic to prevent manufacture of many chemical weapons and their precursors in entirety.

CWS chief Amos Fries was a staunch supporter of gas in general, and believed teargas to be a much more humane weapon than traditional firearms. In his 1919 treatise “The Humanity of Poison Gas”, and 1921 book *Chemical Warfare* (co-authored with Major Clarence West of the CWS Reserve Corps), he contended for the humanity of all forms of chemical warfare: “instead of gas warfare being the most horrible, it is the most humane where both sides are prepared for it, while against savage or unprepared peoples it can be made so humane that but very few casualties will result.”<sup>276</sup> Historian Thomas Faith has argued that Fries’ support for teargas was also inextricably tied with his anti-communist politics, in which

---

<sup>273</sup> Spiers, “Gas Disarmament in the 1920s”.

<sup>274</sup> Matthew Meselson and Julian Perry Robinson, “Chemical Warfare and Chemical Disarmament,” *Scientific American* 242, no 4 (April 1980): 38-47.

<sup>275</sup> Spiers, “Gas Disarmament in the 1920s,” 284.

<sup>276</sup> Amos A. Fries, “The Humanity of Poison Gas,” *Chemical Warfare* 1, no 11 (1919): 1-6; Amos A. Fries and Clarence J. West, *Chemical Warfare* (McGraw-Hill: New York, London, 1921), 13.



teargas might “be a frontline weapon in the war against communist labour agitation.”<sup>277</sup> Fries, and the CWS as a whole, were active agents in the Red Scare of the 1920s, identifying and charting socialist and communist organisations and individuals. The CWS therefore saw teargas as a technology with which it could assert itself as part of the solution to the national threat of communism, yet another way to showcase the organisation’s peacetime value.

#### *Reticence toward gas in Interwar Britain*

Britain, where the horrors of gas warfare in WWI were much closer to home, took a markedly different approach to the idea of using chemical agents for policing during the early interwar period. Wary of damaging public relations and eliciting widespread condemnation for any use of gas, policy makers refrained from exploring the application of teargas in the 1920s, despite the widespread use of teargas in the USA and some degree of support in (and at the least, interest from) both the UK military and government.<sup>278</sup> In 1930, the British policy line was that the GP prohibited teargases; in a February Commons sitting Hugh Dalton, the FO Under-Secretary, stated, “Tear gases and shells producing poisonous fumes are...prohibited under the Protocol.”<sup>279</sup> While the Protocol only formally prohibited “the use in war” of poisonous gases, and not for civil purposes such as domestic policing, British policy makers at this time maintained no doubt that “under existing pledges and as the result of public pronouncements, we are precluded from openly countenancing the use of gas for either military or civil purposes.”<sup>280</sup> However, across the 1930s, British policy began to shift as colonial authorities increasingly entertained the notion of using teargas to disperse crowds and control mobs. This shift culminated in a December 1935 Cabinet Proposal that permitted authorities across the colonies to use teargas without prior reference to the Secretary of State.

The first British policy change approving teargas for crowd control came in Palestine during the early 1930s, which itself became a case that officials pointed to when arguing for police use of gas on crowds throughout the British colonial empire. In the 1935 Cabinet proposal, the policy in Palestine featured as the principal example of a colony that had already adopted the stance of using gas against mobs. Yet prior to this change in Palestine, the

---

<sup>277</sup> Faith, “As Is Proper in Republican Form of Government”, 38.

<sup>278</sup> Advocates included Winston Churchill (Secretary of State for War from 1919-1921, and then for the Colonies in 1921-22) and Sir Henry Wilson (chief of Imperial General Staff). See Shoul.

<sup>279</sup> “HC Debate: Poison Gas”, 18 February 1930, vol 235 col 1170W, Hansard.

<sup>280</sup> TNA, CO 323/1113/13, from J.E. Shuckburgh, 22 November 1930.

Cabinet had approved the use of teargas by experienced police officers in India, solely for the purposes of apprehending criminals brought to bay in a house or place of refuge, rather than for dispersing crowds.<sup>281</sup> This had been prompted by a proposal on 15<sup>th</sup> June 1933 from the Secretary of State for India, Samuel Hoare, who had, in turn, been prompted by a letter from the Government of the Punjab that suggested there would be ‘good reason’ for reviving a similar 1929 proposal to authorise restricted use of teargas.<sup>282</sup> The Cabinet duly and secretly authorised Hoare’s request.

Hoare had expressed “two conceivable points of difficulty” in his proposal: first, “the possibility of retaliation in kind by the criminals,” and second, “the possibility of complications should the use of tear gas, even for internal police purposes, be prohibited by international agreement.” He suggested the first issue be left for the Government of India to decide according to “their practical knowledge of the type of criminal concerned.” He then dismissed the second issue, finding it “almost inconceivable that the Disarmament or any other Conference would seriously consider the complete abolition of the use of harmless gas for internal police purposes or that Governments such as that of the United States would be disposed to entertain such a suggestion.”<sup>283</sup> Notably, Hoare’s conception of teargas as ‘harmless’ equated ‘harmlessness’ with non-lethality and impermanent effect. His demarcation of ‘harm’ neither included indirect ‘permanent’ effects (for example, injuries from stampedes), nor the unpleasant sensory effects of gas. It accordingly rendered colonial populations in question subjects for legitimate intervention on the basis that it was a protective technology. This did not, however, yet negate the uncertainty regarding Britain’s formal position on these international agreements.

### *Requests for Teargas before 1933*

The notion of using gas to quell riots and disperse crowds had in fact been raised with the Cabinet on a number of previous occasions.<sup>284</sup> First, in February 1926, the India Office Military Department asked the WO “semi-officially for the views of the General Staff as to

---

<sup>281</sup> TNA, CAB 23/76/14, Conclusions of a Meeting of the Cabinet, 27 June 1933.

<sup>282</sup> TNA, CAB 24/242/11, Proposal to make a limited Experiment in the use of Tear Gas against armed Criminals in India, Memorandum by the Secretary of State for India, India Office, 15 June 1933.

<sup>283</sup> *Ibid.*

<sup>284</sup> TNA, CAB 24/245/21, Cabinet, The Use of Tear gas by the Police force in Palestine, Memorandum by the Secretary of State for the Colonies, C.P. 301(33), December 1933. Also, Waldren provides more detail on each of these instances.

the use of gas against the North-West Frontier tribes.”<sup>285</sup> The WO informed them that the use of gas was “not recommended, partly on political grounds and partly owing to the unsuitability of the terrain.” Later that year, the government of Southern Rhodesia also enquired as to whether the use of gas in dealing with native rebellions would be permissible, to which the Committee of Imperial Defence responded that, “having regard to existing pledges on the subject, the time had not yet come when Her Majesty’s Government could openly countenance” such action.<sup>286</sup>

The next instance had been regarding use in China in 1927, at the outset of the Chinese Civil War. In this period, Britain had local and municipal (rather than territorial) control of a number of enclaves within China, although these settlements and concessions remained under Chinese sovereignty.<sup>287</sup> During the lead up to the Chinese Civil War that began in August 1927, the Northern Expedition of the Kuomintang (KMT; the Nationalist Party of China) had taken control of Britain’s concession in Hankow (today Hankou).<sup>288</sup> In Cabinet discussions of January 1927, the Secretary of State for Foreign Affairs noted how “a mob at Hankow (probably incited by the Nationalists) had been so violent as to be controllable only by the use of firearms. But the military forces of the South China Nationalist Government were at hand, and it was probable that, if fire had been opened, they would have joined the mob, with incalculable consequences.”<sup>289</sup> With the British settlement in Shanghai and concession in Shamian Island (in Guangzhou, a.k.a. Canton) facing similar situations, policy makers became increasingly concerned with the potential for mob activity and consequent need for mob control. As a result, on 21 January 1927 the Cabinet approved a recommendation of the Chiefs of Staff Sub-Committee that authority should be given for gas to be used in China against mobs, albeit with “very definite instructions as to the circumstances under which it might be employed” and “with the proviso that gas was not to be employed without express authority from home first.”<sup>290</sup> Additionally, the Cabinet acknowledged that the Secretary of State for War was sending “a Gas Unit to China for

---

<sup>285</sup> TNA, CAB 24/196/28, Cabinet. The Use of Gas in the Suppression of Civil Disturbances, Memorandum by the Secretary of State for War, C.P. 228(28), July 1928.

<sup>286</sup> TNA, CAB 24/245/21.

<sup>287</sup> C.F. Fraser, “The Status of the International Settlement at Shanghai,” *Journal of Comparative Legislation and International Law* 21, no 1 (1939): 45.

<sup>288</sup> The Chen-O’Malley Agreement of February 1927 began the process of returning the Hankou concession to Chinese administration.

<sup>289</sup> TNA, CAB 23/54, Cabinet 1(27), Conclusions of a Meeting of the Cabinet, 12 January 1927, 2.

<sup>290</sup> TNA, CAB 24/245/21.

defensive purposes; that he was purchasing gas to send with the unit; but that the gas was not to be employed without express authority from home.”<sup>291</sup>

This authorisation differed from what was later given to Palestine, however, because of this final proviso. There, in contrast to the China case, the Cabinet permitted police to use teargas without prior reference to the Secretary of State. No use was ever made of the authorisation in China, nor did this set a precedent in the ensuing years. In 1928, the Secretary of State for War, Sir Laming Worthington-Evans, circulated a memorandum proposing the use of teargas by British troops for the suppression of civil disturbances in Egypt. However the Cabinet then “inclined to the view that the moment was inopportune for opening the question in any form, although it was a matter which might well be taken up by the Government in office after the next General Election.”<sup>292</sup>

In his memorandum, Worthington-Evans acknowledged, “As this proposal raises the whole question of the use of gas in the suppression of civil disturbances, and as this is to some extent dependent on the chemical warfare policy of [HMG], I have thought it desirable to prepare a paper for the information of my colleagues, dealing with various aspects of this problem.”<sup>293</sup> He went on to identify three “instruments dealing with the prohibition of gas warfare as between nations”: the Hague Convention, Article V of the 1922 Washington Treaty, and the 1925 Geneva Gas Protocol (“which would cover tear gas”). At this time in 1928, Britain had not yet ratified the Protocol, choosing to “adopt a neutral attitude until other Powers have signified their intention, and to ratify only if other Powers do so.”<sup>294</sup> Despite these international agreements, Worthington-Evans perceived that “no undertaking [had] been made by anyone to abstain from the employment of chemical methods in civil war or disturbances,” and maintained a personal view that “the use of gas is a humane and efficient method of warfare, and should be permitted.” He later referred to use of teargas in the USA:

“In the United States of America the use of lachrymators in the control of mobs is an accepted policy, and gas has been used effectively on several occasions. In particular, during the widespread miners’ revolt in the Mingo country the mere threat of the use of gas against 5,000 or 6,000 miners, who had taken possession of the town of Methuen, was sufficient to

---

<sup>291</sup> TNA, CAB 23/54, Cabinet 3(27), Conclusions of a Meeting of the Cabinet, 21 January 1927, 3.

<sup>292</sup> TNA, CAB 23/58/9, Conclusions of a Meeting of the Cabinet, 18 July 1928.

<sup>293</sup> TNA, CAB 24/196/28.

<sup>294</sup> *Ibid.*

bring about a peaceful solution to a dangerous situation, the military troops present not being called upon to take action.”<sup>295</sup>

Obviating the need for the military, and for the use of lethal force, were major reasons for adopting gas in Worthington-Evans’ mind. He felt there had hitherto been no alternative to the use of lethal weapons in dispersing a mob in cases where persuasion and threat of force had “proved insufficient.” Gas would “relieve” officers from “one of the gravest responsibilities they may be called upon to face,” and would “bring about the early dispersion of mobs,” removing the need to bring in the military.

He also identified the use of gas as being particularly relevant for controlling colonial and non-white populations, as in the Indian and Egyptian social and cultural contexts. “In countries such as India or Egypt,” he wrote, “racial and religious animosities are easily aroused, the white population is small in proportion to the potentially hostile crowds, and the latter are likely to be numerous and fanatical. The problem of control under present conditions becomes therefore even more difficult.” This non-lethal chemical force thus had the potential to enable imperial police forces to exert control over colonial populations without resorting to lethal weapons that were “apt to cause heavy casualties, as at Amritsar.”<sup>296</sup>

For Worthington-Evans, the use of gas against mobs in India was “a matter of domestic policy, in which other nations would have no right to interfere,” and instead was far more contingent on “the attitude of public opinion at home.” He believed the solution to this to be public education: “if public opinion...would prefer to accept serious injury and loss of life of either rioters, police or the military rather than countenance the use of non-lethal gas, then steps should be taken to educate the public as to the advantages of the latter.” Egypt, however, presented a more complex scenario. While Britain had formally unilaterally ended its protectorate over Egypt in 1922 with its Declaration of Egyptian Independence, this did not grant Egypt full sovereignty or independence because of its “reserved points” clause (clause

---

<sup>295</sup> *Ibid.*

<sup>296</sup> *Ibid.* This was in reference to the deadly Amritsar Massacre of 13 April 1919, where British troops opened fire upon a crowd of Indian peaceful protestors. Death estimates of the incident numbered up to a thousand, with many more wounded.

3).<sup>297</sup> Amongst other powers, this permitted Britain to maintain its significant military presence in Egypt. Consequently, Worthington-Evans noted that gas “used by the Egyptian police or Egyptian army... would be a domestic matter, but if used by the British forces, it would presumably be held to constitute a reversal of the policy agreed to at Geneva.”<sup>298</sup> This did not deter him from the thought entirely; he deliberated that the “propagandist” might point to “whatever means are used to quell riots in Egypt,” and speculated that the “foreign Powers whose nationals will benefit from such action are unlikely to cry out” while the USA was “unlikely to make any protest” given their adoption of gas. Nevertheless, the overall political risks led him to suggest that gas be utilised “by the Egyptian police or Egyptian army, preferably the former.”

A final point to note in Worthington-Evans’ Memorandum is his list of four arguments in favour of the use of teargas over use of “lethal weapons” to quell riots and insurrections. Worthington-Evans put these forward after another list of five “advantages” of non-lethal gas, which fed into the four arguments. Both of these lists were significant, because they later became the basis on which officials justified the request to authorise gas use in Palestine and the empire as a whole. The four arguments, are listed below, and I have added those related “advantages” of significance in brackets:

- “(i) Gas is temporary in effect, and therefore humane. It leaves no victim to become a martyr and subject for propaganda [an important consideration in Eastern countries].
- (ii) Gas is particularly effective, as it reaches every member of a crowd, whereas the lethal weapon is individual in effect and may hurt the innocent and spare the guilty. [As the instigators of trouble are usually to be found at the back, this is a valuable characteristic]
- (iii) It is economical and can be used effectively by the police, thereby lessening the chances of having to call in the military. [Being non-lethal it can be used at an earlier stage than the bullet and may lead to insurrection being nipped in the bud.]
- (iv) It can be used at an earlier stage of a riot than can the lethal weapon, and lessens the burden of responsibility placed on officers in command of troops called out in aid of the civil power.”

---

<sup>297</sup> Albert P. Blaustein, Jay A. Sigler & Benjamin R. Beede (eds.), *Independence Documents of the World*, Volume 1 (Oceana Publications: Dobbs Ferry, NY, 1977), 204–205.

<sup>298</sup> TNA, CAB 24/196/28.

[(e) The efficacy of its use depends in but a small degree on the numbers of police or troops available.]”<sup>299</sup>

These five points will return later in this chapter when discussing the authorisation of teargas use in Palestine. However, attention must be given here to how Worthington-Evans presented his first point. His first point above was a striking case of co-production in action. His argument for the use of teargas on the basis of humanity co-produced technical qualities – gas being “temporary in effect” – with the social, i.e. the value it had for maintaining imperial power in colonial contexts (“leaving no victim to become a martyr”). Indeed, he made this explicitly clear in his list of advantages, stating that he felt it was “an important consideration in Eastern countries.” Thus, the ‘humanity’ of gas was not simply a quality defined by the temporal physiological effects of the chemical agent, but also the value and effect that these would have for British policy within the context of its efforts to maintain sovereign control over its dependencies.

Two other requests regarding the use of teargas in the colonies came in May 1930. The first was from the High Commissioner for Palestine, Sir John Chancellor, on the 27 May, for “advice and information on the subject of the use of non-lethal gas for police work.”<sup>300</sup> The Colonial Office (CO) responded by clarifying “there is no doubt that under existing pledges and as the result of public pronouncements, we are precluded from openly countenancing the use of gas for either military or civil purposes.”<sup>301</sup> The second involved a more formal discussion with the Cabinet, prompted by a Memorandum by the Secretary of State for India, William Wedgwood Benn. In this document, Wedgwood Benn details the various discussions had within the Punjab Government between 1920 and 1930 regarding the use of teargas.<sup>302</sup> He referred to one particular instance, when the Government of India confidentially brought the question before “a Conference of Provincial Inspectors-General of Police” in January 1929, “who had the advantage, before discussing it, of hearing the views of technical experts.”<sup>303</sup> Subsequently, the Government of India felt “it was desirable to

---

<sup>299</sup> *Ibid.*

<sup>300</sup> TNA, CO 323/1113/13, minute 11, from J.E. Shuckburgh, 22 Nov 1930.

<sup>301</sup> *Ibid.*

<sup>302</sup> TNA, CAB 24/212/3, Memorandum by the Secretary of State for India, The suggested use of tear-gas for the dispersal of mobs in India, 12 May 1930.

<sup>303</sup> *Ibid.*

experiment with gas against dacoits<sup>304</sup> or armed criminals resisting arrest, both as a practical preliminary to a further examination of the possibility of its use against rioting mobs and also as a means of eliciting popular opinion on the matter.” Officials saw the potential for such experimental use on criminals as a means of both testing the technical capacities of teargas as well as the effect its use might have in the sphere of public opinion. Nevertheless, they did not think the information available justified forthwith the adoption of gas to deal with “riotous crowds or passive resisters,” and had not taken “actual steps” in that direction at the time of Wedgwood Benn’s memorandum.

In his memorandum, Wedgwood Benn noted how he was “being pressed by Parliamentary questions, in particular one which Mr Churchill proposes to put, as to the use of tear-gas in the dispersal of mobs.”<sup>305</sup> He, however, suggested that the Cabinet should reply to such questions by saying that the matter “had been considered and the Government declines to make use of this weapon.”<sup>306</sup> He gave six reasons to the Cabinet as to why teargas should not be used, which are summarised below:

1. “It might be urged” that the use of any form of gas for such purposes would contravene Article V of the Five Power Treaty (Washington Treaty).
2. The successful use of teargas depends on favourable wind conditions; it would likely penetrate houses and among people, notably women and children, who had nothing to do with the disturbance.
3. It might be ineffective under unfavourable conditions such that police would have to resort to rifle fire.
4. The manufacture of teargas for use against mobs might easily lead to counter-manufacture by “revolutionaries.”
5. “Whereas it is true that rifle fire is frequently fatal and destroys innocent parties, the number of casualties is limited, whereas by the use of teargas the whole crowd is affected whether concerned in the disorder or not.”
6. The increased national and international interest in Indian affairs, particularly from the United States. The use of teargas would “produce a strength of moral disapprobation,

---

<sup>304</sup> ‘Dacoit’ was a colloquial Indian English word used to refer to bandits; it is an anglicised version of a Hindustani word.

<sup>305</sup> TNA, CAB 24/212/3.

<sup>306</sup> TNA, CAB 23/64/4, Conclusions of a Meeting of the Cabinet, 14 May 1930.



which, whether justified on technical grounds or not, appears to me to be a final argument against its employment.”<sup>307</sup>

In 1930, Wedgwood Benn felt teargas was too politically contentious, too unpredictable, and only effective in particular circumstances, and was therefore unsuitable for the purposes of crowd control. Yet by 1935, and even 1933, officials no longer saw these as legitimate reasons against the adoption of teargas. In fact, some of these points – such as point 5 – were instead interpreted as advantages, in line with Worthington-Evans’ 1928 arguments for the use of teargas. Where Wedgwood Benn felt that the use of gas was problematic because it risked affecting more of those not involved in the disorder, Worthington-Evans saw this ability to reach every member of a crowd in a non-lethal capacity as an advantage, particularly given “the instigators of trouble” were usually “found at the back.” Thus, Worthington-Evans’ and Wedgwood Benn’s respective arguments for and against gas use reflect two markedly contrasting constructions of teargas, its advantages and disadvantages and effects. Wedgwood Benn’s approach upheld firing on crowds, even though it was “frequently fatal and destroys innocent parties” on the basis that police had greater control over who would be affected. Worthington-Evans, on the other hand, argued for the use of non-lethal force because it could reach “every member of the crowd” without high risk of loss of life, suggesting that use of chemical force upon any less culpable members was acceptable due to being temporary in effect (or, by taking every member of a crowd as guilty to some extent).<sup>308</sup>

This observation is not to argue for one approach over the other, but rather to demonstrate how judgments about what kind of force was acceptable to use on whom were contingent on presumed technical knowledge (about teargas), co-produced with social order (geopolitical needs of the empire, notions about race, ideas regarding innocence/guilt). At stake in these judgments – judgments made by British imperial officials – were vital aspects of human life: decisions that determined who would live and who would die, who was a criminal and who was innocent, who was a legitimate target for force. Teargas indeed presented a way for colonial police to deal with crowds before resorting to shooting and potentially killing.

---

<sup>307</sup> TNA, CAB 24/212/3.

<sup>308</sup> This bears striking similarity to the effect of the Himsworth Report’s ‘weapons as drugs’ approach to CS, which constructed entire crowds as acceptable targets for CS use on the grounds of drug safety. See Balmer, Spelling and McLeish.

However, officials arguing for its adoption saw it as a way of consolidating British sovereign power rather than solely softening power in an altruistic sense. Worthington-Evans' arguments effectively made teargas a solution for the management of imperial control, constructing it as a tool to enforce social orders of sovereignty (of Western officer over colonial subject) and subjectivity. The enactment of these constructions – the means to choose more 'lethal' or less 'lethal' technologies (firing or gas, for example) – would lie in the hands of colonial police officers who, equipped with a broadened palette of technologies of force, embodied the 'civilised' apparatus of the imperial state while enabling greater police control of potential scenarios of security. Nonetheless, in their May 1930 meeting, the Cabinet adopted Wedgwood Benn's position as the official opinion of the Government: "the use of such a weapon as tear gas would produce a strength of moral disapprobation which, whether justified on technical grounds or not, provided a final argument against its employment."<sup>309</sup>

### **A Shift in Sentiment, 1930-1933: the 'Humanity' of Teargas**

The League of Nations granted Britain a mandate over Palestine in 1922, coming into effect in September 1923 and remaining in effect until 1948.<sup>310</sup> Prior to and during this period there was considerable tension within the colony between Palestinian Arabs and immigrating Jews as well as discontent with British rule, leading to numerous instances of rioting.<sup>311</sup> As mentioned in the previous section, in 1930 the High Commissioner of Palestine, Sir John Chancellor, wrote to the CO for advice and information on the possibility of using non-lethal gas in police work.<sup>312</sup> While his request was declined, two points of recurring significance surfaced in his request. The first was his argument that teargas should be used on the grounds of humanity, which Worthington-Evans had raised with his 1928 Memorandum.<sup>313</sup> This argument had featured in early US policy discussions, and became an on-going rationale for

---

<sup>309</sup> TNA, CAB 23/64/4, Conclusions of a Meeting of the Cabinet, 2.

<sup>310</sup> Walter Laqueur, *The Israel-Arab Reader* (New York: Bantam Books, 1976), 34–42.

<sup>311</sup> See "Correspondence with the Palestine Arab Delegation and the Zionist Organization," Cmd. 1700 (London: HMSO, 1922) for records of post-WWI communication with the British Secretary of State that includes expression of Arab dissatisfaction with various articles within the proposed governmental scheme. See "Palestine Royal Commission: Report," Cmd. 5479 (London: HMSO, 1937) for the Royal Commission's summary of the colony's historical background, the operation of the Mandate, and political tensions and rioting up to 1937.

<sup>312</sup> TNA, CO 323/1113/13, minute 11, from J.E. Shuckburgh, 22 Nov 1930.

<sup>313</sup> *Ibid*, from Williams, 7 Nov 1930.

the use of teargas in civil disturbances.<sup>314</sup> The notion of chemical warfare in general as a more humane alternative to conventional forms of warfare was a theme permeating much of the military literature of the 1920 and 1930s. This was rooted in the premise that new technological advances were inherently more efficient, effective and suited to their purposes than old technologies.<sup>315</sup> Belief in the humanity of gas came in part from a faith in scientific progress and the idea that a more scientific weapon was a more humane weapon.<sup>316</sup> For these advocates, teargas had the capacity to re-determine the social norms of policing, and even warfare.

The military strategist Major-General John Fuller argued vehemently for the humanity of gas (not solely teargas), and its important role in war as a weapon of demoralisation rather than lethality.<sup>317</sup> For militarists like Fuller, gas represented the ‘progress’ of war, and deserved a place in future wars. Citing statistics from WWI to justify his position, Fuller claimed that 27.3% of the total US wartime casualties were due to gas and that a mere 1.87% of these were fatal.<sup>318</sup> These militarists were accompanied by support from some of the scientific community, most prominently the biologist JBS Haldane.<sup>319</sup> Still, those sceptical of this approach, such as peace and women’s rights activist Elvira Fradkin, remained dissatisfied with this appeal to statistics (pertaining to battlefield casualties) on the grounds that it was rendered irrelevant by the possibility of a mass civilian attack: “Suppose that your beloved London is drenched in a surprise night attack with some mustard gas and Lewisite...is there any choice

---

<sup>314</sup> National Archives, Washington, D.C., Correspondence of the Chief of the Chemical Warfare Service, 1918-42, Records of the Chemical Warfare Service, Record Group 175, entry 1 (hereafter Correspondence, Chief CWS). Memorandum, William L. Sibert to Chief of Staff, November 3, 1919. The “Correspondence, Chief CWS’ archives cited here are derived from Jones, “From Military to Civilian Technology.”

<sup>315</sup> c.f. David Edgerton, *Shock Of The Old: Technology and Global History since 1900* (London: Profile Books, 2011); B.H. Reid, “Gas Warfare: The Perils of Prediction,” in D. Carlton and C. Schaerf (eds.), *Reassessing Arms Control* (London: Macmillan, 1985), 143–58.

<sup>316</sup> Hugh R. Sloten, “Humane Chemistry or Scientific Barbarism? American Responses to World War I Poison Gas, 1915–1930,” *The Journal of American History* 77, no. 2 (1990).

<sup>317</sup> J.F.C. Fuller, *The Reformation of War* (London: Hutchinson & Co., 1923); J.F.C. Fuller, *The First of the League Wars* (London: Eyre and Spottiswoode, 1936).

<sup>318</sup> Fries and West; J.F.C. Fuller, “The Development of Scientific Warfare” (Two lectures, Royal Air Force Staff College, July 12, 1922); B.H. Liddell Hart, *Paris, or the Future of War* (London: Kegan Paul, Trench, Trubner & Co., 1925); Liddell Hart, *The Remaking of Modern Armies*; H.F. Thuillier, *Gas in the Next War* (London: Geoffrey Bles, 1939).

<sup>319</sup> Haldane.

for the seven or eight odd millions huddled in that great metropolis between life and death?”<sup>320</sup>

Historian Hugh Slotten, in an analysis of American responses to gas in WWI, contends that these opposing perspectives on the use of gas formed a cultural ambivalence – “ambivalent sentiments of fear and hope, dread and fascination, anxiety and optimism” – that represented “divergent interpretations of the morality of poison gas or the social role of modern science”.<sup>321</sup> He argues that this ambivalence led to a social divide formed with scientists and the military on one side, and peace activists, religious groups, humanists, women’s groups and even some politicians on the other. The authoritative SIPRI (Stockholm International Peace Research Institute) account of popular attitudes to CBW in the interwar period suggests that these divergent interpretations were also widely shared by the general public in both the USA and Britain. It notes, those “who could recall anything of the wartime publications on CW might have adopted any one of a number of assessments: gas as a human weapon, gas as a terror weapon, gas as just another weapon as horrible as any other.”<sup>322</sup> Yet, in the differing cultural contexts of the USA and Britain, these ambivalences led to notably unique conceptions of the place of teargas in society and how it should be governed. With such a range of opinions, there remained a reticence amongst British policy makers toward adopting gas for operations abroad.<sup>323</sup> Shoul has argued that, throughout the interwar period, the concept of using any gasses for military purposes retained a stigma that was deeply engrained in the minds of the British public with the memories of the gas atrocities of WWI trench warfare, and that this led to the British teargas industry falling significantly behind that of the United States.<sup>324</sup>

Drawing from Jasanoff’s work on civic epistemologies, we might consider how political culture in the USA uniquely shaped the relative speed and ease with which teargas became a technology for civil policing there during the interwar period, as well as the place of teargas in society. The CWS brought teargas to the police market as a lucrative opportunity to generate capital through its use by police for crowd control. As such, the question of teargas

---

<sup>320</sup> E.K. Fradkin, “Chemical Warfare- Its Probabilities and Possibilities,” *International Conciliation* 248 (1929): 149–50 [in criticism of Liddell Hart].

<sup>321</sup> Slotten, 496.

<sup>322</sup> Robinson and Leitenberg, 231–267.

<sup>323</sup> Edward M. Spiers, “Gas and the North-West Frontier,” *Journal of Strategic Studies* 6, no. 4 (1983): 94–112.

<sup>324</sup> Shoul.

adoption was not one centred upon whether use entailed a breach of public trust or rights, but whether teargas would find a place in the free market. It was up to individual police forces to choose whether teargas was valuable for them – and worth the money spent – the market therefore dictating whether gas would prove to be a legitimate technology for civil society. Within that context its use would still be ‘open’ to dispute from citizens – it remained to be seen whether legal cases from citizens would deter police forces from its use, for example.<sup>325</sup> Moreover, the US government never ratified the GP in the interwar period because it interpreted the various international treaties of the 1920s as prohibiting gas in war but not policing. As such, it was thereby left to industry, the CWS, and police departments to determine the place of teargas in civil society.

By contrast, the British approach to teargas can be read as more ‘communitarian’, in which knowledge-making was negotiated according to the consensus of particular experts and stakeholders, and established through empirically demonstrable practices. The British reticence toward teargas in the early interwar period reflected a general consensus amongst British officials that international treaties and public opinion would not allow police use of teargas, a consensus which policy makers, as elected officials, felt they had the responsibility to uphold. However, as empirical evidence of the efficacy of gas emerged from cases in the USA, and as colonial policy makers struggled to maintain control in their dependencies, the demonstrably ‘non-lethal’ effects of gas began to feature in discussions (in the CO, colonial governments, and colonial police) about the legitimacy of teargas as a means of crowd control. Authorising the use of gas in colonial contexts, but not at home, helped to shelter these expert discussions from the scrutiny of public opinion at home, as did the secretive nature of many such deliberations. Moreover, the imperial “order of sovereignty” that gave power to British officials over colonial populations constructed these populations as uninformed, uncivilised subjects, rendering the role of teargas legitimate in the empire but not at home. The empirically demonstrated ‘non-lethality’ of teargas in fact enabled policy makers to provide what they believed was the ‘civilising’ service of imperialism to those that they believed required it.

Thus, British officials needed to find a way to empirically distinguish teargas from

---

<sup>325</sup> See also Sheila Jasanoff, “Taking Life: Private Rights in Public Nature,” in Kaushnik Sunder Rajan (ed.), *Lively Capital: Biotechnologies, Ethics, and Governance in Global Markets* (Duke University Press: Durham and London, 2012), 155-183.

other military gases to address their aforementioned concerns. This was effectively realised through the conception of teargas as a form of humane, non-lethal force.<sup>326</sup> With these ideas, policy makers could point critics to discrete features that demarcated gas as something legitimate for crowd control – maintaining a commitment to empiricism with a rhetoric similar to that of “seeing is believing...and what you see is what you get.”<sup>327</sup> And so, while colonial officials began to search for finer ways of managing imperial control, they began to contrast the ‘humane’, temporary, and non-lethal nature of teargas with the inhumanity, permanence, and lethality of shooting. For Britain, teargas was both a technology suited for the demands of preserving power in the empire, and an example of how Western technology and knowledge enabled more moral, humane, and progressive forms of governance. No longer was it just one of many abhorrent weapons of chemical warfare.

#### *Bringing US Policy into the British Colonial Model*

Following Chancellor’s letter in 1930 enquiring about police use of teargas, the CO made enquiries with US police departments for information on US policies toward teargas. On hearing of the High Commissioner’s request, the Commissioner of the Metropolitan Police in London stated that his force did not use gas, but that the New York Police might have information.<sup>328</sup> The USA had experienced numerous civil strikes and violent riots in the early post-WWI period, and police departments discussed the use of teargas in handling these civil disturbances from as early as 1919.<sup>329</sup> Successful field tests of teargas grenades at Edgewood Arsenal, the CWS’s chemical warfare production facility in Maryland, garnered recognition for the potential application of the technology in foreign countries, and large-scale demonstrations of riot gas to police departments were met with popular support.<sup>330</sup>

By the late 1920s, the regular use of teargas throughout the USA provided an entry point for British colonial officials to discuss the possibilities the technology might have for police departments in their dependencies. The American cases gave them an opportunity to

---

<sup>326</sup> TNA, CO 733/248/24, A.Wauchope to P.Cunliffe-Lister, November 1933.

<sup>327</sup> Jasanoff, *Designs on Nature*, 256.

<sup>328</sup> TNA, CO 323/1113/13, 16 June 1930.

<sup>329</sup> Correspondence, Chief CWS. C.W.W., letter to the editor, *New York Times*, 31 July 1919; also A. D. Porter to William L. Sibert, August 16, 1919,

<sup>330</sup> Correspondence, Chief CWS. Memorandum, W. J. Taylor to Amos A. Fries, August 22, 1919; Correspondence, Chief CWS, *New York Times*, July 20, 1921; July 23, 1921; Fries; W.A. McGarry, “Philadelphia’s Tear Bombs and Mobs,” *Scientific American* 125 (1921): 197.

point to concrete empirical examples of the non-lethal nature of teargas use to control crowds. In other words, they could, rhetorically at first, substitute instances of US teargas usage into a colonial context to serve as a heuristic or thought experiment about its efficacy for imperial crowd control. In doing so, they hoped that teargas would retain at least some of the same effects and capabilities (its non-lethality, ability to disperse crowds, and so on) it supposedly had in the USA across international, and specifically colonial, contexts. However, scholarship in science studies has demonstrated that uncertainties in a given policy process, and the associated methods of dealing with such contingencies, cannot readily be assimilated cross-culturally.<sup>331</sup> Rather, the properties ascribed to technologies (such as their effects and uncertainties) are contingent on their social and cultural context, with institutionalised methods of evaluating knowledge varying from one society to another.<sup>332</sup>

Thus, while British officials did draw from American cases to provide legitimacy for the use of gas in the colonies, the imperial political culture shaped a version of ‘teargas’ – and ‘non-lethality’ – unique from their US counterparts. Where British policy makers conceived of teargas as a form of non-lethal force exclusively suited to controlling colonial populations (and not those at home), no such distinction between domestic use at home and use in dependencies abroad existed in the USA. Rather, as mentioned earlier in this chapter, US police forces adopted gas to tackle the perceived spread of communism and deal with labour strikes. In that context, it was populations within the American national body who were targets for tear-gassing (in contrast to colonial populations outside of the British identity being targets) – whether communist sympathisers, protesting labourers, or criminal gangs. A more market-orientated, and pluralistic knowledge making culture thus provided the backdrop for the ‘humane’ character of teargas that emerged in the USA, championed by the chemical industry, the CWS and individual police departments. In Britain, on the other hand, the ‘humanity’ of teargas as a domestic technology emerged in the context of colonial governance, through negotiated discussions between policy makers and police authorities. These individuals generally understood teargas as an extension of ‘civilising’ power of the imperial state, a means of care and protection of populations (from more lethal alternatives).

---

<sup>331</sup> Sheila Jasanoff, “Acceptable Evidence in a Pluralistic Society,” in D.G Mayo and R.D. Hollander (eds.) *Acceptable Evidence: Science and Values in Risk Management* (Oxford University Press, 1991), 29–47.

<sup>332</sup> Sheila Jasanoff, *Designs on Nature*.

The British Consulate-General responded to Chancellor's 1930 enquiry about police use of teargas with a memorandum from the Boston Police Commissioner, who stated that his force had only been equipped with teargas bombs for the previous 8 years, and that the Massachusetts State Prison (and some banks) had also been equipped with teargas bombs, gas 'billies' and gas guns.<sup>333</sup> He went on to express that "these gas weapons, properly manipulated will do the work claimed by the promoters."<sup>334</sup> The CO drew from this rhetoric of successful gas use in the USA to consider potential use in the colonies, and sought to "get together all available info on this subject, as it seems quite likely that at some later date we (possibly in alliance with IO) may wish to try to get the Cabinet to reconsider."<sup>335</sup> One official stated, "There seems a lot to be said for the use of gas – especially on grounds of humanity!"<sup>336</sup> The sensitivity of the Palestinian political milieu also surfaced in the correspondence. Officials expressly made "discreet enquiries" in America "without mention of Palestine", for fear of coming up against Jewish influences.<sup>337</sup>

### **India, 1933: The Authorisation of Teargas for a Limited Experiment**

Here we shall return to the 1933 proposal submitted to the Cabinet by the Secretary of State for India, Samuel Hoare, mentioned in the early pages of this chapter. Hoare circulated with the Cabinet a proposal that he had received from the Government of India, requesting that the Government of the Punjab be "authorised to make experimental use of tear-gas for police purposes, within a limited field, in situations such as arise when armed criminals are brought to bay in a house or place of refuge."<sup>338</sup> He circulated their letter with the Cabinet, along with its enclosures. In their letter, M.G. Hallett, Secretary to the Government of India, acknowledged the 1928 request for teargas that had been "abandoned...on the ground that it might raise embarrassing problems for [HMG]." Since then, however, he explained that they had received suggestions for the use of gas against

---

<sup>333</sup> TNA, CO 323/1113/13, Memorandum, From E.F. Gray to British Embassy, Washington, 11 August, 1930.

<sup>334</sup> *Ibid*, Article 4. For examples of gas gun and gas grenade advertisements, see attachments within TNA, CO 323/1504/14 and CO 323/1592/64.

<sup>335</sup> TNA, CO 323/1113/13, Minute 8, From H. Beckett, 5 November 1930.

<sup>336</sup> *Ibid*; TNA, CO 323/1113/13, Minute 8, From Wilkins, 10 November 1930.

<sup>337</sup> TNA, CO 323/1113/13, From H. Beckett, 23 June 1930.

<sup>338</sup> TNA, CAB 24/242/11.



riotous crowds from both the Delhi Chief Commissioner and the Government of Bombay. They had refused these on three grounds:

- “(i) the consequences of the use of gas against mobs were unknown, and it might result in disastrous stampedes and panics;
- (ii) it was not likely to be viewed favourably by public opinion in England and in India; and
- (iii) its use was definitely opposed to the policy of [HMG].”<sup>339</sup>

The first point is particularly notable, in which Hallett recognised the uncertainties and unknowns of gas use, highlighting possible harmful knock-on effects it might have in certain contexts (fleeing crowds). In this respect, the Government of India had yet to comfortably align the view that teargas was humane and non-lethal with uncertainties and tensions surrounding the contextual contingencies of its use. However, Hallett went on to note, “there have been indications that public opinion in India, including opinion not extraordinarily favourable to Government, may be less opposed than had been anticipated to the use of tear gas for the purpose of dispersing crowds.”<sup>340</sup> In support of this, he referred to a Bombay Municipality appointed Committee who had enquired “into the alleged police excesses during the last civil disobedience movement” and “suggested that tear gas would have been preferable to lathis [batons] as a means of dispersing non-violent crowds.” In addition, he included “a typical extract from the Press,” a passage from the *Lahore Tribune*:

“We have...no hesitation in saying that the decision of the Government will be generally regretted in this country. The frequent use of lathis or firearms for dispersing crowds is responsible for much of the bitterness which prevails between the people and the police in India; and the broken limbs, the serious and not unoften fatal injuries...as well as the prolonged controversy whether the force used on a particular occasions was justified by the requirements of the situation...can all be avoided by the use of the tear gas. There can be no manner of doubt that the dispersal of an unlawful assembly by use of the gas is more humane than its dispersal by the lathi or the rifle...The police in the United States and other countries...have had no difficulty in handling it; and we have no reason to believe that the police in India would not be able to use it with equal effect and ease after a little training. It is

---

<sup>339</sup> *Ibid*, 1-2.

<sup>340</sup> *Ibid*, 2.

also an admitted fact that the use of tear gas against a crowd leaves no injurious after-effects.”<sup>341</sup>

Taking teargas to be a humane form of force with no permanent harmful effects, the *Tribune* framed its use as a dependable, non-lethal, yet more effective method to dispersing crowds than firearms or batons. They even went so far to suggest that the use of gas might negate any controversy whatsoever about justified use of force. Hallett’s letter therefore demonstrated to Hoare a potential shift in both public consensus (the *Tribune*) and expert opinion (the Bombay Municipality Committee) on teargas, and linked these developments with a potential re-evaluation of the governance of teargas in colonial India. However, Hallett still clarified that “the Government of India do not wish to raise the question of using gas for the dispersal of crowds,” which was in their opinion “open to the objection given at (i).”<sup>342</sup> Indeed, while a considerable degree of consensus for the use of teargas on crowds may have been developing amongst officials and the public, the potential consequences of gas had yet to be empirically demonstrated, which deterred the Government of India from pursuing the question.

Hallett then noted that the Punjab Government were not in fact requesting teargas for these purposes. Their request stood “on a different footing,” instead relating “to the use of gas only as an experimental measure against armed criminals brought to bay in a house or other place of refuge where their capture cannot be effected by the police without risk of serious risk of casualties.”<sup>343</sup> By contrast, in such occasions, the Government of India felt the use of gas was “unobjectionable” and “unlikely to raise any public outcry if indeed it does not earn public approval.” They noted a January 1933 Conference of Inspectors-General of Police that had expressed the use of teargas fired from guns or pistols in “searching houses for terrorists, arms or explosive substances.”

Consequently, the Government of India sought Cabinet approval for the Punjab Government to experiment with what they called “the American weapon” – the Lake Erie Chemical Gas Company Long Range Field Gun (for teargas) – in “experiments designed to reduce the hazards to which the police in India are constantly exposed.” Hallett enclosed the details of the proposed experiment. This was actually a revival of a December 1929 proposal,

---

<sup>341</sup> *Ibid*, 3 (Extract from the “Tribune,” Lahore, 5 July 1931).

<sup>342</sup> *Ibid*, 2.

<sup>343</sup> *Ibid*.

and the Punjab Government were careful to clarify that they had “no intention of using the gas, even experimentally, for the dispersal of crowds either in streets or in the open.” Rather, they noted, “experienced police officers” believed that “it could be used effectively in situations such as arise when armed criminals are brought to bay in a house or other place of refuge where the police armed in the ordinary way cannot come to close quarters and finish off the encounter without incurring or risking casualties disproportionate to the object in view.” With this, they detailed two recent cases that might have benefited from such an opportunity. In the first, two police were injured trying to apprehend a group of ‘dacoits’ [an anglicised term relating to the Hindustani word for bandits] in a house. One of the bandits was shot dead during the altercation, and police had to set the house on fire to force the other bandits into the open. In the second case, three constables and a landowner were shot by an armed convict trapped in a house, two casualties of which occurred during attempts to set fire to the house.

Hoare was suitably satisfied with these proposals, and suggested the Cabinet approve the “limited experiment,” the reports of which would be submitted to him for examination. The Cabinet subsequently approved the experiment in a meeting on 27 June 1933, subject to “further consideration of the possibility of retaliation in kind by criminals” and Hoare receiving a full report of the experiment.<sup>344</sup> During the meeting, Home Secretary John Gilmour notably “reminded the Cabinet that this question might arise later in connection with Police measures at home. There had been experiments with tear-gas which tended to show that in certain cases, comparable, for example, with the Sydney Street affair, the use of this weapon might avoid loss of life.”<sup>345</sup>

The limited and experimental nature of the gas use in India was thus an opening with which both policy makers and police could empirically test some of the potential applications of teargas. Witnessing a shift in both expert approval and public opinion, British officials (in the Cabinet, the IO, and the HO) saw the limited experiment in the Punjab as an opportunity to explore the possibility of chemical force in policing. They nonetheless maintained a distinction between this limited experimental use and that of use against crowds, on the basis of a lack of knowledge of the possible consequences of using gas on mobs. Moreover, using gas for the first instance – against armed criminals – had a comparably low risk of affecting

---

<sup>344</sup> TNA, CAB 23/76/14, “Conclusions of a Meeting of the Cabinet,” 27 June 1933, 14.

<sup>345</sup> *Ibid.*

innocent civilians while enabling police to control criminal behaviour. This distinction is also apparent in Gilmour's suggestion that the experiment in the Punjab might inform discussions about using gas for similar purposes (but not those for crowd control) within Britain. Officials felt that these two types of application, though related, should be considered separately, each necessitating unique considerations with regard to governance. That said, later in 1933 the Government in Palestine did reference the approval of the limited experiment in India in their successful request that the Cabinet re-evaluate its position on the police use of gas on crowds and mobs.

One of the first experiments in India took place in the Ferozepore District of Punjab, on the 1 June 1934. The Government of India deemed it "a complete success", that did not arouse any "unfavourable comment in the Indian-owned press."<sup>346</sup> This involved the Punjab police using teargas against two armed criminals who were entrenched in a house from which they were shooting and throwing bombs at the police. The police fired several teargas cartridges into the house, and this eventually led to the surrender and arrest of the two criminals.<sup>347</sup> Police reports of the incident noted, "it was impossible to enter the rooms of the house without a gas mask...the whole house and courtyard was saturated with tear gas...it was uninhabitable for three days following."<sup>348</sup> These also stated, "experimenting on dangerous criminals, who know if arrested, the gallows will be their fate, is very different to experiments on the parade ground." In doing so, the police acknowledged the status of criminals as experimental subjects (indeed, they tied the legitimacy of the criminals as experimental subjects to their identity as criminals), though they saw the experiments as "fraught with great danger" compared to those on the parade ground. Ironically, in these circumstances teargas was being used for its non-lethal properties to apprehend individuals that, on being caught, would be sentenced to death anyway. Thus, in this scenario, the legitimacy of non-lethal force did not derive from its distance from lethality, but from the fact that lethal force was in fact an option for police. Moreover, the 'experiments' were effectively still police operations, functioning more like field trials in which gas weapons were being used for the first time.

---

<sup>346</sup> TNA, WO 32/3519, C.F.V. Williams to His Majesty's Under Secretary of State for India, 30 August 1934.

<sup>347</sup> *Ibid*, Use of tear gas, Superintendent of Police, Ferozepore, to Deputy Inspector-General of Police, C.I.D., Punjab, 12 June 1934.

<sup>348</sup> *Ibid*.

In summarising the success of the experiment, reports included the following instructions: “(a) Tear gas should be brought into action as soon as possible...(b) Use the tear gas plentifully. Drench the place if possible...(c) The moral effect of tear gas is enormous similar to the stupendous moral effect of poison gas when first used in Flanders during the Great War...(e) The wearing of a gas mask on an afternoon in the month of June is unbearable.”<sup>349</sup> Most striking here is that the value of teargas in policing was directly compared to its use on military battlefields during WWI – one of the aspects officials were keen to distance teargas from. When apprehending criminals, however, these aspects became advantages for police forces, as “the explosion of the cartridge itself terrifies the criminal, and hastens his surrender.” With respect to use on crowds, the authorisation of teargas developed along a different but related trajectory, which I turn to now.

### **Palestine, 1933: Teargas for Use in Dealing with Mobs and Riots**

In November 1933, the High Commissioner of Palestine, then Arthur Wauchope, wrote to the Secretary of State for the Colonies, Philip Cunliffe-Lister, to request permission to employ teargas in “dispersing illegal assemblies and riotous crowds.”<sup>350</sup> Wauchope claimed: “If its use had been permitted during the clashes which took place recently between Arab demonstrators and the Police in Jaffa, Haifa, Nablus and Jerusalem, it is probable that the Police would have been able to break up the crowds without the use of firearms and that no lives would have been lost.”<sup>351</sup>

The thrust of Wauchope’s argument was that teargas could provide an alternative to lethal force, with less dire consequences, in situations when police would ordinarily resort to the firearms.<sup>352</sup> According to Wauchope, bullets caused all 26 of the civilian deaths in the clashes. Additionally, in Jerusalem, “all, at any rate nearly all, the 7 deaths and 25 wounds were caused by ten shots fired by two policemen.”<sup>353</sup> He deemed the lethality of force to be the issue rather than the use of force itself – in escalating crowd control scenarios, police had to resort to firing, lacking the means to control the level of force they used. Noting that all 26

---

<sup>349</sup> *Ibid.*

<sup>350</sup> TNA, CO 733/248/24, A.Wauchope to P.Cunliffe-Lister, November 1933.

<sup>351</sup> *Ibid.*

<sup>352</sup> It was on the grounds that “teargas is really an alternative to shooting that the Cabinet sanctioned its use”, in *Ibid*, P.Cunliffe-Lister to A.Wauchope, 20 December 1933.

<sup>353</sup> *Ibid*, A. Wauchope to P. Cunliffe-Lister, November 1933.

deaths were “caused” by bullets, Wauchope saw teargas as a replacement for shooting (lethal force) in the scenario. He presented teargas to Cunliffe-Lister as non-lethal force that did not have the capacity to kill but allowed police to maintain a similar level of social control. Wauchope’s approach therefore constructed teargas as a humane technology of control, yet in doing this he afforded police authorities grander sovereign powers as arbiters of life and death in colonial dependencies, tacitly assuming the police to be predictable and dependable. In the conclusion of his study of the adoption of teargas by police in the USA, Jones has discussed how similar shifts in control occurred between actors in that context, pointing out a similar asymmetry of power that developed between police forces and those deemed to be the opposition:

“From a humanitarian viewpoint, the introduction of tear gas for civil riot control could be judged as beneficial in the sense that fewer deaths and injuries resulted from tear gas than from use of conventional weapons. Yet the dramatic increase in the power of police forces in handling mass disturbances certainly meant a loss of power to any group opposing establishing order.”<sup>354</sup>

By appealing to the potential to save lives, Wauchope aligned his teargas narrative with both police and public interest, drawing a sharp contrast with the firearms alternative. Not utilising teargas, he argued, would both result in casualties, as it had in the past, and strip police of deserved training opportunities.<sup>355</sup> A Cabinet decision was still necessary to authorise the use of teargas in Palestine in order to override the UK’s position that the use of teargas for crowd control was prohibited in accordance with the Washington Treaty and 1925 GP. On receiving Wauchope’s letter, Cunliffe-Lister made enquiries towards this end with the India Office (IO) concerning Hoare’s 1933 request for permission to use teargas. In response, officials noted the mention of the prior Cabinet decision in June 1933: “It would seem...that the Cabinet have recently agreed to permission being given to the Government of the Punjab to use tear gas, and this precedent may enable us to do something of the kind in Palestine.”<sup>356</sup>

The IO clarified this point, stating that there was no intention of using teargas as a means of suppressing disturbances or mobs, but rather in circumstances such as “the

---

<sup>354</sup> Jones, 168.

<sup>355</sup> The Government of the Punjab similarly made reference to prior instances where casualties might have been prevented by the use of teargas in their 1933 proposal. See Secret Letter No. 38448, 6 December 1932 in TNA, CO733/248/24.

<sup>356</sup> *Ibid*, H.F. Downie to Williams & McSweeney, 7 December 1933.

apprehension of armed criminals when brought to bay in a house or place of refuge.”<sup>357</sup> They explained that the Punjab Government had decided against the use of gas against mobs in light of the fact that the consequences of such action were unknown, and could result in stampedes and panics.<sup>358</sup> On the other hand, the use of gas “as an experimental measure against armed criminals brought to bay in a house or other place of refuge”, was ‘unobjectionable’, allowing for the possibility of capture without risk of serious police casualties as well as being “unlikely to raise any public outcry...if not approval.”<sup>359</sup> Cunliffe-Lister sent this information back to Wauchope, saying he would give the matter “further consideration”, though still advised Wauchope to make arrangements to deal with anticipated riots in Palestine on 16 January 1934 on the assumption that teargas would be unavailable.<sup>360</sup> The riots in question supposedly would have arisen from the demonstrations the Arabs intended to hold on the feast of Bairam (the first day after Ramadan), as a result of political hostility toward foreign rule and Jewish immigration, and the lack of economic benefit this brought to the Arab populace.<sup>361</sup> In the meantime, Cunliffe-Lister submitted Wauchope’s request as a memorandum to the Cabinet on the 13 December, for discussion in a meeting on the 20 December 1933, in which it was approved.

In a private and personal letter to Cunliffe-Lister two days before the meeting, Wauchope explained that previous disorders had not been considered a threat to the State for three reasons: “their character was purely political...the fellaheen did not join in the riots; and the leaders showed no powers of organisation.”<sup>362</sup> However, he felt that “it would be folly to

---

<sup>357</sup> *Ibid*, W.D.Croft to E.B.Boyd, 6 December 1933. *Ibid*, Extract from conclusions of a meeting of the Cabinet held on 27<sup>th</sup> June 1933, 11 December 1933, confirms that the Punjab Government was authorised “to make experimental use of tear gas for police purposes” within this field.

<sup>358</sup> *Ibid*, Secret Letter from the Government of India, Home Department, to the Secretary of State for India, 20 February 1933.

<sup>359</sup> *Ibid*. cf. the later US use of tear gas in Vietnam, see Sarah Bridger, *Scientists at War: The Ethics of Cold War Weapons Research* (Cambridge, MA: Harvard University Press, 2015), 115–154.

<sup>360</sup> TNA, CO 733/248/24, From P.Cunliffe-Lister to A. Wauchope, 12 December 1933.

<sup>361</sup> *Ibid*, Letter from High Commissioner for Palestine to the Secretary of State for the Colonies, December 18, 1933. The rest of this correspondence, found in this file within the Cabinet Memorandum by the Secretary of State for the Colonies, C.P. 2(34), Jan 2, 1934, provides a more detailed summary of the religious, political and economic conditions in Palestine contributing to Arab discontent.

<sup>362</sup> *Ibid*, Cabinet. The Situation in Palestine, 2 January 1934, Annex: Letter from High Commissioner for Palestine to the Secretary of State for the Colonies, December 18, 1933. The fellaheen were Arab agricultural labourers, who were predominantly poor and landless. The Colonial Government believed that “riots would double both in number and in intensity were they backed by religious leaders and supported in the mind of the fellaheen by the belief that their religion was threatened.”

count on these conditions lasting” because of the potential for both political and religious malcontent to be aroused during a religious festival. Wauchope anticipated that rioting was highly likely, and saw particular technologies and tactics – the use of teargas in particular – as ways to pre-emptively secure and control this potential future. Unlike the position of the Government of India, Wauchope saw the use of gas as making the future more knowable rather than less. The effects of lethal force (firing) were known – that it risked potential escalating disorder, resulting in less control and more use of force – and this made the potential of gas only more valuable as an alternative. He elaborated, “If rioters are shot, religious feelings will be strongly excited. Should religious as well as political cries be raised, a number of the fellaheen...will join...it seems to me possible that the number killed and wounded on both sides may greatly exceed the casualties that occurred this year.”<sup>363</sup>

Wauchope had little doubt about the negative reaction shooting would provoke from the fellaheen, seeing that there could bring with it a high likelihood of escalation resulting in large numbers of casualties. Teargas, on the other hand, would avoid this issue, as rioters would not be shot. Cunliffe-Lister, too, believed it “left no after-effects,” thus preventing instances where those killed by rifle fire would be celebrated in the Mosques as martyrs.<sup>364</sup> He contended as such with the Cabinet during the meeting on the 20<sup>th</sup>. Both Wauchope and Cunliffe-Lister saw teargas as a less seditious, less risky, non-lethal form of force relative to conventional firearms. Indeed, Cunliffe-Lister spoke of the Cabinet discussion in a personal letter to Wauchope following the meeting: “The decision is one of great importance, because it is in effect changing the attitude which previous Governments have adopted...it is on the understanding that the use of tear gas is really an alternative to shooting that the Cabinet sanctioned its use.”<sup>365</sup>

*Gas: an alternative or antecedent to shooting?*

Speaking of gas an alternative to shooting implied that the use of firearms would no longer be needed in riot control scenarios, whether that be firearms without the use of gas, with the use of gas, or after the use of gas, and also that use of gas would occur at the same

---

<sup>363</sup> *Ibid*, Letter from High Commissioner for Palestine to the Secretary of State for the Colonies, December 18, 1933.

<sup>364</sup> *Ibid*, Extract from Proceedings of the Cabinet, 20 December 1933.

<sup>365</sup> *Ibid*, to A. Wauchope from P. Cunliffe-Lister, dated 20 December 1933.



point in the disturbance when police would ordinarily shoot. Cunliffe-Lister, however, clarified gas was not just an alternative to shooting, but also a valuable antecedent:

“It was suggested to me that gas would only be used at a moment when, but for the use of gas, police or troops would have to fire. I said that I accepted the proposition that gas was the alternative to the rifle, i.e. that neither gas nor rifle fire would be used if a mob could be otherwise dispersed by ordinary measures. But given the use of a lethal weapon would be necessary, it might be right and necessary to use gas at an earlier moment than rifle fire...it was the practice to hold fire till the last possible moment because if you fire you know you are going to kill...Given, therefore, a situation in which the police cannot deal with a mob without the use of fire or gas, it may be quite right to use gas at a rather earlier stage.”<sup>366</sup>

Cunliffe-Lister’s conception of gas an alternative to the rifle was therefore not a mutually exclusive one – gas did not negate firing, but it might take its place in some scenarios (“neither gas nor rifle fire would be used if a mob could be otherwise dispersed by ordinary measures”). Yet at the same time, he saw the non-lethal nature of gas (compared to the lethal nature of shooting) as reason for police to employ it earlier than when they would shoot. This early use of gas might avoid the need for firing later on (an ‘alternative’ in a different sense), although his suggestion also implied that police might have to fire should gas use not be effective. For example, in a scenario where teargas had been employed, and failed to quell a riotous mob, shooting would no doubt have remained a plausible option. One would hardly think the police would have sacrificed guns for gas. In fact, Cunliffe-Lister explicitly noted this in his response to concerns that, should teargas be ineffective under “unfavourable conditions,” rifle fire would also be necessary: “This is quite possible, but it does not in my opinion minimise in any way the advantage of using tear gas in suitable conditions and as a preliminary measure of control.”<sup>367</sup>

Thus, while the Cabinet authorised the use of teargas “in dealing with mobs and riots in cases where it would otherwise be necessary to shoot,” there existed a notable tension between the idea of using gas as an alternative and the police mission to maintain order, in which gas would operate instead as an antecedent to firing. Teargas gave police an opportunity to draw from a range of degrees of force, depending on the scenario and

---

<sup>366</sup> *Ibid.*

<sup>367</sup> *Ibid*, C.P. 301(33), The Use of Tear Gas by the Police Force in Palestine, Memorandum by the Secretary of State for the Colonies, 13 December 1933: Article 5.

objectives, but in practice it did not replace shooting, as the Cabinet conclusion might suggest. Cunliffe-Lister wrote to Wauchope, “the decision is right and we are prepared to stand by it, but we must be able to defend it on the ground that to use tear gas is more humane than to shoot.” In approving the request, the Cabinet and Cunliffe-Lister actively associated the notion of the ‘humanity’ of gas with its legitimacy for use in the colonies. In a moment of co-production, teargas as a ‘humane’ and ‘non-lethal’ technology was co-produced alongside social order through its new role as a technology with which police might control populations in the colonies.

In the meeting, Cunliffe-Lister also addressed why approval might be given in Palestine despite the prior Cabinet decision against using gas to deal with crowds in India:

“the Chief of Police in Calcutta advised against the use of tear gas in dealing with Indian mobs on the ground that the use of gas would so terrify and stampede a mob that the casualties ensuing by members of the mob trampling on one another might actually be worse than casualties caused directly and indirectly by rifle fire. It was however recognised that in Calcutta you might be dealing with crowds on a very large scale in very densely populated areas. I think it was generally recognised that the results to be anticipated must depend on the circumstances of a particular case.”<sup>368</sup>

In discussions with the Cabinet, Cunliffe-Lister attributed the unknowns and uncertainties that had prevented use of gas in India to the geographical and social contexts in which it would be used. The use of gas in Palestine, on the other hand, would be more acceptable presumably because crowds were not so densely populated such that the use of gas would likely not trigger a stampede. In particular, Cunliffe-Lister dealt with controlling the “unknown” aspects of gas use that had surrounded the Indian proposal by deferring to the expertise of police, trusting the authorities in Palestine to properly interpret “the circumstances of a particular case.” He wrote to Wauchope, “we know that you and your Chief of Police can be fully trusted to use [teargas] with the utmost discretion, and that it will be used, if it be necessary to use it, by a police force so disciplined as to be under complete control.” The aforementioned British civic epistemology, founded on expertise and trust (in this case trust in colonial police to use gas appropriately) again becomes apparent when

---

<sup>368</sup> *Ibid.*

studying the documents in question here. The decision to use gas was made through a consultative, negotiated process with the relevant authorities, who trusted the expertise of police to deliver enact the ‘humanity’ of gas properly.

*The Return of Worthington-Evans’ Arguments for Gas*

By contextualising Palestine alongside the Indian case, Wauchope and Cunliffe-Lister developed a Cabinet proposal that appeared as the logical next step in a progressive legitimisation process.<sup>369</sup> Cunliffe-Lister’s Memorandum to the Cabinet discussion had explicitly pointed to five prior policy discussions on the use of teargas – the unsuccessful request by Southern Rhodesia in 1926, the China case, Worthington-Evan’s request regarding Egypt, Wedgwood Benn’s 1930 response, and finally the approved 1933 Indian case. Cunliffe-Lister framed the adoption of gas, as a means of controlling riotous mobs, as a chronological progression of policy – one that might materialise in Palestine because of the ideal conditions and ability of the police force. Furthermore, his deference to ‘humanity’ argued for gas as a moral and technical advance for police use of force and technologies of control.

That said, the British Government’s shifting sentiment toward teargas had been evident prior to Cunliffe-Lister’s proposal. In April 1933, the FO corrected the British Draft of the Disarmament Convention to allow the use of lachrymatory substances for police operations, thus aligning with the US Government position.<sup>370</sup> Cunliffe-Lister included an addendum to his Cabinet memorandum explicitly acknowledging this concordance. In his proposal, Cunliffe-Lister claimed, “I do not think that our adherence to the Washington Convention and the Geneva Gas Protocol can reasonably be held to debar us from the use of non-lethal gas for the suppression of civil disturbances.”<sup>371</sup> Moreover, in his letter to Wauchope following the decisive Cabinet Meeting, he wrote, “we were much strengthened by the proceedings of the Disarmament Convention. At that Convention the Americans expressly stipulated that they should be free to use tear gas for police purposes and Article 54 of the Draft Convention was accordingly amended.”<sup>372</sup> Thus, rather than imitating US policy, British policy makers used the US position as a way of furthering and expanding British security and policy interests.

---

<sup>369</sup> *Ibid*, Cabinet, The Use of Tear gas by the Police force in Palestine, December 1933.

<sup>370</sup> *Ibid*, From Anthony to P.Cunliffe-Lister, 14 December 1933.

<sup>371</sup> *Ibid*, C.P. 301(33), Article 5.

<sup>372</sup> *Ibid*, Secret Letter from P. Cunliffe-Lister to Wauchope, 20 December 1933.

Cunliffe-Lister also closely echoed Worthington-Evans' 1928 memorandum in his proposal. He offered five points in favour of teargas use, derived from Worthington-Evans' lists of the advantages of gas and reasons it should be used:

- (1) "Gas is temporary in effect and therefore humane; it leaves no victim to become a martyr and subject for propaganda.
- (2) Gas is particularly effective as it reaches every member of a crowd, whereas the lethal weapon is individual in effect and may hurt the innocent and spare the guilty.
- (3) It is economical and can be used effectively by the Police, thereby lessening the chances of having to call in the military.
- (4) It can be used at an earlier stage of a riot than can the lethal weapon, and lessens the burden of responsibility placed on officers in command.
- (5) The efficacy of its use depends in but a small degree on the numbers of Police or troops available."<sup>373</sup>

These criteria constructed teargas as a technology with predictable, discrete effects. The first point tied technical knowledge – that the effects of teargas were transient – with normative judgments regarding how it should be used (it was “therefore humane”). This statement that gas was “temporary in effect and therefore humane” attributed the quality of ‘humanity’ to a perceived inherent property of teargas. In a display of co-production, the temporary and humane nature of the effects of teargas emerged with the CO’s assertion that it should be adopted for crowd control, especially in the context of Palestine, where officials also saw it as well placed to deal with social issues they deemed to be unique to the local populations (“it leaves no victim to become a martyr”).

Relatedly, the second point suggested that the ability of gas to ‘reach every member of a crowd’ made it not less but more effective in contrast to lethal weapons, which could significantly harm individuals who may not be guilty. This lay in stark contrast with Wedgwood Benn’s position on the use of gas in India, which took the ability of gas to reach the entirety of a crowd (the innocent and guilty) as an argument against its use. Cunliffe-Lister thus did not conceive of gas as “hurting the innocent” because of its transient effects and humane status – conventional weaponry could permanently injure or kill whereas gas would only cause short-term harassment. This stance required a limited interpretation of ‘hurt’ as

---

<sup>373</sup> *Ibid*, C.P. 301(33), Article 4.

that of direct, permanent physical injury, and did not cover alternative conceptions of harm that include the effects gas had on individuals with pre-existing medical conditions, indirect injuries caused by panic or stampede, emotional distress, social silencing, or even religious and spiritual beliefs about the body. It should also be noted, then, that in taking gas to be humane (because of its transient effects), Cunliffe-Lister evaded considering the possibility that not every member of a crowd was guilty of criminal activity. Constructing gas as 'humane' therefore also constructed colonial populations as legitimate targets, whether or not some individuals in the crowd were sympathetic to rioting or just bystanders. Thus emerged the co-production of ontological categories of knowledge (teargas as temporary in effect) with normative judgements on social order (how it should be used and who it could be used on).

The remaining three points in the list by contrast constructed police populations as legitimate, reliable users and decision makers with regard to gas use. The fourth point ties in to this chapter's aforementioned discussion regarding the place of gas as an alternative or antecedent to shooting, leaving police to make judgments about when gas should be used. The third and fifth points assumed that (relatively small numbers of) police could easily learn to use gas effectively and appropriately, which in and of itself would be a benefit because it would enable smaller groups of police to maintain control of local populations and spaces. Cunliffe-Lister's memorandum, and the consequent Cabinet Conclusion of approval, gave considerable authority and credence to the colonial police as both users of gas and decision makers regarding how it should be used.

During the Cabinet meeting Cunliffe-Lister pointed out that "the High Commissioner in Palestine and the Chief of the Police were both exceptionally wise and experienced administrators, and that the Police had shown themselves to be a reliable force."<sup>374</sup> As mentioned previously, while Cunliffe-Lister acknowledged some uncertainties related to gas use, particularly those raised by Wedgwood Benn (e.g. how efficacy and controlling gas depended on favourable wind conditions), he left the decision of how and when to use gas to the discretion of the police authorities, believing that this power would be used "by a police force as disciplined as to be under complete control."<sup>375</sup> The Cabinet subsequently requested that he ask the High Commissioner to "send home a Despatch explaining how he proposed to obtain tear gas, to train the Police personnel in its use, and the proposed methods of its

---

<sup>374</sup> TNA, CAB 23/77/21, Conclusions of a Meeting of the Cabinet, 20 December 1933, 5.

<sup>375</sup> TNA, CO 733/248/24, C.P. 301(33), and P.Cunliffe-Lister to A.Wauchope, 20 December 1933.

employment.”<sup>376</sup> The Cabinet thus gave the High Commissioner and his colonial police force a considerable degree of freedom to interpret, delineate and enact the ‘humanity’ of teargas, and its role within the spaces they controlled.<sup>377</sup>

### **1935-1936: Broadening the Applications of Gas; Authorisation Given to the Empire**

#### *Palestine*

Ultimately, Wauchope never had to order the use of teargas in January 1934 or in the year following the Cabinet approval, though the police in Palestine did acquire teargas supplies and start training personnel “required to supervise its use in emergency.”<sup>378</sup> However, after the Cabinet approval, the CO passed on “certain confidential papers” on the teargas experiments undertaken by the Government of the Punjab to Wauchope for “information and guidance.”<sup>379</sup> Consequently, in November 1934, Wauchope asked Cunliffe-Lister for permission to “authorise the Inspector-General of Police and Prisons to employ tear gas in Palestine in circumstances similar to those for which its use has been approved by the Government of the Punjab.”<sup>380</sup> These circumstances involved the use of teargas “not against a hostile mob but against dangerous criminals entrenched in a house, the object being to reduce the risk of casualties amongst police officers engaged in such an operation.” This use would come with two provisos, “(i) that its use is limited to cases of necessity when no other means are considered likely to attain the object; and (ii) that in every case of its use all practicable steps are taken to ensure that innocent persons are not put to unnecessary discomfort in consequence, and that adjoining buildings are, therefore, cleared before the gas is used.”

---

<sup>376</sup> *Ibid.*, Extract from Proceedings of the Cabinet, 20 December 1933. The significance of training and expert use is not exclusive to the case of Palestine; see also the case of Cairo in TNA, CO 323/1396/1, Tear Gas: Use of – By Police etc., from F.D. Baker, Cairo City Police, 1936. In this document, Baker advises the use of teargas in concordance with (1) the consent of the Ministry of the Interior (i.e. Home Office), (2) only by picked and trained men under the command of a special officer; (3) the responsibility for this use lying with a Senior Police Officer.

<sup>377</sup> The Cabinet did remain concerned as to how authorising teargas might impact the wider geopolitical situation in Palestine. They felt it “raised very serious issues” and accordingly asked Cunliffe-Lister to provide them with, “in the near future a full report on the position in Palestine, covering, inter alia, the present position on the following points:- the proposed restriction on the sale of Arab lands to Jews; the proposed Loan; the proposals for the formation of a Legislative Council.” See TNA, CO 733/248/24, Extract from Proceedings of the Cabinet, 20 December 1933.

<sup>378</sup> TNA, CAB 24/253/36, Cabinet. Use of Tear Gas in Palestine” Memorandum by the Secretary of State for the Colonies, C.P. 36(35), 8 February 1935.

<sup>379</sup> *Ibid.*

<sup>380</sup> *Ibid.*

Unlike using gas to deal with mobs, Wauchope saw using gas for these purposes as a last case measure, in which innocent persons had to be actively protected. Cunliffe-Lister put Wauchope's request to the Cabinet with a memorandum in February 1935.

Wauchope also recognised a difference between the types of situations that might arise in Palestine and those arising in India, telling Cunliffe-Lister that he did “not anticipate that occasion will arise for the use of tear gas against strongly entrenched criminals in urban areas...the circumstances necessitating the use of gas which are most likely to occur in Palestine are those in which bandits entrench themselves in caves in the mountainous country or conceivably in a building in some small and isolated village.”<sup>381</sup> Despite the slightly different geographical context, he felt that gas would prevent the police force from suffering casualties in rounding up armed bandits as in India. In scenarios involving entrenched criminals, gas was primarily a means to prevent bandits using lethal force on police, rather than a way of not using lethal force on bandits (bandits who abandoned a house might still be shot by police once out in the open). Cunliffe-Lister's memorandum this time made no reference to the ‘humanity’ of gas, arguing for the adoption of gas on the basis of preventing police casualties. This tactical use of teargas has stark similarities to the United States' employment of CS gas during the Vietnam War later in the century. In a letter to Cunliffe-Lister, Wauchope spoke of the “great number of caves in Palestine” that had holes in their roofs “through which lachrymatory bombs could be effectually dropped.”<sup>382</sup> As discussed in the literature overview, the US Army later sprayed teargas in a similar fashion through cave networks and by air in Vietnam to flush their enemies out of caves and into the open, where they would be targeted more easily (often with lethal force).

### *India, and the Colonial Empire*

In April 1935, the IO wrote to the CO, “In consequence of the recent riot at Karachi the question has been raised whether it would not be desirable to enlarge the existing powers of the authorities in India...and to permit them to use [gas] against riotous mobs as well as against armed criminal brought to bay.”<sup>383</sup> Having heard of the approval given to Palestine to

---

<sup>381</sup> *Ibid.*

<sup>382</sup> *Ibid.*, 4.

<sup>383</sup> TNA, CO 733/272/9, R. Peel to O.G.R. Williams, 4 April 1935. More information on the incident at Karachi can be found at TNA, CAB 24/263/46, Cabinet. Proposed Use of Tear Gas against riotous Mobs in the Punjab, Memorandum by the Secretary of State for India, C.P. 216(36), 24 August 1936.

use gas in dealing with mobs, they asked if they might “take it that the Colonial Office would not object to this being done” in India. The CO responded with “no objections.”<sup>384</sup> Officials in the British government had been aware for some time that giving approval to the Governments in Palestine and India to use teargas could prompt other Colonial Governments, and even British Police at home, to press for permission to use it.<sup>385</sup> By December 1935, James Henry Thomas had succeeded Cunliffe-Lister (and, briefly, Malcolm MacDonald) as Colonial Secretary, and he put together a memorandum for the Cabinet requesting the authorisation of teargas across the colonial empire.<sup>386</sup>

Thomas began his memorandum by citing Cunliffe-Lister’s December 1933 and February 1935 memoranda. He then continued, “since that date [20 February 1935] it has been necessary to seek Cabinet authority separately for the purchase of tear gas apparatus and its use...in Ceylon, and also, after consulting the Prime Minister, the late Secretary of State authorised its use in recent riots in Northern Rhodesia. Its use was not, in fact, required.”<sup>387</sup> He also cited a recent case in Jamaica, “in which in all probability the use of tear gas would have saved the life of a rioter who was shot...where the Police, in order to prevent the mob from rescuing a prisoner, were compelled to fire.”

Thomas was “of the opinion that, in general, and on humane grounds, authority might reasonably be given for the purchase [and use of] supplies of tear gas by Colonial Governments generally...without prior reference to the Secretary of State.”<sup>388</sup> He believed that gas could be used “efficiently by any trained Police Force, the essentials being discipline and a reasonable degree of intelligence,” and referred to the use (or deliberation of use) of gas in the USA (by both the Police and National Guard), India, Germany, Austria, Italy and

---

<sup>384</sup> TNA, CO 733/272/9, H. Downie to R. Peel, 10 April 1935.

<sup>385</sup> TNA, CO 733/248/24, From O.G.R. Williams, 12 December 1933; *Ibid*, Extract from conclusions of a meeting of the Cabinet held on 27 June 1933, 11 December 1933.

<sup>386</sup> TNA, CAB 24/257/46, Cabinet. Use of Tear Gas in the Colonial Empire, Memorandum by the Secretary of State for the Colonies, C.P. 226(35), 3 December 1935.

<sup>387</sup> *Ibid*. The authorisation given to Ceylon followed a memorandum that Cunliffe-Lister submitted to the Cabinet in June 1935, requesting that the Government of Ceylon be permitted to use tear gas to aid the arrest of armed individuals at bay. See TNA, CAB 24/255/32, Cabinet. Purchase of Tear Gas Apparatus by Government, Memorandum by the Secretary of State for the Colonies, 3 June 1935. The Cabinet approved this in a meeting on the 19 June, see TNA, CAB 23/82/1, Conclusions of a Meeting of the Cabinet, 19 June 1935, 15.

<sup>388</sup> *Ibid*.



France as evidence of this.<sup>389</sup> Thus broader geopolitical developments on the world stage also played a significant part in shaping the ‘humanity’ of gas. Thomas then requested the Cabinet authorise the use of teargas across the British Empire on the following conditions and occasions:

- a) “By Police Forces in the Colonial Dependencies, when they have received the requisite training.
- b) Normally under the authority of the Governor or Officer Administering the Government, but at the discretion of the Head of the Police Force, if the Governor thinks fit to delegate this authority.
- c) In circumstances such as dealing with banditry, where there is a serious risk of casualties being incurred by the Police Force if the public were unable to use gas and had to rely on other weapons.
- d) In the arrest of armed individuals, who, having sought refuge in a building or other place of vantage, might evade arrest with the aid of fire arms.
- e) In dealing with mobs and riots in cases where it would otherwise be necessary to shoot.”<sup>390</sup>

In a meeting on 11 December 1935, the Cabinet agreed to all of Thomas’s proposals, granting general authority to the colonial governments to both purchase and use teargas supplies for the stated purposes without having to refer to the Colonial Secretary beforehand. During the meeting, Secretary of State for India, Lawrence Dundas (the Marquess of Zetland), divulged that Sir Reginald Clarke – former Commissioner of Police for Calcutta with “wide experience of police work in India,” who had also “studied the use of tear gas against crowds” in the USA – had convinced him of the applications of gas such that he might come to the Cabinet “before long for wider authority for the use of tear gas than he had at present.”<sup>391</sup>

This time came in August 1936, when Dundas submitted a proposal to the Cabinet requesting that “the Punjab Government should be permitted to use tear gas against unlawful assemblies, provided (a) that suitable equipment and police trained in its use are available, and (b) that the Local Government is satisfied that the occasion and circumstances are appropriate

---

<sup>389</sup> *Ibid.* Thomas specifically noted how the Italian Royal Corps of Public Security Agents were armed with tear gas bombs as part of their standard equipment, and mentioned a French Ministerial Instruction published in November 1934, which stated that French troops could be provided with ‘engins spéciaux’ “for maintaining order without bloodshed.” Thomas deemed this to cover the employment of tear gas.

<sup>390</sup> *Ibid.*

<sup>391</sup> TNA, CAB 23/82/22, Conclusions of a Meeting of the Cabinet, 11 December 1935, 22-23.

for the use of tear gas.”<sup>392</sup> In this, Dundas brought up various pieces of evidence to support his suggestion. These included the March 1935 Karachi riot in which British troops fired upon a crowd, killing 47 and injuring 134. Dundas asked whether “such grave loss of life” might have been avoided with the use of gas, noting that the “same suggestion was made in the House of Commons by Mr Churchill.” He also stated that the Government of India had been satisfied with Sir Reginald Clarke’s demonstrations of American “methods, apparatus and ammunition” in experiments conducted at the Punjab Police Training School. Dundas feared that a “present state of communal tension in the Punjab” might lead to “an outbreak between the different communities at any time,” and endeavoured to permit the Punjab Government to use teargas should such an outbreak occur. He also requested authorisation “to permit any other Local Government which may wish to follow the example of the Punjab,” should “successful results be obtained.” The Cabinet duly approved all of Dundas’s proposals in a meeting on the 14 October 1936.<sup>393</sup>

#### *Debating Public Knowledge regarding Teargas*

Some policy makers also advocated highlighting the ‘humane’ character of teargas to wider publics through local press, as a means of “preparing the popular mind for the use of tear gas as a method of control at once more humane and more efficient than shooting.”<sup>394</sup> For example, one press cutting [Figure 1] was kept on file as a potential reference for giving “a clear (and reassuring) picture of the gas in use” in the USA.<sup>395</sup> In January 1936, Wauchope wrote to Thomas on the topic of “the expediency of making public the intention...to employ lachrymatory gas...for the suppression of civil disorders.”<sup>396</sup> Wauchope felt that the element of surprise was not important to the efficacy of gas because “after the first occasion there could be no surprise.” In fact, he thought the use of gas should decidedly not come as a surprise, as this might “be liable to result in a general stampede and in serious casualties” and could “give rise to a campaign of misrepresentation and calumny.” However, he did not see “any useful purpose” in notifying the public of the Government’s supply of gas and intention

---

<sup>392</sup> TNA, CAB 24/263/46, C.P. 216(36).

<sup>393</sup> TNA, CAB 23/85/10, Conclusions of a Meeting of the Cabinet, 13 October 1936, 25.

<sup>394</sup> CO 733/290/4, O.R. Williams To C. Parkinson, 20 February 1936.

<sup>395</sup> CO 323/1341/19, “Tear Gas to Scatter a Mob,” *The Daily Mirror*, 23 September 1935, with correspondence (signature illegible), 24 September 1935.

<sup>396</sup> TNA, CO 733/290/4, A. Wauchope to J.H. Thomas, 10 January 1936.

to use it at that time, thinking that it would “merely...irritate public opinion and expose Government to calumnious attacks, especially from the Moslem world.” Consequently, he recommended that publicity should only be given to the intention to use it if “it becomes necessary to take emergency precautions in view of imminent disturbances.”

Nevertheless, CO officials began to forward external press extracts advocating the use of gas (such as one from the *Hindustan Times*) to Wauchope.<sup>397</sup> Wauchope still wanted to defer publicising gas use in Palestine until after he had received reports of the experiments in India and trained “a sufficient number of men” in the use of the equipment. However, on receiving the *Hindustan Times* excerpt, he requested that officials send “any similar extracts from the Moslem Press, or extracts from the American press which may contain favourable comments on the use of tear gas in Pennsylvania or elsewhere.” He planned to then send these to local press for publication by Arab and Jewish papers in Palestine if and when the



**Figure 1.** Press Cutting from *The Daily Mirror* circulated by CO officials

© Crown copyright 1935

<sup>397</sup> *Ibid*, J. Hall to C. Parkinson, 23 March 1936.

necessary conditions arose.<sup>398</sup> He subsequently received a number of *Statesman* extracts regarding the use of gas in India, or “propaganda articles” as one official referred to them.<sup>399</sup>

On 25 May 1936, Wauchope wrote to the would-be Colonial Secretary<sup>400</sup> asking for approval to use teargas to “assist the security forces” (British troops) and “in order to prevent avoidable loss of life” in Palestine.<sup>401</sup> Wauchope explained that he had “hitherto...refrained from using it because of the universal condemnation of the use by Italian forces in Abyssinia of mustard gas, and the possibility of tear gas being confused with lethal gas...with resultant embarrassment to [HMG],” but did not think the Security forces should “be denied any longer so effective and merciful a weapon.” While the use of gas by police in Palestine had been authorised by the Cabinet in 1933, this request involved the Security forces and posed a slightly different question, such that it “might be understood to cover use of teargas by military force” and therefore could fall under the terms of the Gas Protocol.<sup>402</sup> The Colonial Secretary initially responded, “You may authorise the use of tear gas after public warning” but followed up stating, “I assume that you contemplate gas being used only by police and not by other security forces.”<sup>403</sup> He specified that the publicity should focus on the fact that teargas had “no permanent ill effects” and was being used to “prevent avoidable loss of life.”

Officials were thus careful in their attempts to shape public knowledge of teargas as a temporary, ‘humane’, and non-lethal technology, though only when its use appeared imminent, in order to prevent public knowledge forming through what they called “calumnious attacks” and misrepresentation by the populations they desired to control. Moreover, they were also careful to delineate teargas as a non-military – and therefore legal – technology. Commitments to the GP meant that for Britain to use teargas legally it had to demarcate it as a non-military technology – or at least, something that was not being used in military contexts or for

---

<sup>398</sup> *Ibid.*

<sup>399</sup> *Ibid.*, Use of Tear Gas to Disperse Unlawful Mobs, *Statesman*, 8 February 1936; Tear Gas, *Statesman*, 10 February 1936; Use of Tear Gas Advised. Suitable to India, *Statesman*, 6 April 1936; Extract from the Manchester Guardian, “More Deaths in Palestine...Tear-Gas Warning” (Jerusalem, May 28), 29 May 1936.

<sup>400</sup> Thomas had resigned on the 22 May following a budget leak scandal, and was succeeded by William Ormsby-Gore on 28 May.

<sup>401</sup> *Ibid.*, Telegram from the High Commissioner for Palestine to the Secretary of State for the Colonies, 25 May 1936.

<sup>402</sup> *Ibid.*, between minute 16 and 17, signature illegible, 28 May 1936.

<sup>403</sup> *Ibid.*, Telegram from Secretary of State for the Colonies to High Commissioner for Palestine, 26 May 1936; Telegram from Secretary of State for the Colonies to High Commissioner for Palestine, 28 May 1936.

military purposes. In recent years, there has been a resurgence of the concept of ‘militarisation’ within social studies literature, as a means to refer to the permeation of military values and cultures into broader social spaces, objects, technologies, discourses and disciplines.<sup>404</sup> However, drawing from feminist, critical race, and disability studies approaches, political scientist Alison Howell has recently argued that the concept of militarisation incorrectly assumes a “peaceful liberal order that is encroached on by military values or institutions.”<sup>405</sup> She instead notes that institutions such as the police have “already been implicated in martial politics...of producing White social and economic order through war-like relations with Indigenous, racialised, disabled, poor and other communities.” Following this line, the ‘making’ of teargas into a humane technology during the interwar period can also be understood as an imperial attempt to construct “martial politics” in its dependencies as humane through deference to a politicised distinction between the military and the non-military.

Wauchope issued the warnings that the government in Palestine were holding teargas in reserve and planned to use it if necessary to preserve order.<sup>406</sup> Meanwhile, he replied to the Colonial Secretary stating that he saw “no strong objection to tear gas being used by armoured car crews or squads of soldiers after they have been thoroughly trained in its use” but would not authorise this use before approval.<sup>407</sup> Wauchope did not see the need for distinguishing military use from police use because he believed that proper training would enable forces to use teargas appropriately and realise its humane and non-lethal character. Put simply, for Wauchope, the ‘humanity’ of teargas eliminated the relevance of the distinction between military and domestic use of force in this case.

The Air Ministry, however, wrote to the CO shortly after this to exclaim that the Air Council was “strongly opposed in principle to the use of lachrymatory gas in any form by

---

<sup>404</sup> Richelle M. Bernazzoli and Colin Flint, “Power, Place, and Militarism: Toward a Comparative Geographic Analysis of Militarization,” *Geography Compass* 3, no. 1 (January 1, 2009): 393–411; Anna Stavrianakis and Jan Selby, “Militarism and International Relations in the Twenty-First Century” in Anna Stavrianakis, and Jan Selby (eds.) *Militarism and International Relations: Political Economy, Security, Theory* (London: Routledge, 2013): 3-18.

<sup>405</sup> Alison Howell, “Forget “militarization”: race, disability and the “martial politics” of the police and of the university”, *International Feminist Journal of Politics* 20, no. 2 (2018): 117-136.

<sup>406</sup> See newspaper excerpt included in TNA, CO 733/290/4, “More Deaths in Palestine, Constable Shot, Tear-Gas Warning,” *Manchester Guardian*, 29 May 1936.

<sup>407</sup> *Ibid*, Telegram from High Commissioner for Palestine to Secretary of State for the Colonies, 28 May 1936.

Royal Air Force personnel” and noted that the Army Council shared this view with regard to Army personnel.<sup>408</sup> As such, they did not agree to the use of teargas by military forces in Palestine, so the Colonial Secretary wrote to Wauchope noting that the authority given in his prior telegram “therefore only extends to use by police.”<sup>409</sup> Whilst no actual need for gas use arose in this instance, the discussions did highlight how legitimate use of gas was tied to who was using it (more so even than the context of use in this case). While the situation was notably construed as being on the bounds between a military and civil scenario, the question of whether gas could be used was not related to the character of the overall scenario but to which social groups would be using it in the scenario. This relation of teargas to these groups of human actors therefore shaped the early formation of its ontological status as a ‘humane’ domestic technology for Britain. For the Air Ministry, its adoption by military forces would transgress the bounds of established relations between groups of actors – that is, where police use of gas represented a ‘humane’ approach to their role in caring for colonial populations by maintaining imperial control, military use entailed transgressing the bounds of national contexts into the international through the involvement of certain military actors. The WO elaborated on the distinction between military and police use in a letter to MacDonald in 1935:

“Quite apart from the consideration that the use of gas by troops in civil disturbances might expose this country to the charge of breaking international agreements, it is open to strong military objections...whenever soldiers are called upon to assist in the suppression of civil riots they should act with their proper lethal weapons, and since gas is not one of these its use by them should be forbidden.”<sup>410</sup>

The notion of the military was thereby entangled with ideas about lethality. For the WO, military technologies *should* be lethal, whereas domestic technologies should not, and therefore teargas was a domestic technology because of its non-lethality. The letter continued, “Its use by the police, on the other hand, would be welcomed...since it would undoubtedly tend to reduce the number of occasions demanding the armed intervention of His Majesty’s Forces in aid of the civil power.” Non-lethal force and lethal force, the police and the military,

---

<sup>408</sup> *Ibid*, Air Ministry to Under-Secretary of State, Colonial Office, 2 June 1936.

<sup>409</sup> *Ibid*, Telegram from the Secretary of State for the Colonies to the High Commissioner for Palestine, 9 June 1936.

<sup>410</sup> TNA, CO 323/1341/19, from A. Widdons, 21 October 1935.

legality and illegality – by the mid 1930s officials were using these categories (statements of both technical and social order) as ways to govern the use of force in the world, categories continually shaping and shaped by one another.

### **Subjectification, Race, and Experimentation**

In April 1938, the CO began drafting a set of “police training instructions” on the question of the teargas grenade, which they planned to send out to all the colonies.<sup>411</sup> These instructions, titled ‘Suggestions for Training Colonial Police Officers in the Use of Tear Gas Equipment,’ began:

“Tear gas can be used efficiently by any trained white police force or by any body of men with approximately the same standard of training as that of the territorial army. No very high standard of training is necessary to use the equipment, and a short course of instruction would suffice. The essentials are discipline and a reasonable degree of intelligence...some degree of efficiency in the use of fire-arms is also desirable.”<sup>412</sup>

The instructions suggested that training should include lectures on: meteorological factors involved in the use of teargas, the conditions under which it would be most effective, how to clear rooms of gas, first aid for gas casualties, and should conclude with demonstrations in the use of the equipment along with practice throwing or firing the grenades. They deemed that “any regular officer or non-commissioned officer who has been through the Army anti-gas wing would have sufficient knowledge to give instruction in all that is required,” though conceded that it might “be necessary for him to practice throwing the grenade before the course began.” The instructions envisioned gas squads as equipped with respirators and accompanied by an escort of two armed police officers, although firearms would not be used unless the gas squad was “attacked before it [had] time to operate.”

This early draft of instructions exposed the colonial officials’ strikingly overt elision of racial identity with the role of teargas. It explicitly noted two social groups that could use teargas effectively: any “trained white police force,” or “any body of men” trained to the same standard as the territorial army. Yet, by claiming that the necessary prerequisites for use were “discipline,” “a reasonable degree of intelligence” and “no very high standard of training,” the

---

<sup>411</sup> TNA, CO 323/1592/64, F.J. Howard to N.K. Johnson, 9 April 1938.

<sup>412</sup> *Ibid*, Suggestions for Training Colonial Police Officers in the Use of Tear Gas Equipment, enclosed from F.J. Howard to N.K. Johnson, 9 April 1938.

instructions demonstrated an approach to technology that subjectified non-white populations and ordered them below white populations. In this respect, the instructions were a case of co-production in action through and through. In them, presumed technical knowledge and ontologies – not just of gas, but attributions of discipline and intelligence to categories of race – were co-produced with normative judgments relating to social order – namely, judgments about who could and could not use gas, who should police and who should be policed.<sup>413</sup> This move classified non-white populations as more unruly, less intelligent, stripped of the freedoms and power afforded to white populations. Albeit briefly, as I shall point out next, British officials had openly announced teargas as a technology for the colonising white man to exert control over non-white subjects.

By July, the CO had revised the instructions in a new draft.<sup>414</sup> The most notable edit was the removal of the word “white” in “trained white police force.” The associated minute in the document offered some explanation as to this deletion: “I note...that, by implication, tear gas should only be used by a white police force. This will obviously cause serious difficulties in Territories where the only ‘white’ personnel in the police are the officers. If carefully trained and supervised, I see no reason why African police personnel should not use tear gas grenades.”<sup>415</sup> While the new draft no longer outright associated the right to use gas with race, officials did not remove “white” because of any change in thinking with regard to categories and orders of race (i.e. this was not because they deemed the association to be discriminatory, unjust, or untrue). Rather, the deletion instead centred upon officials’ desire to uphold imperial control in the colonies, especially those with smaller numbers of ‘white’ police forces. In those contexts, depending solely on ‘white’ police to use gas would limit gas squads to a very limited number of senior officers and therefore pose managerial, tactical and potentially economic problems.

However, from an analyst’s perspective the edit showcases just how tied the ontology of teargas – what it was, and its consequent role – was to the imperial mission of establishing and maintaining sovereign power. The idea to train African police personnel in the use of gas,

---

<sup>413</sup> Likewise, the instructions defined the other group as those with a standard of training equal to that of the territorial army. In doing so, it afforded considerable authority to British training and its pedagogy, co-producing that approach to knowing and living in the world with the right to use and lord the possibilities of teargas over the untrained.

<sup>414</sup> TNA, CO 323/1592/64, Suggestions for Training Colonial Police Officers in the Use of Tear Gas Equipment (22).

<sup>415</sup> *Ibid*, correspondence under minute 22, signature illegible, 8 July 1938.



rather than senior white officers, would establish an “order of sovereignty” that rendered these personnel as subjects of the British Empire and its white officers, placing upon them performative demands related to their role in maintaining order and policing their local populations (producing orders of subjectivity). While the edit seemingly afforded them more freedom than the first draft, it instead subjectified these populations as extensions of the apparatus of imperial security.<sup>416</sup>

The CO forwarded the instructions to the Chemical Defence Research Department (CDRD) (of the WO) and F.H. du Heaume, Principal of the Police Training School at Phillaur, Punjab, for comment. While the CDRD had very little changes to make, du Heaume proposed a number of changes, including longer training periods (at least ten days rather than four), bigger gas squads (fourteen rather than eight men) and bigger armed escorts, and a preference for instantaneous fuse grenades rather than time-lag grenades (so that grenades could not be thrown back and would take effect as soon as possible). He also pointed out that the more technical instructions had confused “fired” and “ignited” – and that this had a difference with regard to the possibility of grenades being thrown back. For time-lag fuses, a “fired” grenade could be thrown back, but an “ignited” grenade (after the expiry of the time-lag) could not.<sup>417</sup> The CO felt that “the difference in the opinions of the Military side [CDRD] and the Police – the latter fortified perhaps by actual experience in the use of gas against unruly crowds – is interesting.”<sup>418</sup> Du Heaume’s comments highlight the way in which judgments regarding how teargas could be used were dependent upon expertise and context. Technical instructions formulated within research establishments or government departments were not necessarily commensurable with the ways in which police forces interacted with teargas technologies in practice. Police forces did not solely enact imperial policy makers’ visions of security and control; they often operated as agential subjects of the state, by interpreting and enacting teargas according to their own knowledge frameworks.

Divergent judgments regarding the effects of gas not only existed between the military and the police force, but also between colonial medical authorities and British officials. A

---

<sup>416</sup> An implication of this was that these personnel were enrolled in enforcing colonial police practices upon their local populations. These practices had embedded within them imperial hierarchies (of race, in this case).

<sup>417</sup> *Ibid*, F.H. du Heaume to Howard, 6 August 1938.

<sup>418</sup> *Ibid*, Extract from letter from Mr. Howard, the Dorchester Hotel, Daddyhole Plain, Torquay, to Mr. L.S. Smith, 13 August 1938.

discussion of gas tactics in a report on a teargas experiment held in Cairo, 29 January 1936, read: “the use of gas in public thoroughfares is certain to be followed by numerous claims by foreigners and others for damages for personal injury, as there will doubtless be many medical authorities ready to declare that their clients’ eyesight has been seriously injured, although it is officially known that the gas is absolutely harmless.”<sup>419</sup> Officials were aware that the effects of gas could be contested as causing serious injury, but remained unconcerned, acknowledging that the ‘official’ position – which focused upon the temporary nature of the physiological effects of gas – was that gas was “absolutely harmless.”

The Cairo City Police had, for example, held a demonstration with teargas (specifically, chloroacetophenone) upon a squad of men from the Cairo Fire Brigade on the 18 December 1935, which included a medical committee who gave a report of the effects and concluded:

“The tear gas Chloroacetophenone when used in the open, has no late deleterious effects on the eyes of people exposed to its action, and when such people can remove themselves quickly from an atmosphere containing a concentrated dose of the gas... [in the open] we consider the use of the gas would be perfectly harmless and effective for the purpose for which its use is advised.”<sup>420</sup>

While the committee did acknowledge that it would be “inadvisable” to use a concentrated amount of gas in confined spaces, its claim that gas was “perfectly harmless” and effective for its purpose provided teargas with a stamp of legitimacy in the form of medical authority. These experiments thus co-produced the non-lethality of teargas with its role as a crowd control agent. This elision of harmlessness with crowd control both gave legitimacy to teargas as a technology for police to use on crowds and provided additional authority to a medical epistemological approach to identifying chemical harm. With this stamp of medical authority, officials could stay focused on upholding sovereign control (in this case, in the Egyptian protectorate), rather than attending to questions regarding whether this role of control itself was legitimate.

---

<sup>419</sup> TNA, CO 323/1396/1, Note on Tactics to be Employed, F.D Baker, in Appendix B, enclosed with letter from War Office to Colonial Office, 18 March 1936.

<sup>420</sup> *Ibid*, A Demonstration of “Tear” Gas, enclosed in letter from Director General, Cairo, 27 December 1935.

Similarly, the influential Indian scientific figure Dr. Shanti Swaroop Bhatnagar<sup>421</sup>, Professor of Chemistry at Lahore, compiled a report of a teargas demonstration on 18 January 1936 at the Police Training School in Phillaur, in which he noted that chloroacetophenone had been picked “for the reason that the tear gas from this leaves no permanent harmful effect and no special first aid treatment is necessary.” He later accounted:

“As a man who loves his people and who has sympathies with those who occasionally constitute peaceful congregations, I consider this method of dispersing crowd far more humane than the lathi charge or firing. Of course...the more politically minded people of this country will write and say that poisonous gases were used by the Government, but the public opinion will soon react in favour of the method when they see the rapid recovery of those injured.”<sup>422</sup>

Scientific experts, too, defined teargas according to its non-lethality, and as a result made recommendations with regard to its role as a crowd control technology. Bhatnagar, stating he was a “man who loves his people,” advocated for the value of gas, which would have provided a means of force that likely would have saved lives in comparison to shooting. However, in his doing so, teargas (its non-lethal and humane status, legitimacy, and consequent role) took shape within a wider context of imperial politics and attempts to maintain sovereign power. The subjects of gas – the “peaceful congregations” that Bhatnagar spoke of – were themselves expected to come to accept and enact the humanity of gas (“public opinion will soon react in favour”). Bhatnagar was himself an Indian citizen after all, and so supported the use of gas when he knew of its temporary, non-harmful effects. Indeed, his claim that the public would favour gas once “they see the rapid recovery of those injured” was reminiscent of an approach to public knowledge making akin to “seeing is believing.” With his expertise in the field, Bhatnagar pointed to empirical evidence as the foundation for both political decision-making and public trust.

---

<sup>421</sup> Bhatnagar would later be appointed the first director-general of India’s Council of Scientific and Industrial Research (CSIR), established in September 1942. He was a very influential scientific figure in the Indian government, playing a significant role in guiding India’s policy on science and technology after its independence, establishing numerous chemical laboratories across India during Prime Minister Nehru’s office.

<sup>422</sup> TNA, CO 323/1396/1, Demi-official letter from Inspector-General of Police, Punjab, 17 February 1936, 13 (Copy of Report on the Tear Gas Demonstration on the 18 January 1936).

My concept of orders of subjectivity becomes germane here, as Bhatnagar's subjectivity (agential and enforced) was multiple: through his professionalisation in chemistry at Lahore, he became both a subject of the imperial state (the University of Punjab in Lahore had been established by Britain in 1882), advocating for the use of teargas upon his own people on the grounds of its humanity (and thus constructing both progress in chemistry and the government as humane). Yet, at the same time, his support for teargas came from his identity as Indian citizen and vision of protecting the citizens of his country. Even as someone with "sympathies" with peaceful congregations, Bhatnagar still advocated teargas use on the basis of humanity – if force was to be used, teargas was better than shooting or baton beatings. It was an array of medical and scientific knowledge, subjects, institutions (police forces, colonial office, the military), that constituted the sociotechnical assemblage that produced a political conception of teargas that simultaneously defined "humanity" with the contexts within which it was to be used. Put briefly, these conceptions of "non-lethality" and "humanity" that legitimated teargas as a technology for police were themselves products of the intersection between scientific and medical expertise and imperial politics.

Meanwhile, the racial distinctions being made by British officials would remain unavoidable. Returning to the report of the January 1936 gas experiment in Egypt, F.D. Baker of the Cairo City Police acknowledged various circumstances that "might alter cases" of teargas use. In these he wrote, "In general [teargas] use is to be avoided in the European quarter of the town."<sup>423</sup> This overt distinction between European spaces and non-European spaces, even within what was a protectorate, illuminates how significantly categories of race were tied to judgments regarding the legitimacy of gas use within British policy. Yet officials skirted these issues and inequalities by justifying their decisions with the authority of both medical and scientific expertise, which constructed the question of the legitimacy of gas as one centred upon its non-lethal, temporary physiological effects, rather than one focused on underlying social inequities in the dependencies. Along with this deference to technical expertise, officials trusted in the reliability of police forces, while also pointing to the use of gas elsewhere in the world, to legitimate the idea that teargas was something different to its historical chemical weapons counterparts.

---

<sup>423</sup> *Ibid*, Note on Tactics to be Employed, F.D Baker, in Appendix B, enclosed with letter from War Office to Colonial Office, 18 March 1936.

## Summary

To review, this chapter investigated how teargas became a technology of policing in the British Empire during the interwar period, tracing how its status as a ‘humane’ technology was co-produced with its role in colonial policing and forms of ordering in imperial governance at the intersection of policy makers, colonial governments and police forces, and scientific institutions. The ‘humanity’ of teargas was both social and technical, a scientific means by which the imperial state upheld its legitimacy as a ‘civilised’ power that could care for and develop its colonial dependencies. Thirty years after the Hague Conventions, the identity of the ‘civilised’ nations was still concomitant with a commitment not to use asphyxiating gases in war, but now also involved a separation of humane and inhumane gases and contexts of use. Chemical force outside of war delineated the humane care and protection afforded by forms of governance under the ‘civilised’ British imperial state.

The chapter also argued that teargas emerged in different unique configurations across cultural contexts, highlighting the different relationships that it had with the state, capital and orders of subjectivity in the USA and the British Empire respectively. In the USA, chemical research programmes and new teargas technologies developed alongside the campaigning of the CWS and the demands of individual police departments (in the burgeoning context of the Red Scare, gang activities in urban areas, and worker protests). Within Britain and the empire, however, these instead emerged alongside the re-evaluation of use of force and methods of control in the colonies, as well as both public relations and financial considerations. Importing the rationales for use from one model to the other would have been impossible; the colonial authorisation of gas hinged upon an ontological distinction (made by British policy makers, often explicitly) between colonial populations and western ones that would have failed to uphold within the context of American internal domestic policing. Advocates of gas in the American context, however, associated its value more overtly with its economic value to police departments and the growing industry of chemical manufacturing companies.

Examining the configurations of these culturally specific assemblages helps to explain why US police forces came to regularly use teargas from the early part of the interwar period, while Britain did not authorise its use on solely colonial crowds until 1933, after which colonial police did not actually use gas for such purposes until 1939. Throughout the chapter I demonstrated how what I have termed “orders of subjectivity” were at play. Questions of how, when and on whom to use teargas took on a number of iterations as they moved from

the hands of policy makers into local colonial police authorities and experimental police and scientific researchers. These subjects interpreted and enacted teargas according to their expertise, but at the same time were generally restricted to defining the technology according to dominant sociotechnical distinctions such as humaneness, non-lethality, and the (non)-military.

The interwar co-production of chemical non-lethality with colonial control also marked the seed-sowing of a sociotechnical imaginary of sovereign control in the empire through ‘non-lethal’ chemical force – one that emerged from colonial officials’ visions of humane governance of the ‘uncivilised’ through the ability of scientific progress to mitigate the bounds of lethality and non-lethality. This in large part emerged after WWI from a cohort of military theorists and scientists as well as certain officials within the CO and colonial governments (as well as some police authorities), and, as Chapter 5 will show, eventually came to justify longstanding research on incapacitating agents both at Porton Down and in experiments abroad. As the later chapters of this thesis shall show, this imaginary became even more dominant after WWII, resulting in police use of teargas throughout the empire, accompanied by extensive government investment in the research and development of non-lethal chemical agents. These developments led to new ways of demarcating teargas agents, such as the formulation of the ‘riot control agent’ category, or the use of ‘toxicity’ as a means to distinguish harmful/harmless and legitimate/illegitimate chemical agents for policing.

After this chapter’s examination of how police in the British Empire came to adopt teargas for the purposes of maintaining control in the dependencies, I now turn to the first instance of teargas use on crowds within Britain, which also constituted the first widespread, regular usage of teargas in any part of the British Empire. The next chapter shines light upon a period in which teargas was articulated in a peculiar and unique fashion that stands out against the associations it has with crowd control and policing scenarios today.

## 4 Teargas in the Town Square: Civil Defence Gas Tests in WWII Britain

“Out of an immense tear gas cloud that obliterated a large part of Union Street, Aberdeen, a tramcar suddenly materialised, the driver and passengers wearing their gas masks. Then came a telegraph messenger, his cycling speed undiminished by wearing his respirator as he threaded through the crowd. It was extremely realistic. Thousands of people, all wearing their gas masks, filled the streets from Belmont Street to Broad Street. The clouds of gas seemed to have an amazing attraction for them. Every time a bomb went off they made for the densest part of the cloud.”<sup>424</sup>

The above might plausibly be mistaken as a script for the dystopian opening of an art-house film, but is in fact a press account of a gas test held as part of a Civil Defence exercise in Aberdeen, Scotland on 9 July 1941. Reading the *Aberdeen Press and Journal* description of the test from our contemporary standpoint feels unquestionably surreal. The modern associations of teargas with scenes of suppression, disorder and violence conjure a context incoherent with the sense of spectacle, the mundane, and the domestic in the account.

Even more surprising is that this indiscriminate release of teargas on the public was by no means a singular event. Public teargas releases occurred in both major cities and smaller towns across the UK from February 1941.<sup>425</sup> These were part of a nationwide Civil Defence effort aimed at minimising casualties among the public in the event of enemy gas raids. Tests were typically conducted by Air Raid Precautions (ARP) wardens, and were held in public spaces such as town squares, main streets, and shopping centres. ARP departments conducted tests with the objective of bringing “home to the public the necessity for respirators to be carried” and creating “in the public mind a feeling of confidence in wearing the respirator under actual gas conditions so that, in the event of the enemy using gas, people will know how to protect themselves and so avoid becoming casualties – either from gas or panic.”<sup>426</sup> Teargas was used as a proxy for any type of gas attack (both lethal and ‘non-lethal’). While the Ministry of Home Security (MOHS) was responsible for Civil Defence and therefore

---

<sup>424</sup> “Aberdeen Under Gas And H.-E. “Bombs”,” *Aberdeen Press and Journal*, 9 July 1941, 3.

<sup>425</sup> Gas tests did take place earlier than February 1941, however wardens did not actually use gas in them (according to newspaper reports), nor did they receive the level of national publicity in press that those held from this date onward received.

<sup>426</sup> TNA, HO 186/481, Public Tear Gas Exercises., Liability of Local Authorities; TNA, HO 186/481, Reference 722, 298/29., From Brown, May 22, 1941.

overseeing ARP schemes, tests were not mandatory, instead held at the approval and initiation of local authorities. Between February and June 1941 alone, at least fifty-four<sup>427</sup> teargas tests were held across Britain, with at least one in every region, including Scotland, Northern Ireland and Wales.<sup>428</sup> This number increased at a greater rate in the latter half of 1941.<sup>429</sup>

### **A Standout Case**

At first glance, the gas tests stand out as an anomaly in the history of teargas in Britain. Histories of CBW have long noted Britain did not use teargas during WWII for military purposes on the European continent, nor for the purpose of crowd control at home (as the USA did). The most oft-cited use of teargas in Britain in this period the use by police in a small number of sieges.<sup>430</sup> This chapter calls for a reassessment of that position, by elucidating a case of teargas use that failed to fit in categories of ‘military’ or ‘domestic’ (insofar as it was used on home soil), nor with contemporary associations of teargas with ‘crowd control’.

In Chapter 1, I mentioned Larrinaga’s idea that “the deployment of teargas is also about circulation: about the ordering of movements and interactions...with the aim of fostering good circulation while mitigating the bad.”<sup>431</sup> From this perspective, teargas is a means with which populations can be controlled within particular spaces, a way to create ‘good’ circulation (where governance is a predictable, controllable task). In gas tests, the deployment of teargas involved ordering and management of circulation, yet what was ‘good’ and ‘bad’ was contingent on both state notions of proper domestic practice in wartime, and the autonomy of local civil defence services (local authorities could decide whether to host gas tests). ‘Good circulation’ was relatively obvious – appropriate adherence to Civil Defence protocols, for example – but the fact that local authorities remained in control of their own ARP schemes meant that gas tests varied across the geography of the nation. Local authorities were, to a degree, able to assert their own notions of control and governance. The choice to hold tests, and the nature of the tests conducted, was therefore related to what local

---

<sup>427</sup> This figure is derived from selected British press coverage of gas tests; the actual number could have been considerably higher.

<sup>428</sup> In 1939 the Ministry of Home Security divided mainland Britain into twelve Civil Defence regions (see Table 1). Civil Defence in Northern Ireland was directed from the central office in Belfast.

<sup>429</sup> I undertook a shorter analysis of the gas tests in a recent publication, which sections of this chapter build upon; see Alex Mankoo, “Controlling and Caring for Public Bodies: Civil Defence Gas Tests in World War II Britain” in Mankoo and Rappert, *Chemical Bodies*, 165-184.

<sup>430</sup> Waldren.

<sup>431</sup> Larrinaga, 529.



authorities perceived to be the best way to train and protect local populations. These cases therefore also call for an understanding of emergency service exercises as anticipatory methods to secure the future, control behaviours, and care for populations within particular spaces.

Drawing from Barad, in a study of the development of protocol in contemporary UK Fire and Rescue Service (FRS) exercises, Nat O’Grady states, “by their bringing future emergencies to light in the present, exercises function to assess, develop and create forms of protocol which plan out and guide...response to different kinds of fire emergencies, before these emergencies occur.”<sup>432</sup> I shall show how these wartime gas tests similarly functioned as ways of bringing future gas raids into what was the present, such that civil defence practice could be assessed and refined. This simultaneously allowed the state to govern and control locales of British populations within public spaces during wartime – ‘fostering good circulation’ in de Larrinaga’s use of Foucault’s terms. In doing so, I suggest that tests also operated as an informal form of large-scale human experimentation, in the senses I discussed in Chapter 1. Tests involved the measurement of public behavior, such that their success was often defined by whether the public acted as anticipated and according to emergency protocols.

This chapter is split into five parts. The first section provides a sense of the national and institutional context within which gas tests emerged, discussing the development of the ARP Department and the regional structure of Britain’s civil defence. It gives a descriptive sense of what gas tests were and where, when and by whom they were held. The second section takes the case of Britain’s first teargas test (or at least the first nationally publicised test) in Brighton as a way to illustrate how the tests formed part of a sociotechnical assemblage of state care and benevolence. In this context, teargas was not simply ‘humane’ but a benign technology that enabled the (taking) care of local populations. ARP authorities used gas tests to prepare both local publics and ARP workers for potential German gas attacks; tests were therefore articulated as ways to protect and care for British publics from future threats. The orders of subjectivity – the ordering of who should be protected (and gassed), from what, by whom, and why – involved in gas tests thus had both temporal and

---

<sup>432</sup> Nathaniel O’Grady, “Protocol and the Post-Human Performativity of Security Techniques,” *Cultural Geographies* 23, no. 3 (2016): 495.

spatial aspects. Furthermore, the hierarchical yet centralised structure of ARP in Britain also facilitated these subjectivities, giving regional authorities certain powers over local authorities, and local authorities powers over local publics, while also providing some flexibility for these individuals to enact their own ideas of civil defence.

The third section interrogates this relationship between care, control, and anticipation, arguing that the concept of simulation offers a way of understanding how the care of future bodies from potential threats legitimated the use of force upon bodies in what was the present. In this context, teargas became an appropriate technology with which civil defence services could control populations within local public spaces whilst envisioning the sensory aspects of potential gas raids. The fourth section queries the connection between simulation and experimentation, contending that the tests also constituted a form of human experimentation, in which civil defence authorities could observe and measure the social relationship local populations had with various gas technologies. Tests involved the monitoring and measurement of sociotechnical practices for the purposes of both gaining information about patterns (such as under what circumstances people would carry masks) and actively shaping them (trying to make people carry them more often).

The final section of the chapter then turns to the legal status of the tests. A few months following the Brighton gas test, regional authorities became concerned that local publics might hold them financially liable for injuries incurred in gas tests. This led the MOHS to negotiate the legal status of responsibility for gas tests with regional authorities. In doing so, the MOHS had to resolve the fact that gas tests, with the need to protect the national body, presented a possible breach of Common law. I argue that the MOHS resolved these tensions largely through interpreting the effects of teargas as harmless and temporary. In doing so, it also constructed the onus of responsibility for protection in gas tests as resting largely with regional authorities and British publics.

### **The Emergence of Gas Tests in Britain's Civil Defence Structures**

The technological trajectory of teargas within British policy prior to WWII makes its pervasive use in gas tests all the more striking. The 1925 GP had prohibited “the use in war of asphyxiating, poisonous or other gases, and of all analogous liquids, materials or devices” by

signatory nations.<sup>433</sup> As Chapters 1 and 3 highlighted, while Britain did not adopt teargas for the purposes of crowd control or policing at home during the interwar period, it did endorse two uses: first, within the context of (secret) experimentation at Porton Down, and second, as a technology to maintain its power in the British colonies. With the approach and then outbreak of WWII, human experimentation at Porton intensified significantly (Porton's experimentation was by no means limited to teargas; it conducted experiments with far more toxic gases – Evans notes that teargas tests were simply 'routine').<sup>434</sup>

As Chapter 3 showed, while scientists at Porton undertook this experimentation with teargas at home, interwar British policy makers began to consider the use of teargas on populations in the empire abroad. However, Cabinet authorisation did not result in colonial authorities making use of this permission in dealing with riots and crowds. The latter parts of Chapter 3 and early sections of Chapter 5 examine some of the reasons for this.<sup>435</sup> Colonial authorities occasionally used teargas in the 1930s during siege situations (where individuals had sought refuge in a building for example), however it was not until January 1939, in Burma, that colonial police first used teargas for crowd control. Chapter 5 investigates this use in detail.<sup>436</sup> Nevertheless, during WWII, use of teargas by colonial authorities remained rare.<sup>437</sup>

Thus the WWII gas tests emerged as the first instance of teargas use on crowds within Britain, as well as the first widespread and regular usage of teargas in any part of the British Empire. While the tests were held on the basis of strategic interests and national security – to train the public to be prepared in the event of enemy gas attack – they also represented a form of human experimentation, something that Britain was already extensively engaged in at Porton. No longer just a civilising object of 'humanity' with which to control colonial populations, teargas became something with which local civil defence authorities 'cared' for, experimented with, and trained British populations on behalf of the state.

---

<sup>433</sup> Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare.

<sup>434</sup> Schmidt; Evans.

<sup>435</sup> Elsewhere, Feigenbaum has explored the tensions behind this. Feigenbaum, *Tear Gas*, Chapter 3.

<sup>436</sup> Shoul, 189; Britain did, however, aid Allied Governments in dealing with crowd control – Schmidt, 60, points out that Porton supplied South Africa with bombs filled with teargas that the South African government used against opposition groups.

<sup>437</sup> Waldren, 17, describes one incident in 1942 where Bombay police used teargas to break up a mob.

### *The Air Raid Precautions Department (ARP) and ARP Schemes*

Gas tests fell under the remit of the 1939 Civil Defence Bill, which expanded upon the 1937 Air Raid Precautions Bill to confer additional powers upon local authorities responsible for civil defence. The MOHS (within the Home Office) co-ordinated civil defence as a whole, directing central and regional services as well as local authorities. This included approving ARP schemes and co-ordination and supervision of the Air Raid Warden Service. In April 1939, the MOHS appointed twelve regional commissioners for twelve regional offices, each of which co-ordinated the services of local authorities within their regions. While the Home Office encouraged the tests, it was not mandatory for local ARP authorities to undertake them. The decision to hold tests was instead left to the discretion of local scheme-making authorities.<sup>438</sup> Public gas tests did not begin until mid-February 1941 (at least, they were not publicised in the press), following a Home Office request that tests be carried out earlier in the year.<sup>439</sup>

Air Raid Precautions in Britain dated back to 1924, when the Committee of Imperial Defence (CID), the government organ for planning defence measures, set up an ARP Committee to consider the issue of protecting Britain's civilian population against air attack. The permanent Under Secretary for the Home Office, Sir John Anderson, chaired this Committee. However, in 1929, it was split into two sub-committees: the Ministerial Committee on Policy and the Official Committee on Organisation. The Home Office formed its ARP department in March 1935 on the recommendation of these two sub-committees, both of which were dissolved in July 1936 to make way for the ARP department as the central authority for civil defence, headed by Wing Commander E.J. Hodsoll.<sup>440</sup> The department's role was to oversee civil defence measures throughout the UK, including approving ARP schemes submitted by local authorities. The 1937 Air Raid Precautions Bill made the preparation of such schemes compulsory for local authorities, tasking them with responsibilities such as first aid, emergency ambulance, gas decontamination and providing

---

<sup>438</sup> TNA, HO 186/481, Public Tear Gas Exercises. Liability of Local Authorities.

<sup>439</sup> This request is mentioned in "Home News. Tear Gas Among Shoppers", *The Times*, 1 Apr 1941, 2. This request may have come following Churchill's national broadcast on 9 February 1941, in which he declared, "We must all be prepared to meet gas attacks, parachute attacks and glider attacks, with constancy, forethought and practiced skill." See "Give us the tools, and we'll finish the job", Speech Broadcast by Prime Minister Winston Churchill, 9 February 1941. URL: <http://www.ibiblio.org/pha/timeline/410209awp.html> (accessed 20 October 2018).

<sup>440</sup> The National Archives website, "Administrative/biographical background" on Reference *HO Division 2*, URL: <http://discovery.nationalarchives.gov.uk/details/r/C511> (accessed 20 October 2018).

gas masks, rescue, repair and demolition services, building air raid shelters and recruiting volunteers.<sup>441</sup>

October 1938 marked another period of restructuring when general responsibility for civil defence was committed to the Lord Privy Seal (Sir John Anderson took up this post this same month), who took charge of the ARP Department. The department lost its planning responsibilities and dealt instead with the administration of the current ARP measures, whilst the Lord Privy Seal's Office adopted the role of planning and co-ordinating civil defence within the Home Office.<sup>442</sup> At this time, the ARP Department consisted of an administrative branch and a technical branch. The administrative branch was responsible for the current ARP measures, legislation, parliamentary and establishment matters, while the technical branch oversaw the organisation, training and inspection of local authorities' civil defence units.<sup>443</sup> April 1939 saw the appointment of twelve regional commissioners for civil defence. The formation of the Ministry of Home Security came in September 1939 with the outbreak of war, created from the Lord Privy Seal's Office, the Home Office ARP department, the Industrial ARP Division of the Air Ministry, and staff from other governmental departments and local authorities. Sir John Anderson (former Lord Privy Seal) became Home Secretary and Minister of Home Security. Herbert Morrison, former head of the London County Council, replaced Anderson as Home Secretary in October 1940.

The function of the MOHS was to co-ordinate the civil defence services of other departments, and to direct its own central and regional services and local authority civil defence services. This included the approval of ARP schemes and supervision of local authority civil defence services, provision of shelters, issue of air raid warnings (from 1943), supply of ARP equipment and co-ordination and supervision of the civil defence regional organisation, which included the Civil Defence Rescue Service, Air Raid Warden Service, Fire Guard Service, Shelter Service, Women's Voluntary Service and the Civil Defence Reserve.<sup>444</sup>

---

<sup>441</sup> Mike Brown, *Put That Light Out!: Britain's Civil Defence Services at War 1939-1945* (Sutton Publishing Ltd: Gloucester, 1999). See also Robin Woolven, *Civil defence in London 1935-1945: the formation and implementation of the policy for, and the performance of, the ARP (later C.D.) services in London*, PhD thesis (Kings College London, 1 October 2001). In his doctoral thesis, Woolven gives an account of the formation and implementation of ARP services (specifically in London) from 1935-45.

<sup>442</sup> TNA, "Administrative/biographical background."

<sup>443</sup> *Ibid.*

<sup>444</sup> *Ibid.*

The twelve regional offices and regional commissioners were responsible for the co-ordination of local authority services within their regions, and reported to the Minister of Home Security. From May 1940, their responsibility widened to include the direction of local authority services. For example, regional war rooms collected information on air raids and passed it on to the central Home Security War Room. The twelve regional offices were divided as seen in Table 1.

**Table 1:** The twelve regional offices of the Ministry of Home Security, 1939-1945, determined by March 1941<sup>445</sup>

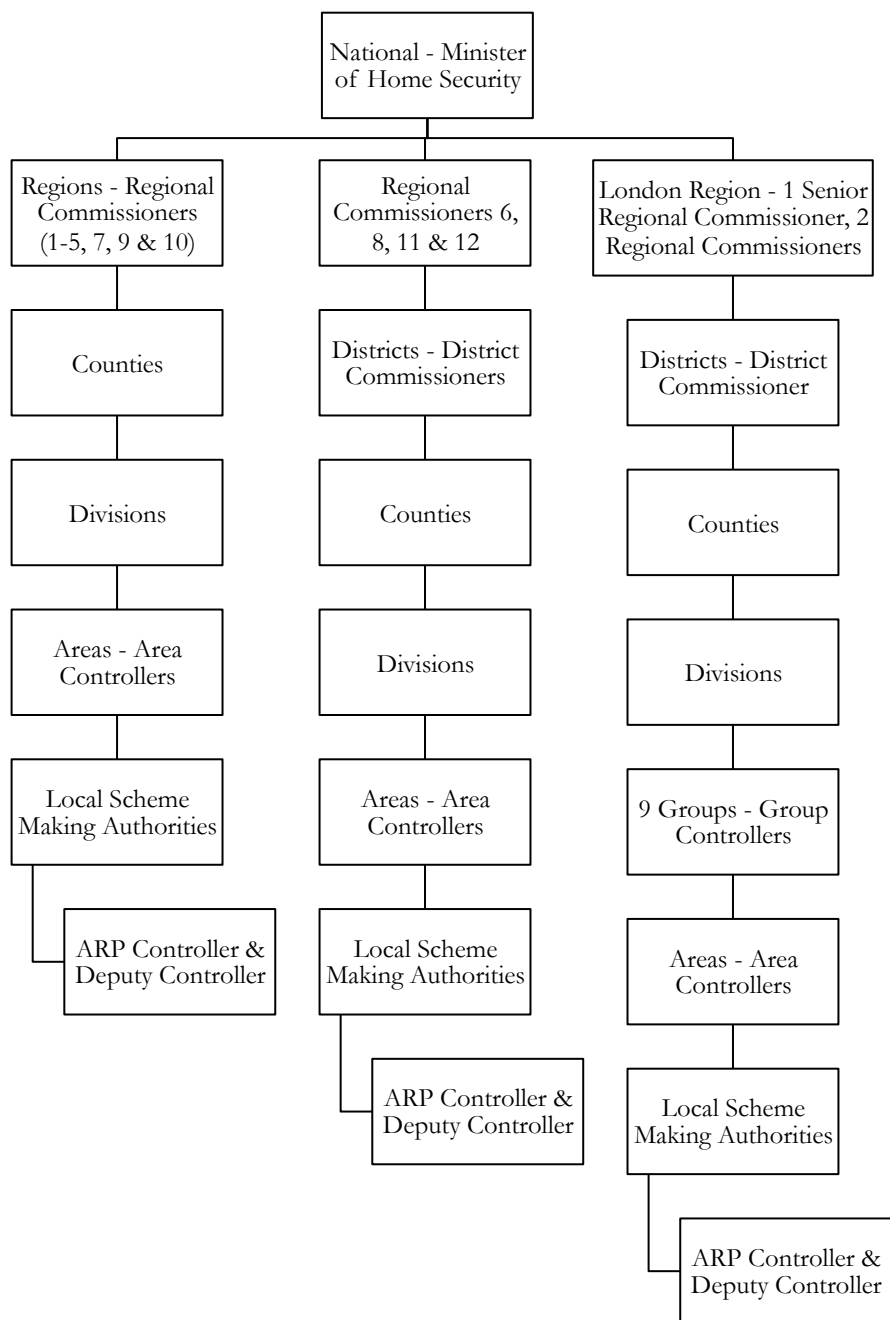
Region No	Area	Location of Headquarters
1	Northern	Newcastle
2	North Eastern	Leeds
3	North Midland	Nottingham
4	Eastern	Cambridge
5	London	68, Victoria St., SW1
6	Southern	Reading
7	South Western	Bristol
8	Wales	Cardiff
9	Midland	Birmingham
10	North Western	Manchester
11	Scotland	Edinburgh
12	South Eastern	Tunbridge Wells

Each region had a Regional Council, composed of representatives of the local authorities and regional representatives for the Ministries of Health, Labour, Food, and Pensions, the Unemployment Assistance Board and the Office of Works.<sup>446</sup> The regional commissioners presided over their region's council, expected to take control of their region if communications with the MOHS broke down and to adopt the full role of civil government until central control was restored. Figure 2 identifies the ARP structure.

<sup>445</sup> Created using information from TNA, HO 207/3 and Terence H. O'Brien, *Civil Defence* (London: HMSO & Longmans, Green and Co, 1955).

<sup>446</sup> Brown, 29.

**Figure 2.** Levels of control in the ARP (developed with details from Brown)<sup>447</sup>



Gas tests and exercises were part of the ARP and Civil Defence anti-gas training. Other such anti-gas training measures included gas vans and gas chambers, mobile chambers within which civil defence personnel and members of the public could test their respirators in an atmosphere of irritant gas (often CAP teargas) – training experiences designed to educate

<sup>447</sup> *Ibid.*

the public in the value and efficacy of their gas masks.<sup>448</sup> While these measures were significant components of anti-gas training, this chapter will maintain an empirical focus on the gas tests and exercises that took place in public spaces. This focus has been selected for two reasons: firstly, although newspapers often notified the public as to when gas vans were to be set up in towns, they contain much less coverage of the actual events and their aftermath compared to gas tests. Secondly, the nature of gas van testing is less aligned to this thesis's focus, as the gas van is an enclosed space designed for experimentation that subjects enter voluntarily for testing. In this sense gas vans differ to gas tests and exercises, which occurred within public spaces and involved members of the public who may have encountered teargas voluntarily or involuntarily. Gas tests are, at least superficially, more suited for comparison and contrast with Britain's use of gas against crowds and in riots in the colonies, which also took place in public spaces.

From the archival documents, it remains unclear who first conceived of using teargas for these tests, and who perceived tests to be under the remit of the schemes permitted by the Civil Defence Bill. However, it is evident that sometime before April 1941 the Home Office requested that local authorities conduct public demonstrations using teargas throughout the country.<sup>449</sup> Indeed, following the first gas test in Brighton, other local authorities began considering the idea of holding similar tests in their districts.<sup>450</sup> The Air Raid Precautions Training Pamphlet – titled “Notes on Gas Tests and Exercises” – issued by the MOHS to ARP wardens and authorities in January 1942, defined ‘gas tests’ as “tear gas release schemes designed chiefly to instruct the public, give confidence in the civilian respirator and afford practice to wardens.”<sup>451</sup> The introduction to the second edition of the pamphlet (January 1944), read:

“Experience of Gas Tests and Exercises held in various parts of the country shows that they fulfil a highly important purpose. The public have been made more gas conscious; public

---

<sup>448</sup> Moshenska.

<sup>449</sup> “Home News: Tear Gas Among Shoppers”.

<sup>450</sup> “Gas Mask Parades”, *Sussex Agricultural Express*, 21 Feb 1941, 4; “City Seeks Guidance on Tear Gas Test”, *Manchester Evening News*, 4 Apr 1941, 3; “Gas Test Proposal”, *Dundee Courier*, 13 Mar 1941, 2; “Kirkintilloch and District Wardens’ Association – The Annual Meeting”, *Kirkintilloch Herald*, 26 Feb 1941.

<sup>451</sup> TNA, FCO 141/9223, Air Raid Precautions Training Pamphlet No. 4 (January 1942), Notes on Gas Tests and Exercises, Issued by the Ministry of Home Security (London: HMSO, 1942). A second slightly retitled edition of this pamphlet was issued in January 1944 – see TNA, HO 186/1575, Civil Defence Training Pamphlet No. 4 (2<sup>nd</sup> Edition, January, 1944).



confidence in respirators and in anti-gas precautions generally has been markedly increased; opportunity has been afforded to rectify any defects in respirators and respirator fitting; and Civil Defence personnel have received useful practice and instruction.”<sup>452</sup>

The pamphlet distinguished gas ‘exercises’ from gas ‘tests’: “‘*Gas Exercises*’ are exercises involving tear and ‘blister’ gases, or substitutes for them, planned mainly for training the personnel of the Civil Defence Services and testing the organisation of those Services. (*Subject to the safeguards mentioned below, Tests and Exercises may be combined.*)”<sup>453</sup> Thus, while both gas tests and combined test-exercises involved members of the public who had not consented to tests, combined test-exercises could also include the participation of military forces. For example, exercises often took the form of ‘mock invasions’ that involved the Home Guard and the military as well as the police and local ARP authorities. This was the case for a large-scale exercise held in Birmingham on 9 August 1941, and an exercise in Hull on 30 August 1941 involving “regular troops, Home Guards and the Civil Defence services.”<sup>454</sup> These combined test-exercises, which were not uncommon, were notable cases in which the distinctions between military and civilian activity blurred – the *Birmingham Post* even referred to the CAP teargas used in the exercise as a ‘war gas’.

### **The First Publicised Gas Test: Brighton, February 1941**

ARP wardens in Brighton had conducted a number of gas warning tests in late 1940, which they deemed failures on account of the lack of interest shown by the public and because the sound of warning rattles and hand-bells (used to indicate the start of the test) had not reached the residential districts of town.<sup>455</sup> After holding these “gas alarm exercises” Brighton’s Emergency Committee (for Civil Defence) did not feel that they could “usefully do

---

<sup>452</sup> TNA, HO 186/1575, Civil Defence Training Pamphlet No. 4 (2<sup>nd</sup> Edition, January, 1944), Notes on Gas Tests and Exercises, Issued by the Ministry of Home Security (London: HMSO).

<sup>453</sup> *Ibid.* Though the Civil Defence Pamphlet made this distinction official in January 1942, both before and after this date media sources and ARP officials often used the terms ‘test’ and ‘exercise’ interchangeably.

<sup>454</sup> “Gas Exercise in Birmingham. Citizens’ Behaviour Under Attack. Large-Scale Defence Scheme”, *The Birmingham Post*, 11 August 1941. Teargas was only used in one area of Birmingham in this exercise; “Home Guards Took The Honours. Mock Invasion Test of Hull Defences”, *Hull Daily Mail*, 2 Sep 1941.

<sup>455</sup> For example, such tests took place on 16 September, 25 September and 3 November 1940. See “Gas-Mask Test”, *West Sussex Gazette*, 19 September 1940, 4; “News in Brief”, *Birmingham Daily Post*, 28 September 1940, 8; “Third Time Like The Rest”, *West Sussex Gazette*, 7 November 1940, 1.

anything more in the matter until the Government has found some way of compelling people always to carry their Gas Masks.”<sup>456</sup> However, on 17 February 1941, ARP officials in Brighton used teargas as part of one of these public gas tests for the first time (according to press reports).<sup>457</sup> The actual use of teargas was, perhaps, a method of compulsion that they had not yet tried until then.

The February test came soon after a radio broadcast by Winston Churchill on 9 February 1941, in which he declared, “We must all be prepared to meet gas attacks, parachute attacks and glider attacks, with constancy, forethought and practiced skill.”<sup>458</sup> It is possible, then, that an authorisation or order to begin tests with teargas may have come from Churchill himself, in co-ordination with his call for national solidarity against the prospect of Nazi invasion. The purpose of his speech was two-fold: first, to build a spirit of civil defence at home, and second, to make an international appeal for aid, specifically to the United States. It came at a time when the US government was debating the 1941 Lend-Lease Act, voted for by 260 to 165 in the House of Representatives that same day. A month later the Senate passed the bill, which came into action on 11<sup>th</sup> March, having been signed by President Roosevelt. The Lend-Lease Act, “An Act to Promote the Defense of the United States”, allowed the President to “authorise the Secretary of War, the Secretary of the Navy, or the head of any other department or agency of Government...to sell, transfer title to, exchange, lease, lend or otherwise dispose of, to any such government any defense article”.<sup>459</sup> The UK was the primary recipient of the Lend-Lease Act in WWII, receiving \$31 billion (in 1940s dollars) of supplies, while chemical warfare shipments accounted for \$208,684 of War Department Lend-Lease shipments and theatre transfers between 1941 and 1949.<sup>460</sup> Whether this included shipments of teargas – to be used in gas tests – is unclear from official records, although it would certainly be possible given the size of Britain’s teargas manufacturing industry compared to that of the USA.

---

<sup>456</sup> The Keep, East Sussex Record Office, DB/B 34/1, County Borough of Brighton. Proceedings of Emergency Committee (Aug 1939 – Nov 1941), Emergency Committee, 11 December 1940.

<sup>457</sup> American press in particular reported the Brighton test as “the first of a series of practice gas attacks to be staged throughout Britain,” see “Britain Stages Gas Maneuver As Warning”, *The Washington Post*, 18 February 1941, 3; “British Test Gas Defenses”, *Los Angeles Times*, 18 February 1941, 1; “British Stage Real Gas Test to Warn Public”, *The New York Times*, 18 February 1941, 5.

<sup>458</sup> “Give us the tools, and we’ll finish the job”.

<sup>459</sup> Lend Lease Act of 1941, Pub. L., No. 77-11, 55 Stat. 31 (1941).

<sup>460</sup> The United States Army in World War II, Statistics. Lend-Lease. Office of the Chief of Military History, Department of the Army, Washington, D.C. 15 Dec 1952.

The February test in Brighton received widespread national press coverage. Featuring in numerous national papers, the reports were almost identical (though the titles differed), and it is possible that the information on the test came from a press release issued by the MOHS. So read the first reports of the test:

“Tear gas in a mild form was released outside a cinema during a public gas test at Brighton today. Loud-speakers had given general warning during the previous two days that there was to be a gas alert and that the public should carry their gas-masks and wear them during the alert. Police and ARP wardens stopped people approaching the tear gas area. All who had gas masks on escaped the effect but one or two of the unwary were caught... There were no real casualties, but a milkman had to continue his round weeping copiously. The general test was very complete, and more of the general public wore gas masks than on any previous occasion. Bus drivers and conductors worked in their masks, as did the staffs of business houses and offices in the town.”<sup>461</sup>

Much like the *Aberdeen Journal* excerpt at the introduction of this chapter, this description situated everyday domestic activities within these tests – a milkman continuing his round, bus drivers and conductors at work, staff in the town offices going about business as usual. The test featured as one of the more benign (and controllable) spectacles of everyday wartime routine, which saw ‘normal’ life continuously disrupted in a range of ways, whether by rationing, other air raid and civil defence precautions, or actual air raids. More detailed coverage of the test came from *Portsmouth Evening News* the day following the test, which provided more information on the objective of the test and the activities involved in it: “the idea [behind the test] was to imitate what would happen if the Germans suddenly made a gas attack, which they might do as a prelude to, or as part of, an invasion effort.”<sup>462</sup> Described as “a very realistic affair”, the test had consisted of “a weak form of tear gas” being released in a “danger zone...indicated by a gas van flying a yellow flag, while loud-speakers warned people to put on their respirators, buses were stopped, and passengers without gas masks informed of the consequences of remaining in the buses and entering the gassed area.” The account also included the official opinion – that of the ARP wardens – on the test: “The result of the

---

<sup>461</sup> “Town Stages Tear Gas Surprise Test”, *Liverpool Evening Express*, 17 February 1941; the test was also covered in the *Derby Daily Telegraph*, *Evening Despatch*, *Gloucester Citizen*, *Hull Daily Mail*, *Gloucestershire Echo*, *Nottingham Evening Post*, *Lincolnshire Echo*, *Portsmouth Evening News*, *Birmingham Mail*, *Dundee Evening Telegraph*, *Sunderland Daily Echo and Shipping Gazette* and the *Hartlepool Northern Daily Mail*.

<sup>462</sup> “Respirator Test”, *Portsmouth Evening News*, 18 February 1941.

test is regarded with satisfaction, but there are to be others, probably more severe, until the gas protection system is in thorough working order.”

However, ARP authorities’ pursuit of realism in tests lay in stark contrast with the manner in which newspapers often presented gas tests with the language of spectacle, excitement and benevolence. Even those suffering the effects of teargas, like the milkman, were framed as temporary and imagined casualties. The *Daily Mirror*, for example, wrote of the Brighton test:

“It caused a good deal of excitement, but everywhere people co-operated with the authorities and welcomed the experiment. “It’s given me confidence in my gas-mask,” [people] said afterwards. Even men and women caught without gas-masks who soon had tears streaming down their cheeks showed no resentment.” More specifically, it reported that “Mrs A. Barker, of Richmond-street, a shopkeeper, said, “People without masks came into my shop with tears running down their faces, but they all took it in good part.” Nonetheless, “The Mayor of Brighton, Alderman J. Talbot told the *Daily Mirror*: “The test was a success. But I am disappointed with the response of the rest of the town to our appeal that everyone should be carrying their masks.””<sup>463</sup>

### *Tests as State Care*

Rather than describing the unpleasant effects of teargas, the *Daily Mirror* account spoke of how tear-gassed individuals “showed no resentment” and “took it in good part”, and in contrast praised the positive, confidence building, and benevolent character of the tests. Similarly, the *Liverpool Evening Express* remarked on the effects of teargas on a young boy during a Kingston gas test in March: “the only “casualty” was a boy of ten who took his mask off to try the effects of tear gas. Treatment soon put him right.”<sup>464</sup> Notably, this account placed the word ‘casualty’ in quotation marks, pointing to how ARP wardens used teargas in tests to imagine casualties of possible future gas raids in the present. For them, the boy in his tear-gassed state was not the real ‘casualty’. Rather, the ‘casualty’ referred to was the possible future state represented by the effects of teargas on him in the present. In this context, teargas was part of a sociotechnical system that enabled ARP authorities to pre-emptively care for populations in potential futures, such that its deleterious effects were reinterpreted as benevolent. Extending past the narratives of humanity and non-lethality associated with

---

<sup>463</sup> “Trust Mask After Tear Gas “Raid””, *Daily Mirror*, 18 February 1941.

<sup>464</sup> “Tear Gas Test in Streets”, *Liverpool Evening Express*, 31 March 1941, 1.

teargas in the interwar period, this enactment of teargas constructed its effects as benign, beneficial and protective.

Accordingly, press accounts often emphasised distinctions between civilians who had their respirators (gas masks) with them during tests and those that did not. Of the Brighton test, the *Portsmouth Evening News* exclaimed:

“It is significant that hundreds of people were out without their respirators. Those who had obeyed the official injunction, always to carry the little square box with the mask in it, were able to walk through the mist of tear gas without inconvenience. The children came best through the test, for they all had their masks with them put them on easily, and were no anxiety to the authorities – thanks to the regular practices at school.”<sup>465</sup>

The article later referred to not wearing a gas mask as aiding the enemy: “It is certain that the Service men would all have their respirators ready...and the Police and ARP workers are similarly prepared. The ordinary civilians should be just as particular. To go without the gas mask is to play into the enemy’s hands by helping the aggressors and handicapping the defence.”

Thus, while gas tests were part of a state programme of protection and care, this programme was also coercively imposed, and was simultaneously a system of state control over geographically disparate populations. Civil defence authorities were able to enrol individuals who did not carry their respirators into this system by using teargas. Although those without masks had not actively protected themselves (and so were “helping the aggressors”), ARP officials could use teargas to transform these populations into imagined potential ‘casualties’ with which they could practice civil defence protocols, and to forcefully encourage them to carry masks in future. Thus, within this assemblage of state care and control, teargas performed a unique role in close relation with that of the gas mask. In recent work, Etienne Aucouturier has pointed out the biopolitical function that the gas mask plays in relation to the use of chemicals upon populations, operating as a means to sort populations to be protected from those to be targeted.<sup>466</sup> Similarly, here it functioned as a means to demarcate the good civil defence practice from the bad.

---

<sup>465</sup> “Respirator Test”.

<sup>466</sup> Etienne Aucouturier, “Biological Warfare, Chemical Warfare and the Public Body,” in Mankoo & Rappert, *Chemical Bodies*, 59-76.

Moreover, the relation between care and control here speaks to the discrepancy that Mol has identified between the ‘logic of care’ and the ‘logic of choice’. Local populations did not get to ‘choose’ whether tests were to be held, but they were told they could ‘choose’ to carry their gas masks, with the implication that any inconvenience or harm incurred by not doing so would be their own choice. The mobilisation of this logic of choice, to quote Mol, shifted “the weight of everything that goes wrong onto the shoulders of the...chooser.”<sup>467</sup> This returns us to questions of ‘whose care?’ Though the state saw gas tests as a way to take care of the national body, this did not necessarily equate to good care to local populations. As later parts of this chapter shall show, for some individuals of the public, gas tests were at best a poor form of care, and at worst an additional wartime burden.

Whilst tests were emergency exercises and training opportunities for civil defence workers, they were also participatory spectacles for local publics, contexts that were often disharmonious. In fact, for some communities, tests were even a humorous experience – of a test in the North Eastern city of Jarrow, the *Newcastle Evening Chronicle* remarked, “One adventurous spirit took off his mask, sniffed the air, and walked into the gas cloud. When nothing happened [to] him – he did not even shed a tear – the rest of the onlookers took off their respirators. “It is not as strong as the curate’s egg,” said one of the crowd. Everybody laughed...Children romped about in the gas cloud without their masks.”<sup>468</sup> This particular test was indeed a town spectacle; the report claimed that “everybody in Jarrow – 27,000 people” carried their respirators out in the streets in preparation for the event. Gas tests may have become more routine practice for those on the home front over time, but they were nonetheless events for local communities.

Indeed, the initial gas test in Brighton led other local authorities around Britain to consider holding gas tests of their own.<sup>469</sup> In the week following the test, the *Sussex Agricultural Express* noted, “Local ARP authorities might arrange a gas test as they did on Monday at

---

<sup>467</sup> Mol, *The Logic of Care*, xi.

<sup>468</sup> “Gas Exercise But everybody laughed”, *Newcastle Evening Chronicle*, 19 April 1941, 5.

<sup>469</sup> Soon after the Brighton test, publicised tests took place in Windsor, Southend, Leicester and Kingston-upon-Thames. Windsor’s gas test saw “high concentrations of tear gas...released simultaneously in all the principal streets. The public had been warned that the exercise would take place, and the majority quickly put on their masks...Most of the shops closed for about ten minutes.” Some of those not carrying masks “were sent by the police into air raid shelters. Some had tears streaming down their face.” See “Careless Weep in Mock Gas Attack”, *Daily Mirror*, 22 March 1941.

Brighton.”<sup>470</sup> Likewise, it prompted authorities in Manchester, and Dundee and Kirkintilloch in Scotland, to consider arranging something similar in their local areas.<sup>471</sup> However, the *Dundee Courier* also received a letter from a local ARP instructor claiming that Brighton was not the first case of teargas being used for an ARP exercise. Instructor George Bennet wrote, “in August last year I took part in an ARP exercise in Hean’s Lane, when tear gas was released in a concentration sufficient to compel wearing of respirators in the immediate area... Similar exercises were held in other districts of the town, when ARP personnel and, to some extent, the general public were able to experience the effects of tear gas released in the open.”<sup>472</sup>

Bennet raised this because of his concern that an “inferiority complex” might develop in Dundee’s ARP should they not recognise their leadership in this area. From his brief description, it seems possible that the events in 1940 that he speaks of were more akin to ARP exercises specifically designed for wardens, rather than public gas tests in the format and with the goals of the 1941 Brighton test. Nevertheless, Bennet’s comments reflect how tests had both local and national significance, being construed not only as events of national importance (that generated a broad national spirit of civil defence), but also of great local importance, becoming sources of local identity and pride, and even competition in civil defence.

The character of the gas tests as local and domestic events was, paradoxically, contingent on Britain’s wartime defensive strategy of preparing and protecting the population against enemy air raids, such that their legitimacy was derived from Britain’s status of being at war. Through this, the domestic spaces of the high street, shopping centre, or cinema, though distinct from the military spaces of battlefields abroad, became potential spaces of military action. Civil defence authorities understood the temporary effects of teargas as a benign way to envision possible future use of gas warfare (including more toxic gases) by Germany, despite the GP’s prohibition of gas as a means of warfare. The use of teargas for civil defence tests and exercises relied in part on its distinction from more lethal forms of CW, which Britain feared Germany might use, a distinction not unlike its demarcation from lethal force by colonial authorities. But in contrast to the empire, where police used gas upon some populations but not others, the civil defence apparatus in WWII Britain co-produced the

---

<sup>470</sup> “Gas Mask Parades”.

<sup>471</sup> “City Seeks Guidance on Tear Gas Test”; “Gas Test Proposal”; “Kirkintilloch and District Wardens’ Association – The Annual Meeting”.

<sup>472</sup> “Dundee Led in Tear Gas Tests”, *Dundee Courier*, 14 Mar 1941, 4.

temporary and innocuous qualities of teargas with its role in a largely indiscriminate system of state control. In this system, the bodies of those on the Home Front – many of which were women and children, conceived of as performing domestic roles – became human subjects through which the state organs of civil defence anticipated and mitigated the effect of possible future gas raids on its national population body.

### **Simulation and Anticipation: Future Emergencies, Present Experiences**

A key function of the gas tests was to provide training to the Civil Defence services. The 2<sup>nd</sup> edition of the Civil Defence Training Pamphlet (for ARP wardens and authorities), issued in January 1944, included an introduction that noted:

“Whilst it is necessary, in view of the possibility of gas attacks, that all scheme-making authorities should push forward with their plans for holding gas tests and exercises, it is equally necessary that:-

- (a) All gas tests and exercises should be carefully planned with due attention to realism, and conducted on sound, practical lines.
- (b) The lessons which the exercises are intended to teach should be clearly defined and properly learnt both by the personnel taking part, by those standing by and by the general public.
- (c) Personnel taking part, particularly at tests and exercises including the public, should have sufficient anti-gas knowledge to enable them to carry out their duties at the exercises without making mistakes which will be obvious to the public.
- (d) Prior to the incident all personnel should be carrying on normally at their usual place of duty. There is no realism about a test or exercise when squads of men in full protective clothing are kept ready waiting for the gas warning to sound.”<sup>473</sup>

Clearly, authorities saw the realism of the tests as imperative. This realism enabled them to simulate the experience of possible future emergencies, so they could refine protocols and train both the public and defence workers in civil defence standards. The realism was directly associated with the use of teargas – a way of experiencing the physiological, visual and emotive character of potential gas raids. “It is useless to stage a test involving the release of one or two generators of CAP in a high wind,” the pamphlet explained, “The lessons of a test are entirely lost unless the conditions of a gas attack are realistically reproduced.”<sup>474</sup>

---

<sup>473</sup> TNA, HO 186/1575, Civil Defence Training Pamphlet No. 4 (2<sup>nd</sup> Edition, January, 1944), 3.

<sup>474</sup> *Ibid*, 5.



In the case of the FRS, O’Grady notes “the capability of exercises to offer realistic impression of future emergencies is intrinsically tied to the question of what material props are found in the exercise.”<sup>475</sup> In ARP gas tests, gas masks, teargas technologies, protective clothing, and gas rattles (used to signify the beginning of gas raids) were examples of such material props. Like O’Grady’s cases, ARP performance in these tests relied on “invoking different emotional states in participants through the presence of material props which entangle with the discursive and audio-visual invocation of the future emergency.”<sup>476</sup> This material and sensory facet of the tests speaks to a notion that they were a form of simulation, generating “knowledge of gaps, misconceptions and unfulfilled needs”, in the words of Lakoff.<sup>477</sup> This is exhibited in point (b) in the Civil Defence pamphlet: “The lessons which the exercises are intended to teach should be clearly defined and properly learnt...by the personnel taking part.” The tests therefore made “infrastructural vulnerabilities visible” and entailed a method “for designating priorities and allocating resources in a preparedness system.”<sup>478</sup> Making such vulnerabilities visible was a way of creating “good circulation” in wartime within local public spaces.

Thinking of teargas use in tests as a form of simulation speaks to observations made within the STS literature on teargas. Balmer, Spelling and McLeish similarly suggest that the recommendations of the Himsworth Committee’s investigation into CS gas (following use by the RUC in Northern Ireland in 1969) was a form of simulation, describing and predicting future teargas use.<sup>479</sup> They refer to Crogan’s definition of simulation as “a process by which a phenomenon is representatively modelled by another phenomenon. The process involves a selective reduction in the representative model of the complexity of elements composing the simulated phenomenon.”<sup>480</sup> In particular, they point to how simulating something that had not yet occurred involved making “a spectrum of judgments about which elements of the simulation had to be authentic and which were trivial.”<sup>481</sup> Similarly, the MOHS intended to

---

<sup>475</sup> O’Grady, 500.

<sup>476</sup> O’Grady, 496.

<sup>477</sup> Andrew Lakoff, “Preparing for the Next Emergency,” *Public Culture* 19 no. 2 (2007): 247-271.

<sup>478</sup> *Ibid*, 266.

<sup>479</sup> Balmer, Spelling and McLeish.

<sup>480</sup> Patrick Crogan, *Gameplay Mode: War, Simulation and Technoculture* (Minneapolis: University of Minnesota Press, 2011), xviii.

<sup>481</sup> Balmer, Spelling and McLeish, 112. In making this point, they particularly draw from Ghamari-Tabrizi’s study of RAND’s Cold War role-play and gaming simulations of nuclear war; see Sharon,

use gas tests to model gas raids that had not yet occurred. The civil defence pamphlet deemed the authenticity of particular elements – the element of surprise, certain choices of material props, and the discipline of civil defence workers in adhering to protocols, for instance – as key components of realism. Unlike the Himsworth case, however, the “selective reduction” of elements in simulating gas raids was not undertaken simply with regard to triviality. Instead, at least when simulating the effects of gas, authorities had to selectively reduce complexity on the basis of acceptable use of force – they used to teargas to simulate the effects of a range of chemical weapons (including more deadly gases such as mustard or chlorine gas) because it usually made people adorn gas masks, while not having the kind of permanent harmful effects some of these weapons would.

Balmer, Spelling and McLeish, following Crogan, also note that simulation involves both “copying and controlling what is being simulated.”<sup>482</sup> Yet these two objectives often lie in tension with one another: copying a gas raid would require the lack of control over the situation that the simulation is itself also designed to minimise. In their paper, they address this tension by showing how the Himsworth Report entailed pre-emption – decisions as to how authenticity could be achieved – while also blurring boundaries between the real and the simulated. This blurring involved the simulation becoming ‘real’, or rather ‘hyper-real’, to use Jean Baudrillard’s term.<sup>483</sup> As such, they argue that the ‘real’ reference points that existed in the recommendations of the Himsworth report failed to translate to the framework of everyday policing.<sup>484</sup>

This idea of the simulation becoming the ‘real’ overlaps with O’Grady’s argument that exercises bring “future emergencies to light in the present,” and therefore “assess, develop and create forms of protocol which plan out and guide...response to different kinds of fire emergencies.”<sup>485</sup> With this discussion in mind, applying the conception of simulation to the gas tests, they can be understood as ways that civil defence authorities made the future ‘real’. The tests, as simulations, “re-insert[ed themselves] back into the world as the ‘real’ reference point[s] for acting and thinking in relation to a phenomenon,” which in this case was enemy

---

Ghamari-Tabrizi, “Simulating The Unthinkable: Gaming Future War in the 1950s and 1960s,” *Social Studies of Science* 30 no 2 (2000): 163-223.

<sup>482</sup> *Ibid.*

<sup>483</sup> Jean Baudrillard, *Simulacra and simulation* (Ann Arbor: University of Michigan Press, 1994).

<sup>484</sup> Balmer, Spelling and McLeish, 116.

<sup>485</sup> O’Grady, 495.

gas raids.<sup>486</sup> As the Himsworth simulation failed to translate to everyday policing, actual gas raids clearly would not match the ‘reality’ referenced by gas tests. British publics did not and could not experience gas tests as actual emergencies. Press coverage often paradoxically portrayed gas tests as exciting, even humorous and fun events. A real gas raid would not be any of these things. Making certain elements of the simulation authentic therefore did not necessarily translate to an ability of ARP workers to make the threat of gas raids ‘real’ for local populations. In fact, it was the transient and mild effects of teargas – the very qualities that enabled its use in tests in the first place – that contributed to the lighthearted, mundane, communal experience that many people had during the tests.

Despite these tensions, authorities believed a successful test performance hinged upon a public experience that felt real – the civil defence pamphlet bullet point (c) requested that personnel carry out exercises without making mistakes noticeable to the public. The sight of personnel in protective clothing prior to the test, for instance, would be a signifier of a test’s superficiality and was to be avoided. While tests did not involve the sense of threat that a real gas raid would, they still enabled ARP workers to generate knowledge of “gaps, misconnections and unfulfilled needs” in emergency protocols, to return to Lakoff. Thus, tests were a means of building public confidence not just in equipment, or with teargas, but the entire sociotechnical system of civil gas defence – ARP wardens, technologies, and emergency protocols.

#### *Simulation and Anticipation as State Care*

In gas tests, the temporary effects of teargas served to at once provide a sensory experience of gas in an emergency that was ‘real’ enough to simulate enemy use of war gas, while remaining short-lived enough that they only did so within the temporal limits of the exercises. In doing this, teargas was not just constructed as humane, but as a technology of care within an assemblage of values, technologies, social actors, and practices that in turn provided legitimacy to the gas tests as programmes of state control and care. During tests and exercises, individuals affected by gas could be decontaminated and issued clothing to go home in at gas cleansing centres. Local authorities assigned decontamination squads to the task of monitoring and decontaminating both people and spaces following a test (this included

---

<sup>486</sup> Balmer, Spelling and McLeish, 113.

decontamination of food in stalls for example).<sup>487</sup> These aspects of tests enabled ARP authorities to ‘take care’ of populations in both senses noted by Weiss Evans and Frow, as discussed in Chapter 1: first, by making the ARP authorities the service that mitigated, and protected local populations from, the raid threat; and second, by enabling ARP authorities to fulfil their obligations to the state to secure, and make knowable, their local populations. In short, through these assemblages, ARP authorities were able to control and secure the various local publics across the nation that they were respectively responsible for ‘taking care of’ on behalf of the state.

Various sections of the civil defence pamphlet also used the language of care: “it is possible with adequate knowledge and efficient precautions, to *reduce the dangers* of gas attack...urge the public (a) to *take care* of their gas masks...proper *care* must be taken over the preliminary arrangement for a gas test. (italics added).”<sup>488</sup> Thinking of tests as attempts to care also speaks to de Larrinaga’s notion of teargas as an apparatus of security that fosters good circulation and mitigates the bad. In the case of gas tests, this good circulation consisted of, most notably, the carrying and wearing of gas masks. In WWI, teargas was often employed on battlefields as a way of forcing the enemy to wear gas masks, lessening their efficiency.<sup>489</sup> In gas tests, teargas had a similar effect but did so in the context of a program of state protection, forcing civilian populations to practice wearing gas masks in preparation for enemy attack. Gas tests also allowed for the identification and marginalisation of ‘bad circulation.’ Following the first test in Brighton, the *Portsmouth Evening News* remarked, “To go without the gas mask is to play into the enemy’s hands by helping the aggressors and handicapping the defence.”<sup>490</sup> Similarly, the *Daily Herald* featured a column with two images from a gas test in Southend. The first image showed a woman and child wearing gas masks with the heading “They were ready” and caption “This mother and child were prepared...they suffered no effects, but look at the picture of the girl below.”<sup>491</sup> Below this image and caption was a picture of a woman suffering the effects of gas, with the heading “But she wasn’t” and the caption “caught without her gas-mask, she was soon “crying” as the tear-gas took effect. So wherever you go, carry your gas mask.” Local civil defence authorities issued gas masks, and everyone was

---

<sup>487</sup> TNA, HO 186/1575, Civil Defence Training Pamphlet No. 4 (2<sup>nd</sup> Edition, January, 1944).

<sup>488</sup> *Ibid*, 6-7.

<sup>489</sup> Jones, 152.

<sup>490</sup> “Respirator Test”.

<sup>491</sup> “They were ready”, *Daily Herald*, 31 March 1941, 3.

expected to have one. Gas tests were thus a way of measuring this compliance (through counts and estimates, as I will show shortly), and identifying individuals who required, or had forgotten, their masks. In doing so, tests enforced certain public norms of civil defence.

The four points in the Civil Defence Pamphlet (see above) suggested that a lack of realism in tests would not provide civil defence services with reliable experience of how the British public would respond in the event of an actual gas raid. Thus, civil defence officials saw the reliability of the ‘results’ of tests as therefore contingent on realism. In a ‘realistic’ test or exercise, the bodies of the British public themselves became material props through which the state’s system of civil defence could anticipate and mitigate the effect of gas raids on future bodies. For this reason, it is useful to not only think of the gas tests as simulation, but also as forms of experiment, and more specifically human experimentation. ARP authorities used teargas on human bodies in order to make measurements, learn new information, and find patterns. The British state, in seeking to protect the national population body, transformed the individual bodies of members of the public into experimental subjects.

### **Gas Tests as Human Experimentation**

ARP authorities did not conduct tests with the primary goal of observing the physiological effects of teargas. Rather, they aimed to measure and monitor the effects of gas – and civil defence technologies and practices as a whole – on local populations. This provided civil defence workers with knowledge about how the public might respond in gas raids, while training local populations and building the public confidence in their role in the state system of civil defence. That authorities were particularly interested in the behaviour of the British public during tests is evidenced by the Civil Defence pamphlet including “Behaviour of the Public” as a major consideration under its section of “Matters for Attention in Gas Tests”. An account in *The Times* of the aforementioned gas test in Kingston read as follows:

“[a] concentration of gas was laid outside a large department store...it was a test for the anti-gas precautions in the district affected and the ARP services in the store, while the effects of the demonstration on customers in the store itself were specially noted...The public response to the appeal of the authorities for cooperation was admirable. Gas-masks were put on whenever they were required, and the injunction not to take cover or to attempt to get into shelters before fitting the masks was strictly obeyed. People carrying parcels obeyed the

instruction to place them on the ground where they stood and then to put on their respirators.”<sup>492</sup>

Rather than focusing on measuring the physiological effects of teargas on bodies, ARP services instead used gas tests to monitor and modify social practices of their local populations in wartime. In the case above, they observed the effects of the demonstration on customers, and monitored the response of the public to injunctions. In this respect, tests also functioned as measures of control and order. Authorities measured the extent to which the public obeyed official protocols, such as placing parcels on the ground and adorning respirators before taking cover. Sometimes measurements were quantified, and if not they were certainly monitored through observation. As such, the gas tests fit with Stilgoe’s slightly ‘tightened up’ conception of experiment as involving “the deliberate use or observation of a system in which certain things are controlled in order to measure effects.”<sup>493</sup> The ‘controlled’ aspects of the tests could include: the actions/protocols of ARP wardens, the technologies used (masks, rattles, teargas), and the location or time of the tests. The effects being measured, on the other hand, generally related to public behaviour, or the relationship the public had with particular technologies, especially gas masks.

Roles of measurement and observations were especially delegated to individuals that the Civil Defence pamphlet referred to as ‘umpires’, although the pamphlet does not give any detail on the criteria for who could be an umpire (presumably these were ARP wardens assigned to the particular task). For example, Section 5 of the Training Pamphlet on Gas Tests and Exercises detailed “Matters for Umpire’s Attention,” noting various aspects of gas tests that the MOHS expected local authorities to monitor and measure. In the first edition of the pamphlet, this read:

“Umpires should give special attention to the following points:-

- (a) Wind and weather conditions.
- (b) Effectiveness and appearance of gas cloud.
- (c) Action of police, wardens, and other services, including the knowledge of where to send people for cleansing.
- (d) Action of pedestrians (people carrying bags or parcels should drop them quickly on hearing the gas alarm so as to be unhindered in putting on respirators), people indoors,

---

<sup>492</sup> “Home News. Tear Gas Among Shoppers”.

<sup>493</sup> Stilgoe, 42.

local shopkeepers (all food should be covered up; all show windows and doors must be closed), traffic and drivers of vehicles, parents and small children, school-children, horses and other animals.

- (e) Proportion of people carrying respirators.
- (f) Audibility of rattles, and handbells, also how far the rattle warning is taken up by successive wardens, and how far this corresponds with the actual effectiveness of the gas.
- (g) Distance from point of release over which gas is noticeable and effective.
- (h) Degree of penetration of gas into dwelling-houses, surface shelters, Anderson shelters, shops and commercial premises, higher floors as compared with lower floors (medium or strong wind may carry gas high; roof spotters may be affected).
- (i) General condition of public respirators including number faulty, number wrongly fitted (including wrong size), and the proportion properly anti-dimmed (misting is specially noticeable on cold days).
- (j) Methods of carrying respirators and types of carrier used.
- (k) Whether public are in possession of anti-gas ointment.”<sup>494</sup>

Umpires took on the role of monitoring both members of the public and members of the air raid precautions services, as well as various material technologies. The umpires took on the role of “deliberate observation” of the controlled system (the gas test), specifically paying attention to measuring the above qualities – some behavioural, some environmental, and some socio-material. Thus, as experiments, the tests were also sites of knowledge production; through umpire’s monitoring, civil defence services could gain insight into the social patterns of the local populace during gas raids as well as material (efficacy of respirators against gas) or meteorological (effect of wind on gas) aspects. By taking these measurements, civil defence

---

<sup>494</sup> TNA, FCO 141/9223, Air Raid Precautions Training Pamphlet No. 4 (January 1942). In the 2<sup>nd</sup> edition of the Pamphlet, points (e) and (j) had been removed. This was because, as the war progressed, issues regarding the durability of gas masks began to pose a problem for British policy makers due to Britain’s limited supply and production of gas masks. In January 1942, the Principal Assistant Secretary of the MOHS T.H. Sheepshanks: “From the supply point of view it is clear that it would be to our advantage that respirators should not be exposed to the wear and tear which results from their being carried. The position arising from the war with Japan reinforces this view.” See TNA HO 186/2098, from T.H. Sheepshanks, 15 January 1942. Ultimately, however, the MOHS decided to continue with gas tests because of the “very useful purpose” they fulfilled, and because no formal relaxation of gas-mask carrying instructions was sanctioned. Had such an announcement been made, they would have had to stop gas tests on the grounds that the “courts will no longer have the same sympathy” for local authorities, who would then be open to significant liability for injuries (see the latter section of this chapter). See TNA HO 186/2098, to Mr. Kirwan, 26 March 1942.

services could refine socio-material protocols such as when, where and how to use rattles or gas in order to achieve ‘realism’ and public cooperation in civil defence (e.g. high rates of gas mask adoption). Moreover, as highlighted by (i) above, gas tests provided authorities with the opportunity to experiment with the condition and efficacy of respirators in service. The use of teargas enabled them to conduct ‘field trials’, so to speak, to identify faulty or ill-fitting masks that would not adequately protect against gas. However, in order for them to make such assessments of gas masks, they required human subjects to wear them in ‘real’ gas conditions.

Despite the involvement of a range of parties in the tests, they differ from Stilgoe’s notion of ‘collective experimentation’ mentioned in Chapter 1, which he defines as “democratising the asking and answering of the question.” The questions at hand in gas tests – those of how local populations might respond to gas raids and how to protect them – were not open to all those involved in the tests. Rather, national security and the state’s need to protect the national body dictated the obstruction of democratisation. Instead, the MOHS left the choice of conducting tests, rather than defining their objective, to local authorities. Delegating responsibility for tests to local authorities did, however, enable those parties to implement gas tests according to their best judgments.<sup>495</sup>

The measurement of local populations’ familiarity with and adoption of gas masks was also a key experimental component of the gas tests - for example, following a test in Birmingham on 13 August 1941, Birmingham ARP Committee Chairman Alderman Norman Tiptaft noted, “Now as to the necessity for this exercise. A census taken on the morning of August 13 showed...only one person in thirty four was carrying a gas mask. The next morning (August 14) one person in seven – just about five times as many – was carrying a gas mask.”<sup>496</sup> For ARP authorities, the gas test – and the actual use of teargas in it – had a measurable effect on the behaviour of local populations, specifically their relationship with gas masks. A comment from an ARP official in Manchester published in the *Manchester Evening News* reflected similar goals: “We want to find out how many folk carry their gasmasks regularly, and if people were given warning they would bring their respirators on the day of the tests and still leave them at home for the rest of the time.”<sup>497</sup> Some accounts of gas tests explicitly referred to increased mask carrying as ‘results’ of the test. An account of a gas test in

---

<sup>495</sup> Stilgoe, 48.

<sup>496</sup> “Tear Gas. More Experiments in Birmingham. A.R.P. Chief’s Advice”, *The Birmingham Mail*, 20 August 1941, 4.

<sup>497</sup> “You’ll Cry If You Forget Gas Mask,” *Manchester Evening News*, 1 May 1941, 4.



Barnstaple in the *Western Morning News* read: “The most obvious result of the “exercise” was that more people carried their gas masks to business in the morning, but fewer people were in the streets when the tests took place.”<sup>498</sup> The framing of these effects of the test as ‘results’ speaks further to their role as a form of human experimentation.

Gas advisers also played a key role in the experimental apparatus of tests. Each local authority could also delegate a gas adviser for their area, who would prepare and discharge teargas bombs. In some cases, gas advisers were professional scientists. For example, in 1941, the gas adviser for the Dundee area was Dr Robert Roger of the chemistry department at the University College, Dundee.<sup>499</sup> Roger supervised an anti-gas demonstration in Perth on 30 March 1941, where he “exploded a tear gas bomb” while “wardens and others” entered the affected area.<sup>500</sup> Later that year, on 24 June, he “prepared and discharged” a “persistent tear gas bomb” for a teargas test in Brook Street, Broughty Ferry (a Dundee suburb).<sup>501</sup> According to local reports,

“...it contained a compound not mentioned in the ARP book, and released a vapour capable of penetrating houses and causing much discomfort. Chief symptoms are skin irritation and eye trouble. It is ideal for exercise purposes. Careless pedestrians who ventured out without their gas mask soon felt their eyes smarting as the vapour reached them a good distance from the point of explosion.”<sup>502</sup>

Roger’s scientific background would have brought an authority to his role as gas adviser in the tests – he had the expertise to select the necessary compounds, prepare and release them in gas bombs – it also further constructed the gas test as an experimental setting. As a chemist, Roger had the knowledge deemed necessary to both measure and control particular chemical effects (for example, the concentration of the gas bomb, or the type of vapour used).

It does not appear to be the case that scientists or officials from Porton were involved in the conduct or monitoring of gas tests or exercises. Nevertheless, it is possible that certain developments at Porton during the previous decade came to fruition in the gas tests. For

---

<sup>498</sup> “Gas “Exercise”. Vicinity of Tests Avoided In Barnstaple,” *Western Morning News*, 1 October 1941, 6.

<sup>499</sup> “Perth Anti-Gas Demonstration,” *Perthshire Advertiser*, 2 April 1941, 7.

<sup>500</sup> *Ibid.*

<sup>501</sup> “Tear Gas Test at Broughty,” *Dundee Courier*, 25 June 1941, 3.

<sup>502</sup> *Ibid.*

example, by February 1938, scientists at the Porton Experimental Station had developed a “method for the production of a toxic cloud” by means of a specially designed exhaust box to fit on vehicle engines into “a working possibility.”<sup>503</sup> They specifically carried out trials with CAP gas. On 9 December 1941, authorities held a public gas test in central Guildford in which “the streets were almost cleared within three minutes of the passing of 18 generators on cars.”<sup>504</sup> The *Surrey Advertiser* account of the test wrote of how “the majority of those without masks wisely ran for cover in shops and other enclosed premises.”<sup>505</sup> While there is no concrete evidence that the generators in question were the same mechanisms developed at Porton in 1938, this case nevertheless highlights how the kinds of technical experimental developments scientists were focusing on at Porton had a certain direction of innovation that, to an extent, aligned with the applications teargas later found in civil defence gas tests.

In summary, the tests involved forms of chemical experimentation with human subjects, but not necessarily of the type occurring at Porton Down. Instead, they functioned as experiments on human subjects’ relationships with gas and air raid technologies, such as teargas, warning gas rattles, and most importantly gas masks. Civil defence authorities wanted to measure wartime behaviour, public responses to gas, and the way in which both wardens and the general public handled gas tests, whilst also monitoring gas masks and the effects of teargas. Gabriel Moshenska has previously highlighted how gas vans and school gas chambers used teargas to educate the public in the value and efficacy of their gas masks.<sup>506</sup> Summarising the outcomes of the Kingston test (mentioned at the beginning of this section), *The Times* noted:

“A satisfactory feature of the tests was their effect on the local inhabitants, who took care to have their respirators ready for use. In one way the tests proved inconclusive, for a strong wind dissipated the gas as soon as it was released; but valuable information was obtained about the behaviour of the public and the reactions of the local ARP workers. The objective of the first exercise was to find out how quickly gas could be detected by patrolling wardens and how wardens in the neighbouring post areas would act.”<sup>507</sup>

---

<sup>503</sup> TNA, WO 188/558, Production of Toxic and Lachrymatory Clouds From the Exhaust of an I.C. Engine, Porton Report No. 2061, 20 January 1939, 5.

<sup>504</sup> “Tear Gas Test,” *Surrey Advertiser*, 13 December 1941, 2.

<sup>505</sup> *Ibid.*

<sup>506</sup> Moshenska.

<sup>507</sup> “Home News. Tear Gas Among Shoppers”.

The claim that “valuable information was obtained” about the behaviour of human actors despite the fact that “in one way the tests proved inconclusive” (due to the wind’s effect on the gas) again illustrates how the relationship between human actors and gas technologies became an experimental focus. Despite the wind conditions, umpires still had the opportunity to measure how the test affected the behaviour and actions of both the public and ARP workers. The tests, as experiments, were key instances in which civil defence workers could produce knowledge through formal monitoring, measurement and recording of social patterns.

### *Consent*

However, contrary to the upbeat tone adopted in many newspaper reports, some members of the British public were understandably disgruntled about the use of teargas in tests, for a range of reasons. Ada Croxton of Stourbridge complained that tests were unnecessary in a letter to the *Evening Despatch*, “There are already enough poisons in the air without endangering precious eyesight by releasing tear-gas in the streets. I hate gas-masks, and the type of people who always carry them. I don’t think there is the slightest need for us to fear a gas attack, therefore I will not carry a gas-mask.”<sup>508</sup> Another citizen raised concerns for vulnerable people subjected to gas, specifically infants and individuals with breathing conditions, and noted the difficulties the tests posed for mothers. They also pointed out the dangers blinded pedestrians faced from vehicles.<sup>509</sup> Clearly, some individuals felt unhappy with teargas being used against them without their consent. Yet mention of consent was notably absent in planning gas tests. Rather, officials focused on the question of whether to inform publics of the use of teargas in tests before hand. This point shall be returned to shortly.

Schmidt has shown how pressures of secrecy, national security and the emergency state of being ‘at war’ justified the suspension of ethical principles for those involved with programs of human experimentation at Porton Down.<sup>510</sup> While gas tests were not formal experiments, they were, like experimentation at Porton, a result of national security pressures and the state of wartime emergency. They too involved extensive use of chemical agents on individuals who had given no consent, and they too incorporated kinds of observation and

---

<sup>508</sup> “Public Opinion. Tear Gas”, *Evening Despatch*, 14 August 1941, 3.

<sup>509</sup> “Gas Test Without Warning”, *The Rochdale Observer*, 12 April 1941, 7.

<sup>510</sup> Schmidt, Chapter 3.

measurement. Unlike what went on at Porton, however, the primary aim of the tests was not to gain knowledge of teargas chemicals. As previously shown, tests instead were intended to observe and control social responses to, and understandings of, gas and civil defence technologies. Brian Balmer has also contributed to literature on more informal and impromptu programmes of human experimentation. Most pertinent is his work on the case of the Carella Trawler, a fishing vessel that strayed into the danger zone after a British biological test bomb detonation off the Isle of Lewis in 1952. In that instance, the authorities holding the trial chose not to notify the crew and instead tailed and monitored the trailer for a month, listening for a distress call while the Navy developed contingency plans in case the crew became seriously ill.<sup>511</sup> Like the gas tests, this was both a national security operation (discretion about the biological weapons program was paramount) but also a form of human experimentation (monitoring the effects of the test on the crew).

Balmer has also examined the rationales behind large area germ warfare tests in the UK in the 1960s and 70s, in which populations were sprayed with bacterial suspensions of *E. coli* and *B. globigii* (two spores thought to be harmless) in trials designed to assess the biological weapons threat to national population.<sup>512</sup> The reasoning behind the WWII teargas tests was similar to what Balmer identifies as the principle behind these large-scale tests: the use of population bodies (the populations being sprayed) to protect the national body. From the perspective of government, military, and civil defence, the use of CB agents in tests was for the population's own good. Yet in large area germ tests, populations were caught up in the experiment but were not part of it in any obvious manner, such that they constituted "implicated actors", approximating "artifact[s] needing to be excluded from consideration."<sup>513</sup> Balmer argues that this discourse of exclusion enabled experimenters to readily counter concerns about consent, because within its terms the population were not formally part of the trial, so their consent was unnecessary. By contrast, in the WWII gas tests the ARP benefited from as many people being involved within the spaces of the test as possible, such that the opposite effect occurred. Authorities designed tests to maximise the number of bodies gas would reach in the allocated test space (and even outside of these limits), such that acquiring the consent of the individuals involved was neither required nor feasible. Moreover, taking

---

<sup>511</sup> Balmer, "How Does an Accident Become an Experiment?"; Balmer, *Secrecy and Science*, Chapter 3.

<sup>512</sup> Balmer, "Using the Population Body to Protect the National Body".

<sup>513</sup> *Ibid.* Balmer uses the term "implicated actors" in reference to M. J. Casper and A. E. Clarke, "Making the Pap Smear the 'Right Tool' for the Job," *Social Studies of Science* 28, no. 2 (1998): 255-290.

Balmer's work in light of the earlier discussion regarding care and anticipation, we can view the civil defence gas tests on local population bodies as ARP authorities' 'taking care' of the national population body on behalf of the state.

In experimentation at Porton, the Carella case, and contemporary riot control scenarios, target populations could be divided into categories such as 'rioters', 'bystanders' and 'subjects'. Conversely, the WWII gas tests were intentionally indiscriminate. All citizens became eligible targets by virtue of their being British citizens and part of the overall war effort. Unlike the large area germ tests, gas tests deliberately involved public bodies as opposed to rendering them 'implicated actors'. The intended targets of the teargas were any, and all, individuals in the spaces the gas permeated, such that the precise individuals affected would be unknowable in advance (and perhaps even after). For civil defence authorities, targeting the population in this way lent realism to tests. As such, acquiring consent from those affected by the tests was an impossible task. Newspapers did, however, often feature official warnings in advance of tests to inform readers of their occurrence, in which local authorities chose whether or not to disclose details such as time and place. Some warnings specified exact times and places when and where tests were to take place, while others left these details vague to encourage public vigilance.<sup>514</sup> Instead, they simply noted that a test would happen somewhere unspecified in the local vicinity at an undisclosed time.<sup>515</sup>

### *Public Relations*

Yet the decision to inform the public about tests was not entirely in the hands of local ARP committees. As local authorities began holding tests around the nation, tensions emerged in British government over how to publicise the tests, particularly between the MOHS and the Ministry of Information (MOI), the governmental department responsible for

---

<sup>514</sup> An example of a detailed warning about a gas test can be found in: "Public Notices. Tear Gas Exercise," *Dundee Courier*, 19 April 1941, 1. This gave details of when (3.30pm) and where (in front of the City Churches, Nethergate) the exercise was to take place, but noted, "The actual gas contaminated area cannot be strictly defined due to wind and other weather conditions which may be prevailing during the Exercise."

<sup>515</sup> See "Monday's Gas Exercise," *Rochdale Observer*, 17 May 1941, 4. In contrast to the Dundee warning (see above footnote), this stated, "the time of the release of the gas is not to be made known, and neither is the locality, except that it will be within half a mile of the Town Centre. This there will be plenty of scope for the element of surprise." In some cases, the day of the test was withheld. See "Tear Gas," *Gloucestershire Echo*, 21 May 1941, 3, which stated that Cheltenham's first gas test would occur "towards the end of [the] week – probably on Thursday or Friday."

publicity, censorship and propaganda during the war. Following the Brighton test, the MOHS wrote to the MoI unhappy, feeling that “the decision to allow publicity for this test conflicts with the previously agreed policy and the guidance to the Press which was based upon it.”<sup>516</sup>

They continued:

“Wide publicity for the first occasion in the history of this country when gas has been released in the streets of a town, appears to be in conflict with this policy as stated. The press evidently shared this feeling that a novel policy had been put into place, as is shown by the considerable prominence which they gave to the story – prominence far greater than that given to any preceding reference to gas.”<sup>517</sup>

The MOHS had intended for the press to reference gas tests only for the purposes of increasing public awareness of and alertness to “the menace,” and to give “unobtrusive insistence on the importance and good sense of the public having their gasmasks always available and in good working order.” They desired this publicity, “on the initiative of the Press itself,” to consist of only “instructional articles and editorial comment.” However, as gas publicity had taken the form “not of instruction and advice...but of a prominent report of a very novel test carried out by a public body” that was “certainly not unobtrusive,” they argued that an “essential boundary” had been “transgressed.” In explaining these concerns to the MoI, they acknowledged the “difference of opinion...about the advisability of releasing news of the recent Brighton gas test or anything similar” that existed between the two branches of government.<sup>518</sup> While the MOHS generally desired the tests to have very little to no publicity,<sup>519</sup> the MoI by contrast maintained “the decision to allow publication was the right one.”<sup>520</sup> The MoI’s position to give publicity to tests was instead in line with the views expressed by some regional commissioners on this point.

The Regional Commissioner for the South West, Sir Hugh Elles, had written to Sir George Gater (Permanent Secretary to the Minister of Home Security) at the end of January 1941 regarding the value of press publicity as a method “for educating the public.”<sup>521</sup> Elles

---

<sup>516</sup> TNA, HO 186/2116, Publicity for Brighton Gas Test, enclosed from S.C. Leslie to C.J. Radcliffe, 24 February 1941.

<sup>517</sup> *Ibid.*

<sup>518</sup> TNA, HO 186/2116, S.C. Leslie to C.J. Radcliffe, 24 February 1941.

<sup>519</sup> TNA, HO 186/2116, letter not sent, Ministry of Home Security to Radcliffe, 25 February 1941.

<sup>520</sup> TNA, HO 186/2116, letter not sent, from Sir George Gater, 19 February 1941.

<sup>521</sup> TNA, HO 186/2116, to Sir George Gater, 29 January 1941.

spoke of the “complete unanimity” of the South Western local authorities and Medical Officers of Health, who all felt that methods of propaganda (in the form of word of mouth, radio, conferences, leaflets, posters) could not “compare in effectiveness with publicity in the press.” He advocated “‘plugging’ in the press”, explaining, “I have done a lot of ‘plugging’ in the West Country press and it has proved really effective because the press is good and local papers are widely read everywhere...I do urge very strongly that the ban on publicity of this sort may be lifted...The public in this region have gone completely non-gas-minded.”<sup>522</sup>

Regional Commissioner for the North West, Sir Harry Haig, had sent a telegram to Gater on the 30 January with similar concerns:

“Instructions to improve our anti-gas precautions and...have no publicity present a problem which seems to me fundamentally insoluble. The basis of effective precautions against gas is that the public should understand the nature of the danger...unless the public are educated up to this point, there is danger that gas will produce panic, and that apart from this many casualties will be caused which are easy avoidable, and cleansing arrangements will be overcrowded and blocked. The only way to educate the public is through publicity.”<sup>523</sup>

The MoI’s position, then, likely represented the interests of Regional Commissioners (and as far as possible those of the British publics) more than the highly discreet approach advocated by the MOHS, which prioritised state control of the national population body. Ultimately, given the considerable press that tests continued to receive after the Brighton case, the MoI approach seemingly won out. Nevertheless, the episode left officials at the MOHS keen “to keep more closely in touch [with the MoI] in future, so as to guard against any other embarrassing difference of point of view.”<sup>524</sup>

### **Liability: Negotiating Responsibility for Gas Test Injuries**

Consent may have been absent from ARP discussions, but some authorities raised concerns regarding ARP liability in the event of a member of the public being injured in a

---

<sup>522</sup> *Ibid.*

<sup>523</sup> TNA, HO 186/2116, Sir Harry Haig to Sir George Gater, 30 January 1941.

<sup>524</sup> TNA, HO 186/2116, Draft Letter from the Minister to Mr. Duff Cooper, 2. Questions of censorship still prevailed, however, as the Ministry of Home Security began discussing control and censorship of the information released in the press in the event of an actual gas attack by the enemy. Various documents on this topic can be found in TNA, HO 186/2116.

test.<sup>525</sup> In fact, this reticence began “holding up efforts to develop gas exercises,” according to one MOHS official, E.S. Snelling.<sup>526</sup> The Ministry’s legal advisers had told Snelling that it would be “most improbable that any member of the public would lay an action for damages, or if they did, that such an action would succeed.” Nevertheless, local authorities wanted “something more definite in the way of reassurance.”<sup>527</sup> Explaining the legal complexity of the situation to a senior official at the MOHS, Sir Gordon Johnson, Snelling acknowledged,

“Since in some cases responsibility in law would rest upon a member of the Regional organisation and consequently upon the Department, it is not unreasonable to suggest that, where an exercise has been organised with the knowledge and co-operation of Regional Headquarters, the Department should assume responsibility in all cases whoever may be legally responsible.”

Therefore, the Department “would have to promise indemnity to local authorities in the event of any legal action being taken against them.”

Some senior officials in the MOHS did not agree with Snelling’s suggestion; Thomas Herbert Sheepshanks, Principal Assistant Secretary of the MOHS, bemoaned, “This seems to me a monstrous proposition and such as would only come from the most petty minded of LAs [local authorities]. I see no justification whatsoever for giving an indemnity to LAs against any claim that any ingenious person might have for any conceivable injury arising out of the release of tear gas.”<sup>528</sup> Initially (in May 1941), therefore, the MOHS deferred making any formal decision and held the position that no indemnity should be given to local authorities against such claims.<sup>529</sup> However, a number of regional officers wrote to the MOHS interrogating this decision. The Senior Regional Officer (SRO) for Scotland exclaimed, “We feel that, if the instruction of the public is to be carried out effectively by means of Public Gas Tests, some decision must be given on this vital matter of liability.”<sup>530</sup> He argued, “If, through training, [the public can be given confidence in the respirator and learn to protect themselves], there is certain to be a consequent saving to the government in claims for compensation under the Personal Injuries (Civilians) Scheme in the event of gas being used in enemy

---

<sup>525</sup> TNA, HO 186/481, J.R. Alderson to L.N. Helsby, 13 Sep 1941.

<sup>526</sup> TNA, HO 186/481, E.S. Snelling to Sir Gordon Johnson, 9 May 1941.

<sup>527</sup> *Ibid.*

<sup>528</sup> TNA, HO 186/481, T.H.S. to Sir Gordon Johnson, 10 May 1941.

<sup>529</sup> TNA, HO 186/481, Senior Regional Officer (Scotland) to the Inspector-General, 22 May 1941.

<sup>530</sup> *Ibid.*



attacks.” Moreover, he rebutted: “Local Authorities in Scotland are much too well versed in Scots Law to be labelled “petty-minded,” and the cautious attitude which they adopt to all legal problems is worthy of the confidence reposed in them.” Further countering Sheepshanks’ argument, he pointed out that local authorities were “not concerned with ingenious persons who might frame a claim for compensation.” Rather, they felt that the amount of compensation involved for any member of the public with “the misfortune to sustain an injury in a Public Gas Test” would “be a mere fraction of the cost to the Country.” In response to the letter, one official advised Sheepshanks, “I agree that the whole thing is bogus. At the same time training is getting held up in some places and unnecessary bother caused in others.”<sup>531</sup>

### *Lines of Legality*

The SRO for Tunbridge Wells (South Eastern region) also wrote to the MOHS with concerns. They had so far responded to questions regarding compensation from Eastbourne with the following:

“...though those responsible for discharging or for ordering the discharge of tear gas might be liable to an action for damages at the instances of anyone suffering ill effects through the gas or being involved in an accident on account of it, the possible illegality would probably be outweighed by the expediency of what is being done. It is most important that every precaution be taken to prevent accidents and casualties. The effects of the CAP Tear Gas itself are temporary only, even without treatment of any kind.”<sup>532</sup>

Two particularly striking statements can be found in this excerpt. Firstly, the SRO noted that, “the possible illegality would probably be outweighed by the expediency of what is being done.” This was an open admission, and enforcement, of a state policy in which national security interests – in the form of a state programme of civil defence – took precedence over the common law, and over acquiring consent of the populations involved in tests (if they had consented, then there would not be the question of illegality). While use of teargas in tests was possibly illegal, it was nevertheless acceptably illegal. The second striking

---

<sup>531</sup> TNA, HO 186/481, comment to Sheepshanks, 23 May, written on letter from Senior Regional Officer (Scotland) to the Inspector-General, 22 May 1941.

<sup>532</sup> TNA, HO 186/481, Anti-Gas Exercises Claims for Damages, from Senior Regional Officer for Tunbridge Wells, 20 May 1941.

statement from the Tunbridge Wells SRO was the comment that “the effects of CAP Tear Gas itself are temporary only, even without treatment of any kind.” Here, the SRO referred to the temporary nature of the effects of teargas as advantageous because they would be less likely to produce accidents or casualties, and therefore a situation in which someone might take action for damages. Taking these two statements together, then, the temporary effects of teargas became a means with which to define the line between acceptable and unacceptable illegality. The use of gas with permanent effects would have most probably prompted a vast number of claims from the public, but the impermanent nature of teargas meant that authorities could use it in gas tests without the same risks of liability.

Correspondence from another Regional Training Officer around the same time raised a similar point regarding legality. The officer quoted the Controller of Willesden: “Legally, I have no doubt that the liberation of gas or any other noxious vapour or substance in a public highway, is a nuisance at Common Law, and any person not voluntarily taking part in the exercise, and who may suffer inconvenience or damage therefrom, would have, in my opinion, a good cause of action against those responsible for creating the nuisance.”<sup>533</sup> This comment overtly referred to the release of teargas as a breach of common law. Rather than this making the release teargas unacceptable, the Controller framed it as one that was reliant upon a decision regarding the legal question of compensation. Granting indemnity to local authorities, and providing them with the capacity to compensate for any civilian damages, would make the breach of law acceptable and legitimate. Furthermore, the Willesden Controller highlighted an essential tension between the aim of the gas tests and the issue of liability: “to achieve its object, a considerable quantity of gas must...be liberated...The element of surprise...is an important aspect of an effective exercise, but which may have, in my view, unfortunate results.” The requirements that gas tests use a considerable amount of gas and be conducted with the element of surprise would at the same time mean a higher risk of injury to the public. Thus, in a very real way, the “possible illegality” of tests and exercises were related to the “expediency of what [was] being done.” The Willesden Controller was making the point that the need to train the public through realistic gas tests – even surprise ones – was what raised the very potential for injury and therefore liability.

---

<sup>533</sup> TNA, HO 186/481, Public Gas Exercises, Regional Training Officer (signature illegible) to Mr Sargent, 23 May 1941.

The Tunbridge Wells SRO explained to the MOHS that, while they had given Eastbourne the response quoted above, the Town Clerk had remained unsatisfied and still wanted to “know whether the Government will grant-aid or reimburse the amount of any claims which may have to be paid to members of the public.”<sup>534</sup> As such, the SRO wished to reply further to Eastbourne “on the lines that...claims... should be submitted to the S.R.O. who would, in junction with the Ministry, give favourable consideration for the purposes of grant?” Despite these requests, by July 1941, the MOHS still maintained the position that “the matter has been put to the Legal Adviser of the Department, and it has been decided that no ruling can be given in advance as to what the position will be in the unlikely event of a claim being made, and the still more unlikely event of its being successful.”<sup>535</sup>

Meanwhile, the St. Helens Town Clerk (Lancashire) had been pressing the North Western Regional Office for information regarding the grant of indemnity. Responding to the Clerk, North Western Principal Officer and Legal Adviser G.D. Wheway explained, “no advance undertaking to indemnify the Corporation against possible claims for damage arising out of the public Tear Gas Exercises conducted by them can be given.”<sup>536</sup> He then elaborated on the legalities: “The position is, to some extent, covered by Section 3 of the Personal Injuries (E.P.) Act, 1939, and the Scheme made under that Act. Due warning given on the scene of operations will impose a duty on members of the public to take proper precautions, and injury contributable to a breach of that duty would not involve the Corporation in any liability.”<sup>537</sup> In such a reading, the interpretation of what counted as “due warning” would be highly germane, shifting the duty of care (and protection against gas) from local authorities to members of the public. Wheway’s response also explicitly demonstrated the relationship between taking the effects of teargas as non-lethal effects and the acceptability of the tests from a legal standpoint. He concluded by stating, “Moreover the Gas to be used in these exercises has been chosen on account of its comparatively innocuous properties and, if as may

---

<sup>534</sup> TNA, HO 186/481, Anti-Gas Exercises Claims for Damages, from Senior Regional Officer for Tunbridge Wells, 20 May 1941.

<sup>535</sup> TNA, HO 186/481, to the Principal Officer, No. 10 Region, Manchester, 25 July 1941.

<sup>536</sup> TNA, HO 186/481, G.D. Wheway, Office of the Regional Commissioner, North Western Regional Office, to the Town Clerk, Town Hall, St. Helens, Lancs.

<sup>537</sup> *Ibid.* By classifying gas tests as falling under the 1939 Personal Injuries Act, this effectively defined them as falling outside of mandatory schemes to be undertaken under the Civil Defence Act – even though tests could have not been conducted without the ARP structures established (and powers afforded to local authorities) through that act. The tension between these two legal readings of the tests had significant implications for defining responsibility and liability for tests.

be confidently expected, it is used with proper care no injurious results should follow.”<sup>538</sup> The “innocuous properties” of teargas therefore came with not just a social expectation, but also a legal expectation, that no injuries would result from its use.

Again, local authorities remained unsatisfied. The North Western Regional Office wrote once more to the MOHS on the 31 July, stating that Wheway’s suggestion would not help them “in dealing with the Local Authorities” and pressed for “something more definite.”<sup>539</sup> They argued, “Government are asking Local Authorities to prepare the public for gas attack, and as the exercises are an essential part of this preparation, it is only reasonable that the Government should assume any consequential liability.” He enclosed a letter from the ARP Department at Blackpool, who had postponed a planned exercise in absence of the MOHS’s decision to take responsibility or provide indemnity against damages or loss. The Emergency Committee in Blackpool had felt that “either the Department [MOHS] should issue a specific instruction for such exercises to be held, or that [HMG] should undertake to indemnify the local authority...Failing this, the Committee...are not disposed to approve tear gas exercises.”<sup>540</sup> For many local authorities, concerns about liability were therefore related to whether or not gas tests and exercises were mandatory, instructed by the MOHS. As this was not the case, any damages would be the responsibility of the local authorities and not the Government. Thus, the provision for indemnity (as requested by Blackpool) would protect local authorities that chose to conduct non-mandatory tests and exercises. Sentiments in the MOHS began to be very slightly more sympathetic. On 8 August, Sheepshanks wrote internally, “I stick to my earlier view that this fuss about indemnity in respect of gas exercises is ridiculous. But there is evidently sufficient cause to make it necessary to try to allay it...we clearly cannot give a complete indemnity as we must safeguard ourselves against the negligence by the LA.”<sup>541</sup>

*Liability in Practice: A Case Emerges, as the MOHS Concedes Indemnity*

On 20 August 1941, the *Daily Mail* ran an article titled “Tear-Gas Damages Claim,” which read,

---

<sup>538</sup> *Ibid.*

<sup>539</sup> TNA, HO 186/481, Office of the Regional Commissioner, North Western Regional Office, to H.C. Emmerson, Ministry of Home Security, 31 July 1941.

<sup>540</sup> TNA, HO 186/481, E.H. Holmes, ARP Controller, to Colonel Blatherwick, 29 July 1941.

<sup>541</sup> TNA, HO 186/481, T.H.S. to Mr. Kirwan, 8 August 1941.

“A man living in a Midlands town is to claim damages for injuries to his eyes, which he alleges resulted from the release of tear-gas in the streets by the local council. He has started proceedings in which the High Court is expected to decide whether local authorities have the right to release noxious gases on the highway; and whether anyone suffering injury as a result is entitled to compensation.”<sup>542</sup>

This article quickly came to the attention of the MOHS, who enquired with the Midland Regional Office about this complaint. The Midland Regional Office had, with the aid of the MoI, determined the Midlands town in question to be Birmingham, and replied stating that “neither the ARP Headquarters nor the Town Clerk’s office” knew of any such complaint regarding exercises in Birmingham’s Old Square.<sup>543</sup>

The MOHS made further enquiries as to the man and High Court case in question, and found very little information. In September, Snelling wrote to the Publications Relations Department at the Home Office to request that they ascertain directly from the *Daily Mail* which town the article referred to. No such case had come to the notice of the Birmingham ARP authority, and the MOHS suspected “that the reporter was probably going farther than the facts warranted.”<sup>544</sup> The PR Department replied to Snelling stating that the Daily Mail’s Legal Correspondent, responsible for the story in question, said the case was a Lancashire one but was unable to say whether any progress had been made in the matter, nor if the case was down for hearing. However, the North Western Regional Office informed Snelling that they did not believe the *Daily Mail* paragraph to refer to any town in Lancashire.<sup>545</sup> Ultimately, the *Daily Mail* case never materialised as something officials could locate, however it certainly provided the MOHS with significant concern at a time when resolving the issue of indemnity for gas test damages was becoming increasingly pressing.

Days prior to the *Daily Mail* article, the City of Birmingham ARP Committee had requested that the MOHS receive “a small deputation from the Birmingham Committee...to discuss the subject” of more stringent directions to the public “generally accompanied by

---

<sup>542</sup> “Tear-Gas Damages Claim,” *Daily Mail*, 20 August 1941, 1.

<sup>543</sup> TNA, HO 186/481, Principal Officer (signature illegible), Office of the Regional Commissioner, Midland Regional Office, to S.D. Sargent, Ministry of Home Security, 23 August 1941.

<sup>544</sup> TNA, HO 186/481, E.S. Snelling to Publications Relations Department, Home Office, 19 September 1941.

<sup>545</sup> TNA, HO 186/481, Office of the Regional Commissioner, North Western Regional Office, to E.S. Snelling, Ministry of Home Security, 11 October 1941.

some penalty for failure to [carry] gas masks.”<sup>546</sup> This meeting took place on the 4 September, and involved Birmingham ARP Committee Chairman Alderman Tiptaft, Birmingham Town Clerk Frank Wiltshire, Sheepshanks, Snelling and William Mabane, one of the parliamentary secretaries to the MOHS. The Birmingham local authority’s (the ‘Corporation’) point of view was that “if the Government is serious in its advice to the population to “Carry your gas-mask always”, steps should be taken to see that gas-masks are always carried, and that if this cannot be done by the introduction of a Defence Regulation, the Government should take the responsibility for the tear-gas tests which local authorities have been asked to arrange.”<sup>547</sup> Mabane replied that the introduction of a formal Defence Regulation would be problematic because “the Police had stated quite definitely that they would not be able to enforce it.”

Tiptaft then explained to the MOHS officials that Birmingham’s first teargas test had been “held without warning, in order to bring home to the public the Government’s advice that “Hitler will give no warning”, and in consequence, a number of the citizens had suffered inconvenience and discomfort.”<sup>548</sup> Following the test, the “Corporation, and he as the member principally responsible, had therefore incurred a good deal of odium,” thus Tiptaft wanted “authority to state that the Corporation’s action in arranging such tests was in accordance with the Government’s directions.” Alongside this, Wiltshire pointed out that at Common Law the Corporation could be held liable if, for example, a driver who had been blinded by teargas lost control of their vehicle and caused damage to persons or property. Sheepshanks, though doubtful whether such an action would lie, finally conceded that the “Department would be prepared to accept for grant any expenditure incurred by way of legal expenses or damages if such an action were successfully brought against the Corporation.”

Mabane had no objection to the local authority announcing that the tests were held “in accordance with the Department’s directions.” However, he stated that this had to be subject to a proviso that the tests were not held without warning. Tiptaft responded by showing Mabane the press notice the Committee had placed in the Birmingham papers – one which only noted that a test would be held in Birmingham on 6 September, but not the exact time or place. Mabane nevertheless felt that such a warning “was exactly what the Department intended.” The MOHS thus interpreted ‘due warning’ as information given that a gas test

---

<sup>546</sup> TNA, HO 186/481, from F.H. Wiltshire, Town Clerk and ARP Controller, 15 August 1941.

<sup>547</sup> TNA, HO 186/481, Compulsory Carrying of Gas Masks. Tear-Gas Tests.

<sup>548</sup> *Ibid.*

could happen anywhere in a particular vicinity at any time on a given day, rather than information provided about exact times or places. Sheepshanks confirmed this in a letter to Wiltshire following the meeting: “[the Minister of Home Security] desires me to add that in his view it is desirable firstly that a general indication of the day and area of release should be given in advance – though not, of course, precise information as to actual time and place.”<sup>549</sup>

Discussions then began with the Treasury regarding the form of indemnity the MOHS would provide to local authorities. On 13 September, MOHS official J.R. Alderson wrote to the Treasury: “The public gas exercise is not a statutory obligation placed on local authorities by the Civil Defence Act and it would seem reasonable to reimburse any expenditure, as approved by the Department, which may be incurred by local authorities in meeting such claims.”<sup>550</sup> For the MOHS, gas tests were not obligatory functions that the state had commanded of local authorities through the Civil Defence Act; rather, they were voluntary schemes local authorities could organise through the power and structure delegated to them in the Act.<sup>551</sup> Had gas tests been obligatory (for example, ordered by a Defence Regulation as the Birmingham ARP Committee initially suggested), they would have been formally legal such that the question of liability would not have stood. For MOHS officials, this also meant a distinction between the form of compensation given to local authorities: “The public gas exercise is not a statutory obligation...but a voluntary effort aimed at minimising casualties among the public in the event of gas raiding. It therefore seems reasonable that any approved expenditure by local authorities in meeting claims for damages should be reimbursed and not grant aided.”<sup>552</sup>

Snelling put the request to the Treasury as such:

“It is not proposed to offer an unconditional indemnity to local authorities, but we would consider any claim received from a local authority in respect of (a) damages awarded by the Court against the authority or (b) compensation which the local authority has agreed to pay to a member of the public on compassionate grounds without the case coming before the Court,

---

<sup>549</sup> TNA, HO 186/481, T.H. Sheepshanks to the Town Clerk, Council House, Birmingham, 4 September 1941.

<sup>550</sup> TNA, HO 186/481, J.R. Alderson to L.N. Helsby, 13 September 1941.

<sup>551</sup> The primary source documents remain ambiguous about whether or not the tests strictly fell under the Civil Defence Act.

<sup>552</sup> TNA, HO 186/481, Public Tear Gas Exercises. Liability of Local Authorities. Not dated.

provided that the sum involved is reasonable and the approval of the Regional Officer was obtained before payment.”<sup>553</sup>

The Treasury approved this request in a response on 22 September.<sup>554</sup> After the Treasury approval, MOHS officials began drafting an official circular to the Regional Offices stating their position. They expanded the term “Tear Gas Exercises” to encompass both “Tear Gas Tests and Exercises”, while making sure that it was clear claims were to be “reimbursed, not grant-aided, so that no question of insurance by the Authority for these risks will arise.”<sup>555</sup> Additionally, they reminded Principal Officers that public gas exercises should only be held after local authorities consult with their Regional Office.

Circulated only to Regional Officers and not local authorities, the final version of the circular read:

“...general indemnity cannot be contemplated, at the same time there may be occasions when it would be manifestly unfair to expect a local authority to bear the burden of damages, and it is desired to avoid saddling authorities with the expense of covering their potential risks by insurance...provided the advice and recommendations issued from time to time regarding tests and exercises have been followed, this Ministry will consider claims arising out of gas tests and exercises submitted by local authorities in respect of:

- (a) Damages awarded by the Court against the authority where gross negligence has not been proved against the authority, including reasonable legal expenses in defending the case, and
- (b) Reasonable compensation which the authority, although not admitting culpable negligence, has agreed to pay to a member of the public in a case settled out of Court.”<sup>556</sup>

The still somewhat parsimonious position arrived at in this circular was thus a culmination of the negotiation of responsibility and liability for teargas tests between the MOHS, its Regional Offices, and local authorities around the country. Furthermore, it was also a negotiation of the legal legitimacy of tests, particularly with regard to what form of compensation for damages would make acceptable the possible breaches of common law. In

---

<sup>553</sup> *Ibid.*

<sup>554</sup> TNA, HO 186/481, From L.N. Helsby, 22 September 1941.

<sup>555</sup> TNA, HO 186/481, Claims by Members of the Public for Damages arising out of Tear Gas Tests and Exercises. Circ. H.S.R. 294/1941, from G.H. Gater, Ministry of Home Security, 15 November 1941.

<sup>556</sup> *Ibid.*



a broader sense, holding tests demanded a negotiation between the requirements of national security (the protection of a national population body) and the authority of common law – and the rights of members of local populations to public spaces. This was summed up by the Tunbridge Wells SRO’s comment that “the possible illegality would probably be outweighed by the expediency of what is being done.” Through examination of the discussions that led to the eventual legal standing of gas tests above, I have also shown how they constructed members of the public as informed citizens through the local press. Gas tests were legitimated on the grounds of warnings in the local press, for example. Negligence of local authorities, for example, was tied to concepts such as ‘due warning’. Should a member of the public be caught up in the event unwittingly following due warning, the onus of responsibility for injury would have fallen upon them unless they could prove otherwise in Court (or settle out of court). This legal status was constructed through a presumed ‘innocuous’ nature of teargas, in a context of state care during wartime. Risks of injuries and damages to the public during tests were acceptable in light of the opportunity to mitigate potential risks to the public from enemy gas raids in the future. Notions of care and security were predicated on anticipated temporal states, such that they legitimated the holding of gas tests in what was the present.

## **Summary**

This chapter has offered a case in which teargas was used to both ‘take care’ of and control populations in tests and exercises designed as means for envisioning and enacting imagined future states of emergency. It has shown how Britain constructed teargas as not only a humane technology, but also a technology of care and protection, by situating it as an ‘innocuous’ chemical within a sociotechnical assemblage of state civil defence. ARP authorities thereby ‘took care’ of local populations both in the sense that they performed roles as protectors from future threats, and in the sense that they fulfilled their obligation, as subjects of the state, of securing and making knowable heterogeneous locales of the national population body.

Furthermore, I suggested that gas tests represented both a form of simulation and an informal program of human experimentation, through which civil defence officials could observe and measure human subjects’ relationships with gas technologies as well as the physiological effects of teargas on those bodies. The MOHS encouraged regional authorities to hold tests on local population subjects on the grounds of a need to protect the national

population subject. I also explored how these tensions produced problems that required resolution from a legal perspective. I argued that the MOHS effectively resolved this tension by taking teargas to be ‘innocuous’, and thereby shifted responsibility for injuries incurred by gas tests upon the shoulders of regional authorities and individual members of the public. Co-produced with the presumed ‘innocuousness’ of teargas were notions of what counted as ‘due warning’ and an informed citizen, as well as the legitimacy of the state in determining when the transgression of Common law (through gas tests) was acceptable.

Gas tests blurred the lines between the civilian, military, and experimental. While they were domestic events involving the state and its citizens, they sometimes included military actors, and were necessitated by Britain’s being at war. Drawing from Alison Howell, one must also be careful not to assume that there ever existed a pure “peaceful domain of ‘normal’ or ‘civilian’ politics unsullied by military intrusion.”<sup>557</sup> The shift of teargas into the domestic realm thereby did not represent its militarisation, but an emergent representation of already established power and means of imposing social order. Rather, as Larrinaga has also suggested, we might understand the role of the distinction between lethality and non-lethality – the ‘innocuous’ character of teargas – as a means to give the state legitimacy and power to demarcate and police the bounds of what constitutes civil or military force. This was exhibited, for example, by the legal negotiation of where the lines of liability regarding gas tests should lie.

Similarly, to describe the tests as solely a form of ‘crowd control’ seems deficient; I have shown how they were simultaneously means to control, take care of, and secure the British population body, as well as forms of simulation and human experimentation. Nevertheless, they do call for a reassessment of the oft-cited position that Britain did not use teargas on crowds at home until well after WWII. Insofar that they were attempts to control, order and make predictable local populations, through training them in particular civil defence practices, gas tests were a form of ‘crowd control’, albeit in a different sense to contemporary notions of the term. They certainly represented the first use of teargas upon citizens en masse on British soil. The next chapter, however, examines the post-WWII growth of Britain’s use of teargas across its empire for crowd control purposes more akin to those for which teargas is used around the world today – namely, the emergence of the notion of ‘riot control’ and its specific relationship to teargas.

---

<sup>557</sup> Howell, 118.

## 5 Tear-gassing the Empire: The Making of a Riot Control Agent

As the previous chapter showed, Britain's Civil Defence gas tests during WWII marked the first use of teargas by British police on public populations in the UK. However, while teargas became a means of caring for and controlling such populations at home by way of simulating potential enemy attacks, it became distinctly something else across the British Empire. An earlier chapter noted how the Cabinet's 1935 authorisation of the use of teargas by colonial governments throughout the empire for dealing with mobs and riots did not result in actual use until the end of the decade. One of the earliest cases, if not the earliest, of a colonial government using teargas on crowds was in Rangoon, Burma, to deal with striking on 31 January 1939.<sup>558</sup>

This chapter examines the trajectory teargas took as it was increasingly used to control populations across the British Empire from 1939 onward, but most prominently in the period following WWII until the late 1960s. It argues that, during this period, the legitimacy of teargas as a form of crowd (and later 'riot' control) became increasingly entangled with ideas of non-lethality and (non)toxicity that were to be determined by scientific and medical expertise. These technical ideas about teargas were co-produced (in institutional contexts and in the 'field') with a range of social orders, including the legitimacy of scientific and medical authority, judgments regarding who was a legitimate target for gassing, and judgments regarding the abilities of police authorities. I suggest that this mode of co-production was shaped significantly by Britain's imperial and geopolitical interests, but also by the particulars of the various colonial contexts in which they occurred. As a result, the adoption of teargas in the empire was not without its problems, with many colonial police forces encountering issues with its use in practice. Consequently, the use of teargas in the empire also became a conspicuously experimental feat, contingent on these local demands while simultaneously shaping them, as policy makers and scientists attempted to test, and locate, the bounds of non-lethality and legitimate use. These various pressures led Britain to search for new and more suitable forms of teargas, which culminated with the adoption of CS in the late 1950s.

During the period studied in this chapter, the co-production of teargas with colonial crowd control entailed the construction of a plethora of distinctions – distinctions between

---

<sup>558</sup> "Tense Days in Rangoon", *The Yorkshire Evening Post*, 31 January 1939, 11.

specific kinds of subjects, bodies, and types of force. As with the wartime civil defence gas tests, experimentation played a significant role in shaping these categories. British scientists, military personnel and colonial authorities performed experiments with teargas on both British and colonial subjects, looking for difference in the effect teargas had on these bodies. At the same time, this experimentation was also part of Britain's search for a more powerful teargas that would be ideally suited to its imperial needs.

By the mid 1960s, it was common for police forces throughout the British Empire to use CS and CN in riot control operations, to the extent that the topic of teargas reached the halls of parliament. In its April 1965 debates, in a display of co-production, British parliament took teargas to be a riot control technology on the basis of its non-toxicity, appealing to distinctions between teargas and the gun or baton – between more and less lethal force, and more and less harm – that had characterised British policy discourse on the issue since the interwar period. Finally, in tracing out the trajectory of teargas in British policy in the post-war era, I argue that the various iterations of teargas were situated within a sociotechnical imaginary of imperial sovereignty through non-lethal chemical control. In other words, as an exercise of biopower, where non-lethal force was a 'civilised' scientific means with which to exert power over colonial populations without resorting to what would be viewed in the international arena as excessive force and violence. This imaginary both legitimated, and gained legitimacy from, Britain's numerous experiments and extensive investment in the research and development of non-lethal and incapacitant weapons during this period.

Instead of focusing on a single place or event as a means of attending to the adoption of teargas across the colonial empire, this chapter will take as its empirical focus a collage of events and practices that took place in various locations across the British Empire from 1939 to the mid 1960s. In this vein, I intend the chapter to be understood similarly to a thematically arranged mixed-media exhibit. Colonial police use of teargas on crowds, British experiments with teargas and human bodies in Malaya, Porton's search and recommendation of CS, the CO's archiving of the usage of teargas across the imperial territories – this array of contexts within which the thing 'teargas' appears points to the broader assemblage within which it existed as a tool of imperial control. The chapter is therefore broadly split into five parts: the early use of teargas in Burma in 1939; the numerous problems with teargas that colonial police forces encountered in the early post-war period; Britain's 1953 experiments with BBC teargas in Malaya; Porton's research and recommendation of CS as an agent for riot control in

the late 1950s, and the use of CN and CS throughout the empire in the 1960s, which ultimately culminated in the 1965 parliamentary debate on the issue.

### **Burma, 1939: Enacting Non-Lethality in the Empire**

On 13 February 1939, teargas released by colonial police engulfed Rangoon's Surtee Bazaar, the chief market of what was then the Burmese capital, and with it the bodies of those who had been picketing in the market.<sup>559</sup> The police, equipped with gas masks, also used the gas to disperse strikers who were lying down on Rangoon's tramway rails. This event came two weeks after the first use of teargas by Rangoon police on 31 January 1939 (according to British newspapers)<sup>560</sup>, which had occurred in a "bus strike picketing situation" where police tried to disperse a crowd that "included Buddhist priests and women."<sup>561</sup> According to news reports, nine people had been injured by that use of teargas.<sup>562</sup>

Burma had experienced social and political turbulence throughout the 1930s, which intensified toward the end of the decade. During 1938 and 1939, Burma was home to various labour strikes, student strikes, and communal riots (most notably the July 1938 Rangoon Riots). These communal riots emerged in part from tensions between Buddhist Burmese and the country's numerous Muslim communities, as well as tensions between Indian and Burmese workers.<sup>563</sup> These frictions, however, were also part of a growing anti-colonial sentiment in the country. In a PhD thesis on policing in colonial Burma, Hingkanonta notes, "almost all the communal disturbances in the 1930s involved attempts by nationalists to end colonial rule by mobilizing groups of Burmese, the working classes and Marxist-influenced radical students. Workers were encouraged to protest against their British employers and to use violent means to bring Indian and European economic domination to an end."<sup>564</sup>

Against this backdrop, the police force, which was predominantly composed of British police officers and Indian constables and featured relatively few Burmese recruits, was understood not as "part of the local society but rather as an instrument of colonial repression...and was therefore structurally incapable of controlling late colonial Burma's

---

<sup>559</sup> "Many Hurt in Indian Riots", *Sheffield Evening Telegraph*, 13 February 1939, 1.

<sup>560</sup> "Threat to Senators", *Newcastle Evening Chronicle*, 13 February 1939, 1.

<sup>561</sup> "Tense Days in Rangoon".

<sup>562</sup> "Tense Days in Rangoon"; see also "Riots in Rangoon", *The Scotsman*, 1 February 1939, 8.

<sup>563</sup> Lalita Hingkanonta, *The police in colonial Burma*. PhD Thesis. SOAS, University of London, 2013, Chapter 6.

<sup>564</sup> Hingkanonta, 205.

fierce communal tensions, which had deeply-set economic and political origins.”<sup>565</sup> The organisation of the Burmese police thus entailed a racial ordering by British officials, in which Indian constables were afforded more rights than their Burmese counterparts yet were still expected to perform a role as an extension of the apparatus of British colonial security.<sup>566</sup>

The use of teargas in Burma was therefore part of a broader system of political ordering. In a narrow sense, police used teargas to disperse and bring order to crowds and mobs in accordance with the 1935 UK Cabinet authorisation. However, in a deeper sense, this chapter will demonstrate how the use of teargas also marked a shift of the dispersion of colonial power amongst particular subject bodies. Teargas as a non-lethal technology of governmental and imperial intervention was co-produced with institutional structures and practices through which bodies were ordered and re-ordered to fulfil roles within broader systems of state control (and care).<sup>567</sup> Over the following decades, this shift became more and more apparent. The use of teargas amongst the British Empire was increasingly related to the growing need for non-lethal forms of colonial control that might be construed as more diplomatic, humane and caring than firearms. Indeed, as this chapter shall show, with the adoption of CS gas in the 1960s, these attempts of colonial control eventually began to be regularly documented (and surveilled in parliament) by the British state in a systematic monitoring and evaluation of what might be termed its colonial organs of ‘non-lethality’.

It is not entirely clear whether the 31<sup>st</sup> January strike was the very first use of teargas for crowd control in the empire – Hingkanonta suggests that teargas might have been used in the 1938 Rangoon riots<sup>568</sup>, and the memoirs of the Rangoon Assistant Commissioner of Police W.H. Tydd note that it had previously “been tried a few times in street riots in India.”<sup>569</sup> It is possible, however, that Tydd was referring to the use of teargas in India to apprehend armed criminals at bay rather than to disperse crowds. Nevertheless, 1939 Burma does appear to be one of the first instances where colonial policy makers adopted and used teargas to deal with social unrest on a number of occasions. It therefore represents a useful

---

<sup>565</sup> Hingkanonta, 206, 236.

<sup>566</sup> Hingkanonta, 206, elaborates, “the view that the Burmans were inferior in police work was prevalent among British officials...almost all Burman police were subordinate to Indian police officers. At some point, Burman police officers were prohibited from giving orders to Indian constables.”

<sup>567</sup> Jasanoff, *States of Knowledge*.

<sup>568</sup> Hingkanonta, 226. It should be noted, though, that this would seem to contradict the reports in British newspapers that the 31<sup>st</sup> January 1939 strike was the first use of teargas by Rangoon police.

<sup>569</sup> Bill Tydd, *Peacock dreams*. Putney, London, British Association for Cemeteries in South Asia (BACSA), 1986, 133.

starting point with which to examine the forms of natural and social order that were co-produced in British colonial policy regarding teargas usage. Moreover, Malcolm MacDonald, Secretary of State for the Colonies, certainly considered the use of teargas in Burma to be an important initial case of use on crowds that presented an opportunity to evaluate the implementation of the Cabinet's 1935 policy.<sup>570</sup> The next section follows the development of these discussions.

*Teargas in Rangoon: Interpreting 'Control'*

Following the events in Rangoon in early 1939, the Office of the Secretary of State for the Colonies wrote to the Burma Office:

"I am directed by Mr. Secretary MacDonald to request you to inform the Secretary of State for Burma that his attention has been drawn to reports in the press of the recent use of tear gas against rioters by the police authorities in Rangoon...In view of the fact that Colonial police authorities have been given authority to use tear gas under certain conditions, but have no practical experience of its employment, Mr. MacDonald would be much obliged if a report could be obtained...on the use of tear gas in the recent disturbances. It would be appreciated if the report could indicate, in particular, (a) the organisation of the unit or units using gas (b) whether both shells and hand grenades were employed (c) the general efficacy of the measures adopted."<sup>571</sup>

That colonial police had "no practical experience" of the employment of teargas indicates the significance that the Burma case had for policy makers – Rangoon presented an opportunity with which to scrutinise the use of teargas on colonial crowds for the first time, to observe how it functioned in the field. In this context, the three areas the CO requested information on are especially revealing, pointing to where the bounds of uncertainty were seen to lie. Yet in selecting these categories as pertinent the CO also defined what kinds of knowledge and social contexts were relevant to using teargas for crowd control. For the CO, these categories were: (a) the social actors using teargas and their associated expertise, (b) the dispersal mechanism, (c) its effects on the crowd, and success at dispersing them.

Setting up the enquiry in this way, then, made users and dispersal mechanisms the point of experimental focus, and dispersal as the measure of success and 'control'. These

---

<sup>570</sup> TNA, CO 323/1658/13, From F.A. Calder, 7 March 1939.

<sup>571</sup> *Ibid.*

other actors and objects were taken as variables, orientated around a conception of teargas as a crowd control technology (the ‘constant’). Officials wanted to determine the effect of specific users and means of dispersal on achieving their imaginations of colonial control – that for policy makers were perhaps broader and longer-term visions of imperial sovereignty but for police forces were, in practice, more short-term ideas about how to achieve control. Point (c) made dispersal, and more broadly the behaviour of the crowd, key measures of success – and control. This relates to a more general point regarding the objective of state control in these policing scenarios. The objective of control in such cases was not total control of the crowd, but rather a degree of control over particular objectives of success determined on a context-by-context basis.

In a renowned STS work, Collins and Pinch showed how contextually variable readings of success similarly figured in how groups determined the criteria for success of the Patriot missiles in the Gulf War, pointing out 21 different ways in which the missiles’ success could be framed (these ranged from ‘direct’ criteria such as the interception of enemy missiles to ‘indirect’ criteria such as boosting civilian morale or increased sales).<sup>572</sup> The cases in this chapter similarly show that rather than controlling all facets in a given scenario, officials and police had to make various contextually variable judgments regarding how to achieve control, as long as it was broadly moving toward a particular shared vision (of imperial governance).

In response to the CO’s request, the Burma Office initially noted that they had only received word from the Government of Burma regarding the January 31<sup>st</sup> incident.<sup>573</sup> With this response they forwarded a telegram from the Governor of Burma that read:

“It has been decided to equip Rangoon police with teargas and India has been asked to supply certain equipment. Yesterday in Rangoon teargas generators as used by military for training purposes were used for dispersing unruly crowd...Owing to the unsuitable nature of the equipment, experiment was not [an] unqualified success, but it certainly had considerable moral effect on those who were gassed.”<sup>574</sup>

In this correspondence, an official at the Burma Office had underlined the word “unsuitable.” Evidently, officials felt the ‘military training’ nature of the equipment had made

---

<sup>572</sup> Harry Collins and Trevor Pinch, *The Golem at Large: What You Should Know about Technology*, (Cambridge: Cambridge University Press, 2002), 18.

<sup>573</sup> TNA, CO 323/1658/13, from Donaldson, 13 March 1939.

<sup>574</sup> TNA, CO 323/1658/13, Extract from Telegram from Governor of Burma to Secretary of State for Burma, 1 February 1939.



it inappropriate for the crowd control context, although no specific information was provided as to why. Yet they still maintained that its use was somewhat successful because of its “considerable moral effect” on the crowd, implying that the right kind of gas correctly dispersed certainly could effectively control and disperse crowds. Moreover, while affecting morale and the dispersal of a crowd were forms of ‘controlling’ the scenario – something the Governor of Burma acknowledged – these objectives of chemical control had to be actively worked out through use. Criteria for control were not universal across contexts even from the same actor’s perspective; they were actively worked out, and enacted, within one context to another.

In his summary, Rangoon Commissioner of Police R.G.B. Prescott explained that the police force had used “C.F. Spadeheat Grenades and C.F. Three-Way Grenades” in contrast to the “Army generators” used on 31 January – which were “not intended or suitable for use by the Police against a crowd.”<sup>575</sup> He then went on to recount the 13 February encounter:

“A number of women were picketing buses parked in Fraser Street and a very large crowd had collected to watch and encourage them. This crowd while not actively hostile to the Police was whole-heartedly in sympathy with these women. Efforts to persuade these women picketers to move, failed and it was decided to use gas in preference to physical force.”<sup>576</sup>

Notable here is the decision to use gas on a crowd – which included women – that was “not actively hostile to the Police”. Rather than using gas as a means to control and disperse an ‘active’ riotous mob, the police felt teargas use was required in order to induce movement (after efforts to persuade the women to move failed). This was, presumably, in part justified on the basis that, if the women did not move and these sympathies continued, the crowd might *become* actively hostile to the police. In this respect, the use of gas was to control what would have been understood as a future threat – *future* disorder, imagined and anticipated by the police force.

Thinking back to the work on anticipation and pre-emption discussed in Chapter 1, in the case here, we can consider how the police force pre-emptively constructed the crowd as a source of disorder and hostility, by presuming that they might become ‘actively hostile’. Doing so legitimated the use of (chemical) force and constructed a binary that framed

---

<sup>575</sup> TNA, CO 323/1658/13, From R.G.B. Prescott, 18 April 1939.

<sup>576</sup> *Ibid.*

populations as either non-hostile or hostile regardless of their past actions or what they were doing at the time. These pre-emptive constructions of populations were at once acts of securing against anticipated threats, ways of making disorder knowable such that it could be controlled and brought to order. The point of timescale is therefore germane here. These anticipated threats were not years in the future, but minutes and hours. These were therefore not examples of the ‘sociotechnical imaginaries’ discussed in Chapter 1, but a range of imagined contingencies, each with implications for how the future might be controlled and secured through the sociotechnical apparatus of the state. It was left to state actors – colonial police – to construct, assess and resolve these possibilities. For police in high-pressure scenarios in which state control was being contested, teargas was a way to pre-emptively use force to anticipate and control scenarios in both the present and immediate future. Prescott continued:

“The arrival of the gas squad wearing their masks undoubtedly shook the crowd but not sufficiently to make them disperse. A number of bombs were first thrown at the women picketers, some of whom immediately ran but a few refused to move although severely gassed. They were completely incapacitated of course and the buses were enabled to drive away.”<sup>577</sup>

Prescott specified that the women picketers were targeted first. Anna Feigenbaum has noted how “the rising role of women in protest...posed a logistical and public relations nightmare for colonial authorities. Tear gas offered a third way out – it could change how governments looked, without any need for them to change the way things actually were.”<sup>578</sup> Thus, in this light, the use of teargas in Burma emerges as an imperial balancing act of legitimacy – gas was seen as an acceptable form of force to use upon a population of women, upon which firing might be perceived as grotesquely illegitimate. Prescott went on to discuss how the situation developed:

“By this time the crowds...were becoming unruly and a few bombs were thrown among them with excellent effect, the three-way grenade being particularly effective. At the time when the gas squad first went into action the wind was blowing from West to East, but after a few minutes it changed and the Police who had retired up the road to the North had to retire still further to avoid the gas. Fortunately it is possible to see the gas coming. Had the gas squad been attacked at this time it would have been difficult to give them adequate protection.”

---

<sup>577</sup> *Ibid.*

<sup>578</sup> Feigenbaum, *Tear Gas*; Feigenbaum, “Tear Gas and Colonial Bodies”.

In his memoirs, Assistant Commissioner Tydd also recounts what was likely the shift in wind Prescott mentioned in the report:

“...an amusing episode took place when we first used teargas to disperse crowds. The weapon was then fairly new...a special squad was set up under my direct command to go through a crash course of instruction...We had to apply our newly learnt skills within twenty-four hours of being declared competent...A large crowd had refused to disperse when so ordered and it was decided to use tear gas instead of the usual tactics. We, in the special squad, donned our masks, which in themselves intrigued the crowd and caused some consternation; we fired several grenades and lobbed a few more into the mob and – ‘Hey Presto’ – the people fled headlong down the street, pursued by the smoke of the gas. Well satisfied, we removed our masks and I was just telling the officer in charge of the armed patrol to take over, when a strong gust of wind veered round and drove the gas clouds, still hanging around in the street, straight back at us. So, while the mob was running one way, we fled as fast as we could the other; the whole length of road was then well and truly empty.”<sup>579</sup>

Tydd’s account points out how the identity of the gas squad was related to a particular kind of knowledge and training (although it does not sound particularly rigorous). Yet it also shows how teargas was a ‘messy’ technology, contingent on contextual conditions such as wind and climate. As such, police forces had to orientate themselves around using teargas as an objective in and of itself. For teargas to fulfill its potential for crowd control, properly trained and equipped police would have to use the right kind of gas, in the right quantities, under the right conditions. Its ‘messiness’ needed taming. This attempt at taming lay at the core of the British experimental search over the next two decades for a form of teargas more suited to the needs of colonial policing and imperial geopolitics.

When commenting, “fortunately it is possible to see the gas coming,” Prescott’s account raised another pertinent characteristic of teargas – its visibility. Tydd refers to this too, mentioning the crowd fleeing “pursued by the smoke of the gas.” Much like its role for civil defence in WWII gas tests, although for different reasons, visibility was key to the role that colonial police saw teargas playing. The visibility of gas was itself a deterrent for crowds, an indication of less liveable space; at the same time gas made visible areas that were being seized for control by colonial authorities, temporarily cordoning off these spaces as places only for

---

<sup>579</sup> Tydd, 133.

police forces. Another point for consideration, thinking back to discussions regarding the smoke/gas distinction in Chapter 1, is that a focus on the visibility of teargas (and what it makes un-visible) accorded more with an interpretation of the agent as a ‘tear smoke’ rather than ‘tear gas’. A smoke entailed a visible agent that was non-toxic intended to obscure rather than directly harm, which would not fall under the terms of the GP (that Britain had in 1930 determined to exclude screening smokes).

After describing the scenario Prescott responded directly to MacDonald’s three categories of interest:

“As regards the points raised by the Colonial Office –

- (a) Only one unit was engaged and consisted of two Gazetted Officers (Europeans) and 12 European Sergeants.
- (b) Only hand grenades were used. Spadeheat Grenades were thrown first followed by Three-Way Grenades. Altogether 19 grenades were thrown.
- (c) The gas enabled us to release the buses and had also the effect of upsetting and driving back though not actually dispersing the hostile crowd.”

In relation to the first category of interest – that of *who* was using gas – Prescott again overtly stated that the officers and sergeants in question were European. In answering question (a) about the organisation of the police force, Prescott was presumably eliding the racial identity of the police and their level of skill, training, and right to use gas. This elision entangled teargas’s role as a crowd control technology with a hierarchy that rendered native populations as targets for gas, and Europeans as gas users.

To return here to the nature of ‘control’, Prescott’s third point presented the gas use as only a partial success – while the captive buses were released, the crowd did not disperse. While he used the language of control – the police being “enabled” by the gas for instance – his comment illustrates how ‘control’ in these scenarios did not mean having a total ‘remote control’ of the situation. Rather, ‘control’ was heavily context dependent, with police seeking a range of possible degrees of control. Driving back the crowd and releasing the buses represented a degree of state control but not as much control as if the crowd had dispersed. Yet the dispersal of the crowd did not itself result in permanent control - it would be possible for the same crowd, or a different crowd to reassemble later that day, or week, or month. Thus, timescale becomes pertinent again. Asserting control was an on-going process, contingent on both Britain’s often longer-term imperial geopolitical interests but also on the

approaches and decisions made by its autonomous colonial governments and police forces, many of which were made with shorter timescales in mind. It was for local colonial police forces to balance tensions between these possible interests when they arose, and to make judgements as to how to pursue control.

In concluding, Prescott addressed the partial success of gas use further:

“For the purpose of upsetting a hostile crowd gas is undoubtedly very useful but if the crowd is to be actually dispersed it is necessary that the gas squad be supported by regular Police equipped with gas masks. When using gas against a hostile crowd it is essential that a large quantity be used. Two or three grenades are useless and it is the opinion of all officers who were present on the occasion referred to above that the number of grenades used was insufficient. Had we used twice the number the crowds might have broken and fled.”<sup>580</sup>

Here Prescott made two interrelated comments that highlight the power the imaginary of chemical crowd control already held in the minds of British imperial officials. First, he maintained that gas would be “undoubtedly very useful” for upsetting crowds, in spite of its failure to do so in the Rangoon instance. In order for it to achieve this efficacy, he asserted, all police members – not just the gas squad – would need to be equipped with gas masks (no doubt to avoid issues with wind for instance). Second, Prescott felt a larger quantity of gas would be necessary to effectively break crowds (the two points are thus interrelated in that more gas would increase the need for police to be protected by masks). In a real sense, then, teargas became an object around which the police force re-ordered itself. The imagined possibilities that gas offered – that it could, under the right circumstances, be the ideal technology of crowd control – became a goal colonial police orientated themselves toward. In this case, the perceived steps toward this goal were (a) equipping regular police with masks as well as gas squads (in contrast with the crowds being subdued), and (b) using a greater quantity of gas. These were, therefore, indications of the development of a sociotechnical imaginary centred upon a future in which teargas was a dependable solution for colonial policing. In the ensuing years, policy makers faced both new and persisting challenges framed within this imaginary – how would this colonial demand for teargas be supplied? Was gas strong enough? Were dispersal mechanisms appropriate, or too violent? How did it fare in

---

<sup>580</sup> TNA, CO 323/1658/13, R.G.B. Prescott (Commissioner of Police, Rangoon) to Secretary to the Government of Burma, Home Department, 18 April 1939.

tropical climates? I will now show how this imaginary consequently led Britain to orientate its research and development of teargas around these specific questions – ‘teargas’ was by now, without question, something that was “undoubtedly very useful” for crowd control. Instead, the issue was now how these challenges might be overcome.

### **The (Re)Making of Teargas: Entangled Networks of Supply, Experimentation, and Subjectification**

From 1936 onward, following the authorisation of teargas use on crowds in the colonies, policy makers had turned to questions regarding acquisition, supply and storage. Yet, they continued to note how these questions were themselves entangled with more technical considerations about the efficacy of teargas as a means of addressing crowd control. It is therefore important to note here, as will be discussed, that technical knowledge about teargas or notions regarding its technical efficacy did not precede policy considerations, but were rather co-produced hand in hand with social order – in alignment with economic, social and political concerns of the empire. Moreover, this challenges any contention that teargas was authorised in the Empire on a purely technical conception of ‘non-lethality’. Instead, the appropriateness of teargas for its given purpose was in continual evaluation, even following the 1936 authorisation. In practice, questions about how teargas should be used were also questions about what it was, and its technical characteristics. Yet the rationales and discourses for its applicability (many of which persist today) framed the relationship between these two questions as a linear one – one in which questions of how teargas should be used come after what it ‘is’.

Anna Feigenbaum notes how limited stocks, the lack of a teargas manufacturing market in the UK, and scarcity of resources for training colonial police in gas use led British officials to turn to the United States for supply of gas to the empire.<sup>581</sup> In particular, policy makers were averse to the idea of supplying the colonial demand for teargas from British based manufacturing because of the economic risks it posed. These concerns can be gleaned within a circular sent from MacDonald to all colonial police and mandated territories in August 1939:

“Obviously it is desirable on general grounds that, if possible, [tear-gas apparatus and equipment] should be purchased here rather than in the United States of America and

---

<sup>581</sup> Feigenbaum, *Tear Gas*, Chapter 3; Feigenbaum, “Tear Gas and Colonial Bodies.”

naturally it will be a matter for regret if it is found that a substantial sum of money has been spent on experimental work to no end. But it is clear that, if the doubts which are felt about the efficacy of the experimental grenade produced by the Chemical Defence Research Department [CDRD] are realized, further research and experimental work would be required here before any satisfactory equipment could be produced. Such work would, however, undoubtedly be hampered by the pressure of other and more important duties which the Chemical Defence Research Department is called upon to fulfil, and by the fact that there is no normal demand from British manufacturers for such equipment. This last is, as you will appreciate, an important factor and one likely to be enduring. There is, I understand, very little prospect that there would be any demand for supplies of tear-gas equipment manufactured in this country except from the Colonial Police forces, and (so far as can be foreseen) the Colonial demand by itself is not likely to produce substantial orders for British manufacturers.”<sup>582</sup>

The first section of the above excerpt highlights the tension policy makers felt between the desire to acquire supplies of teargas from the home market, and the impracticality of establishing such a market when demand was relatively low. However, MacDonald went on to explicitly tie the question of supply with that of technical experimentation – “naturally it will be a matter for regret if it is found that a substantial sum of money has been spent on experimental work to no end.” In fact, MacDonald made it clear that such experimentation was ongoing, and that the CDRD’s “doubts” about whether teargas could fulfil the role policy makers envisioned were another reason a home market should not yet be established. He suggested that the work required to develop and produce a suitable form of tear-gas in the home market would be “hampered” by the CDRD’s other priorities, and that the US market would therefore be a better source of teargas in the meantime.<sup>583</sup> MacDonald considered production of teargas “a novelty” for British manufacturers, such that the price “would remain correspondingly high” to the extent that the advantage of buying from a home market (to reduce costs) would “not materialise.”<sup>584</sup> Moreover, “American equipment” was “known to be satisfactory,” in contrast to the efficacy of the British model grenade, of which “considerable doubts” were felt. Consequently,

---

<sup>582</sup> TNA, CO 323/1658/13, Circular from Malcolm MacDonald, 31 August 1939.

<sup>583</sup> The Chemical Defence Research Department (CDRD), of which the CDES was part, was at this time part of the Ministry of Supply (it moved from the War Office to Ministry of Supply in 1939).

<sup>584</sup> TNA, CO 323/1658/13, Circular from Malcolm MacDonald, 31 August 1939.

MacDonald suggested that Colonial police forces purchase “(through the Crown Agents for the Colonies) from one of the two American suppliers – namely Federal Laboratories Incorporated and the Lake Erie Company.”<sup>585</sup>

After WWII, however, colonial governments began to consider the possibility of conducting research and development of teargas weapons within their respective countries. In 1947 the Home Department of the Government of India wrote to the WO noting that while “present arrangements for obtaining supplies of tear smoke weapons from America” were “satisfactory”, they were “contemplating conducting research in India with a view to developing their own production of tear smoke weapons.”<sup>586</sup> However, they did not “wish any research or production to be carried out on their behalf in the UK.”

Nevertheless, during this time officials at Porton were searching for more effective forms of teargas weapons (if not new gases, new mechanisms of dispersal). Despite the lack of interest from the Colonial Secretary and colonial governments in a home market, WO and Porton officials also remained interested in supplying teargas to other British markets. In 1947, for example, Porton produced and supplied Britain’s Mediterranean Fleet with No. 91 Tear Smoke Grenades for both anti-riot and boarding party purposes.<sup>587</sup> However, Porton began doing so while they were still experimenting with the design of the No. 91 model. R.B. Vallender, a scientist at the CDES, states in correspondence with F.C. Marrison (who was writing for the ‘officer in charge of Chemical Defence Department, hereby abbreviated to CDD’<sup>588</sup>, and was liaising with Naval Ordnance Department) that the grenade was still being modified – “we do not think that these modifications represent the best possible way of carrying out the alterations to obtain the desired result. We would prefer to do some more experimental work before sealing such a design and getting out the necessary drawings and specification.”<sup>589</sup>

Refining the mechanisms for dispersal of teargas was a point of focus throughout this period – for many policy makers, one important way to gain more control over the non-lethal properties of teargas was by finding (and becoming familiar with) the right kind of dispersal

---

<sup>585</sup> *Ibid.*

<sup>586</sup> TNA, WO 188/2108, From Colonel G.S for P.S.O., 11 January 1947.

<sup>587</sup> *Ibid.*, Development of Tear Smoke Weapons for Anti-riot and Boarding Party use, 30 June 1947.

<sup>588</sup> From the source material, it seems the CDD fell under CDRD (Ministry of Supply) rather than the CDES at Porton specifically.

<sup>589</sup> TNA, WO 188/2108, Development of Tear Smoke Weapons for Anti-riot and Boarding Party use, From R.B. Vallender, 30 July 1947.



mechanism. As the next section will show, however, separating effects of gas from effects of dispersal mechanisms can prove (and did prove) problematic, given that the ability to use gas is contingent upon the ability to control its dispersal in the first place. Policy makers often attributed lethal qualities to dispersal mechanisms while associating non-lethality with the gas itself. Furthermore, it will show how experimentation was both a means of testing distinctions of what teargas (and its dispersal mechanisms) could and could not be, and of making teargas technologies legitimate. Colonial populations became subjects with whom colonial authorities tested and identified these bounds. In 1947, no case exhibited this more starkly than the use of teargas in the Peshawar Central Jail riot.

*Peshawar: The gassing of 1,100 prisoners in a courtyard*

On the 20 May, in the midst of the “sultry afternoon” heat with “no wind”, the Peshawar Police threw 38 No. 92 teargas grenades into a crowd of around 1,100 prisoners confined to the courtyard of the Peshawar Prison Jail.<sup>590</sup> According to the Northern Command<sup>591</sup> report, “Nearly all” 1,100 were “affected to a varying degree by the gas.” Furthermore, a “large number” were “overcome by the fumes” to the extent that they were carried “into a non-affected area.” Approximately 70 of these people were “detained in hospital the next day.” Of these 70 people, six were “suffering from deep multiple cuts” and two of these six were “considered by the jail doctor to be in a fairly serious condition.” The report also noted that the rest of the 70 suffered from what was termed “a serious “hangover”, (one “gassed” casualty died 23 May) combined with minor cuts and abrasions but will probably be out of hospital in the next 48 hours.” The remaining prisoners were not admitted to hospital and were “also feeling slightly ill as a result of the gas, but [were] fast recovering.”

The Northern Command report not only evaluated casualties and injuries, but also assessed technical aspects of the gas itself:

“Large cloud persisted for approx 4 to 5 hours and 16 hours afterwards the effect of the gas still caused minor discomforts to anyone entering the affected area...The whole of the courtyard was an affected area, and a cloud persisted until 2200 hours that night. The

---

<sup>590</sup> Peshawar is now the capital of the Pakistani province of Khyber Pakhtunkhwa. TNA, WO 188/2108, Subject:- I.S. – Use of 92 Grens, 27 May 1947.

<sup>591</sup> The Northern Command was part of the British Indian Army, which became the Pakistan Army following the independence of Pakistan and partition of India on 14 August 1947.

fragmentation area cannot be accurately assessed but it is assumed that it was approx 25-30 yards.”

Furthermore, the report ended with an evaluation of policy: “A senior Police Official who was present at the time stated that had these grens not been used, the police would have had to resort to firing to restore order.” Thus, the distinction between firing (lethal force) and the use of teargas (as non-lethal) returned once again as a way of legitimating the use of teargas in the first place, much like discourse use by policy makers in interwar Palestine. The use of teargas was far more favourable than firing upon, and potentially killing, many of the prisoners. However, in using the No. 92 grenades, police and policy makers were trying to assess whether or not these grenades might be legitimate forms of teargas (for crowd control), while reconfiguring where the bounds of ‘non-lethality’ might lie. The incident was both an instance of an enactment of policy (use of teargas on crowds) and a reference point with which policy makers actively negotiated what constituted acceptable use and therefore policy. The gas use at Peshawar became an event with which medical expertise and the Northern Command determined what ‘lethality’ (and non-lethality) was, and therefore informed whether or not the CO should make the No. 92 grenade available to all colonial police forces. As shall be shown now, the Civil Staff Surgeon at Peshawar evaluated the incident to identify what kinds of force police had used, and what the results of this were. In a display of co-production, medical expertise played a significant role in co-producing what teargas ‘was’ (a non-lethal chemical) with considerations about how, and on whom, police should use it. If the No. 92 grenade could be made to fit this ontological category, then it would be a viable option for adoption by colonial police.

The Civil Staff Surgeon wrote a report of the incident on the “clinical aspects of the cases affected in the discharge of tear gas.”<sup>592</sup> The full report can be found in Appendix 5. The surgeon divided the cases into three groups:

- “(a) Those affected by the vapour alone...
- (b) Those with wounds and either no burns or minimal [inflammation] of the skin...
- (c) Those with wound and adjacent skin lesions resembling first and second degree burns...One fatal case...had extensive second degree burns on the lower limbs...no distress until about 7.30pm on 23 May. Collapse was ushered in by sudden [vomiting of blood/bloody

---

<sup>592</sup> TNA, WO 188/2108, Subject:- I.S. – Use of 92 Grenade, 5 June 1947.

stools], and death occurred in about 4 hours. No post mortem could be performed because the body was seized by unauthorised person[s], so the cause of death was not precisely determined.”<sup>593</sup>

This medical report ordered the ‘messiness’ of teargas at Peshawar by deferring to certain technical distinctions as means of identifying what constituted not just acceptable harm by teargas, but cause of harm. For example, the first and largest group of cases, defined by the surgeon as “those affected by the vapour alone”, encompassed those prisoners who experienced temporary effects of “short duration.” This constructed the vapour as having particular effects that were separable from its context of use, effects dependable on “dosage received,” rather than taking context and effect as entangled and inseparable – which would instead entail taking wounds and burns from grenade fragmentation, or injuries sustained by panic caused by the gas, as effects of the ‘teargas’. Without the use of teargas, after all, these particular harms would not have come about, whether or not they were due to the vapour or its dispersal mechanism.

The second and third groups of cases, on the other hand, consisted of prisoners whose skin had been wounded or burned. The third group also contained the one fatality, which the surgeon attributed to “toxaemia” (blood poisoning from infection) of burns. From the medical point of view, these cases were not attributable to the vapour alone. Severe burns, for example, were rather attributed to “exploding gas canisters”. This separation of the effects of the vapour from the context of the canister mechanism constructed the vapour teargas as a non-lethal entity, while attributing the more permanent and lethal injuries to the context in which the vapour was situated. In this case, the gas dispersal mechanism was the main contextual point of focus, but in other instances aspects such as weather conditions, expertise of users, and space (enclosed/open spaces) might be pertinent. At no point was the non-lethality of the ‘teargas’ category challenged, and this in effect ordered a medical epistemic approach to defining conceptions of lethality – and its normative implications (i.e. that the underlying idea of chemical force remained legitimate) – above alternative ways of thinking about harm and legitimate force. Taking chemical force to be legitimate by ‘non-lethality’ exonerated police for their responsibility in using chemical force that led to the death of a prisoner, particularly given the secretive circumstances in which the “body was seized.” Death

---

<sup>593</sup> *Ibid.*

should hardly be a fair outcome for involvement in a prison riot; and this could have been taken as a starting point. Instead, the report reinforced the ‘non-lethality’ of teargas. Thus, this framing rendered the fatal casualty as ‘less than human’.<sup>594</sup>

Moreover, the surgeon drew a distinction between thermal and chemical burns as a means of determining whether the chemical was the cause of the injuries that led to death – although they noted that “the cause of death was not precisely determined” because the body was seized by unauthorised persons before the post mortem. Stating that the most severe burns “looked more like thermal than chemical burns,” this created a division between the cause of burns as teargas and the cause of burns as the gas canister mechanism. That said, the surgeon did first acknowledge significant uncertainty with regard to these claims: “I cannot say what proportions of the burning was chemical and what thermal.”

Both the Northern Command report and Civil Staff Surgeon report were sent from Marrison to the Chief Superintendent at Porton Down. Thus, the Peshawar incident directly informed experimental work and strategy at the chemical defence establishment. With the reports, Marrison sent a note stating:

“...the Colonial Office do not consider that their requirements are sufficient to justify asking us to carry out any design development and have advised the Colonial Governments to purchase equipment from American sources. They have, however, “hoped that it may prove possible to employ the 92 Grenade in place of some types of American grenades which have been purchased in the past.””<sup>595</sup>

Since the late 1930s, officials at Porton had continued development of teargas grenades despite repeated statements from the CO that they did not desire further work on teargas. During WWII, the UK extensively produced and weaponised phosgene gas, mustard gas and teargas (predominantly bromobenzyl cyanide, a.k.a. BBC) in Agency factories run by the chemical industry for the Ministry of Supply, “under conditions of secrecy and urgency,” as Porton historian Gradon Carter has noted.<sup>596</sup> Thus, the ongoing work on teargas at Porton

---

<sup>594</sup> Judith Butler, *Precarious Life: The Powers of Mourning and Violence* (London; New York: Verso, 2004). This draws from Judith Butler’s notion of the ‘less than human’. In *Precarious Life*, Butler uses the term to refer to how detainees in indefinite detention become portrayed as “not entitled to trials, to due process, to knowing and understanding a charge against them,” such that certain bodies become killable.

<sup>595</sup> TNA, WO 188/2108, from F.C. Marrison, 2 December 1947.

<sup>596</sup> Carter, 44.

was undertaken by the CDD on the basis of applications the gas might have outside of colonial policing, such as its potential applications in war, and in research on defending against gas. Nevertheless, Porton continued to co-ordinate with the CO regarding research and development on teargas. Whilst the CO position after Peshawar was still to buy American, they also perceived the No. 92 grenade as a potential future replacement for American alternatives, despite the numerous deaths and injuries involved in the Peshawar incident. This was partly because the No. 92 grenade had been used one month prior to the Peshawar incident, in the city of Kohat, where it had been “particularly effective in dispersing a crowd without any very serious injuries,” in the words of Marrison (CDD).<sup>597</sup> A Northern Command report of this incident was enclosed alongside the Peshawar reports and the aforementioned note from the CDD (the incident is discussed in Appendix 6).

#### *Abandoning the No 92 Grenade*

However, the fragmentary explosive nature of the No. 92 grenade remained troubling for policy makers. Writing to Porton, Marrison stated, “the fundamental functioning desiderata are basically incompatible, i.e. that it would not be possible to produce a sufficiently large and aggressive cloud without an explosion of sufficient intensity to cause lethal effects under certain circumstances.”<sup>598</sup> The explosive mechanism was perceived as transgressing the bounds of lethality, thereby making the No. 92 grenade a potentially unsuitable teargas technology.

These concerns did not just come from the CDD and scientists at Porton. Colonial police forces also wrote to the Colonial Secretary with their dissatisfaction with the No. 92 model. The Acting Commissioner of Police for Jamaica, for example, proposed that “the No. 92 grenade is a military weapon designed for war purposes, that (a) it contains an explosive charge which generates considerable heat, causes fragmentation of the container, and (b) actual experience has shown that it is a dangerous weapon causing burns, wounds and on at least one occasion death.”<sup>599</sup> The American C.P. Tear Smoke Grenades, “specially designed and developed over a period of 15 years for use in case of civil unrest,” remained more suitable for police force requirements than the No. 92. The Commissioner also noted that the

---

<sup>597</sup> *Ibid.*

<sup>598</sup> TNA, WO 188/2108, from F.C. Marrison, 15 November 1947.

<sup>599</sup> *Ibid.*, from F.N. Miles.

C.P. manufacturer had assured them that “no case of injury” had ever resulted from their use. Similarly, the Governor of Cyprus complained, “the No. 92 grenade did not provide so dense a volume of smoke...the smoke, not being visible, is unlikely to have such good deterrent effect.”<sup>600</sup> The aforementioned visibility of gas as a deterrent thus remained an important aspect of teargas’s power for many officials.

The No. 91 model was generally seen as the more suitable British model, although some considered the 91 to be too benign. One official commented, “in any case something more violent than the 91 but less violent than the 92 is likely to be a definite requirement.”<sup>601</sup> This particular official also mentioned a trial carried out by the Hong Kong Police with the No. 92 grenade, in which “one of 25 human guinea pigs received a splinter wound at 30 yards and another vomited!”<sup>602</sup> In their own experiments, it had “displaced to a good extent a large block of stone.” Nonetheless, they still claimed that colonial police “would probably accept a less lethal production of the 92 if such was produced.”

Moreover, from the late 1940s, policy makers became increasingly concerned with the deterioration of CN teargas (both American and British-made) over time, particularly in the hot climates of certain colonies. Issues of leakage and decomposition led to gas being ineffective, to charge mechanisms malfunctioning, and to shorter shelf lives – therefore higher costs and demand due to the need for regular restocking. A 1948 inspection in Jamaica, for example, found 122 No. 92 grenades to be “unserviceable” and 896 to be “doubtful” due to both internal and external corrosion.<sup>603</sup> The 122 unserviceable grenades were “deep-sea dumped because of exposed fillings.” It is unclear from these documents how many other grenades might have been deep sea dumped in this period, but it does pose a fascinating and important avenue for potential research work into the relationship between chemical agent disposals, abuse of colonial waters, and environmental impact.

Not all officials were dissatisfied with the No. 92 grenade. The Commissioner of Police for Zanzibar, for instance, still felt the 92 would be suitable for crowd control – “this type of grenade would be quite suitable for use in this country, in spite of the fact it is liable to inflict injuries, if caused to explode too near, to persons. Its greatest asset is that no control

---

<sup>600</sup> *Ibid*, from the Governor of Cyprus, 26 January 1948.

<sup>601</sup> *Ibid*, S.F.S.D., 25 February 1948.

<sup>602</sup> A report of the tests in the same file confirms that these “guinea pigs” were police recruits. The tests were conducted “in open country in the King’s park, Kowloon Reservoir area.

<sup>603</sup> TNA, WO 188/2108, Extract From C.I.L.S.A. Report CILSA H/Gren/14. 13 October 1949.

could be exercised over the dispersal of the gas cloud by a mob after it has exploded.”<sup>604</sup> By this, the Commissioner was referring to the fact that these exploding grenades could not be picked up and thrown back at police.

Let us here return to the comment that “something more violent than the 91 but less violent than the 92 is likely to be a definite requirement.” Officials clearly did not use minimum force or violence as an objective. Finding a suitable crowd control gas technology entailed negotiating what level of violence was acceptable to inflict on crowds, the bounds of which were worked out through on-going gas use and experimentation. Knowledge of what constituted non-lethal force was being continually co-produced with what kinds of force *ought* to be used on colonial populations. Moreover, level of force varied across geographies – different local police forces came to different decisions and solutions regarding use of force, decisions contingent on their local knowledge and politics. Police authorities in Jamaica felt differently about the No. 92 grenade from those in Zanzibar. Decisions regarding chemical force, who could use it on whom, and when, were also dependent upon these geographies of knowledge, as was apparent in the earlier Burma case involving the racial hierarchy of police officers.

Additionally, it is important to acknowledge here that violence and force were not the equivalent of lethality. In fact, they often lay in tension with one another. The No. 92 grenade was considered problematic by many because of its potential for lethality, while its greater force and capacity for violence made it more appealing than the No. 91 model. Attempts to find a balance of these aspects, and address problems of storage and decomposition, ultimately coalesced in Porton’s recommendation to replace CN teargas with CS in 1958 (examined later in this chapter).

In 1948 the Colonial Secretary, Arthur Creech Jones, sent a secret circular despatch to all the colonies addressing this issue of force:

“...it is a general principle that the police, and (if they are called upon) the military, should employ only the minimum degree of force necessary to restore order or protect life and property in the event of riots, and that recourse should be had to the use of firearms only as a

---

<sup>604</sup> *Ibid*, Tests of No. 92 (Tear Smoke) Grenades and No. 2 Generator, 10 December 1948.

last resort...One of the most effective and humane weapons available against rioting crowds is tear smoke.”<sup>605</sup>

Once again, in stating that the principle of minimum force meant firearms should be a last resort, and defining tear smoke as “effective and humane”, this statement effectively equated tear smoke with a “minimum force” option. This did not accommodate the notion that force might be contextual, such that use of tear smoke might encompass a range of levels of force – something some police officials had struggled to grapple with when using the No. 92.

The CO’s aversion to the use of firearms was deeply geopolitical, and derived from an interest in maintaining imperial legitimacy rather than just concern about the rights or welfare of colonial populations. Creech Jones ended the circular by expressing, “I am deeply impressed with the bitter feelings which the use of firearms against civilians tends to arouse and perpetuate, and by the opportunities which it provides for political misrepresentation and for the exploitation of extreme political views.” Thus, gas was an alternative intended to incite less potential for criticism of the British imperial state, through enabling police to reconstruct the boundaries of lethality and non-lethality. In doing so, teargas formed part of an imperial apparatus of biopower, allowing the state to govern the conditions of colonial life rather than acting as executioner per se. Moreover, by enabling the state to define and traverse the boundary between lethality and non-lethality, teargas co-constructed the state as humane and ‘civilised’, affording it the ability to ‘take care’ of its colonial populations (with the implication that it could do so better than they could ‘take care’ of themselves).

### **Operation Crusoe, Malaya**

Though Britain generally appealed to distinctions between military and domestic contexts, lethality and non-lethality, the international and the national, as ways of legitimating its role of humane governmentality, there were instances in this period when international pressures led policy makers to re-evaluate, and even consider transgressing, these distinctions. For example, in 1953, Britain made a notable shift in its policy toward teargas, as the UK Cabinet approved the use of BBC (bromo benzyl cyanide) teargas for operations against

---

<sup>605</sup> TNA, CO 537/2712, Methods of Dealing with Civil Disturbances, from A. Creech Jones, 24 June 1948.



“terrorists” in Malaya.<sup>606</sup> Cabinet Secretary Norman Brook recorded minutes of this Cabinet meeting in his notebook, which read, “New tear gas – BBC: purely lachrymatory. Will be used to beat them up in jungle. Not persistent. Authorised.”<sup>607</sup>

These operations took place in the midst of the Malayan Emergency, a conflict fought in British colonial Malaya (and from 1957, independent Malaya) between the Communist Malayan National Liberation Army (MNLA) and the Commonwealth forces. The MNLA had support from a considerable portion of the Chinese population living in Malaya as well as some of the Malay population (with Chinese, Malay, Indian and Indonesian members), representing predominantly poor Chinese farmers who were denied equal rights to vote and lacked land rights. As such, they operated within the jungle territory that many of these farms bordered. While Britain termed the conflict the Malayan Emergency, the MNLA dubbed it the Anti-British National Liberation War.<sup>608</sup> According to the National Army Museum, Britain labelled the conflict an “emergency” because using the term “war” would have enabled property insurers to avoid paying out damage claims from plantation, manufacturing plant, and mine owners affected by the conflict.<sup>609</sup> However, this subsequently enabled Britain to consider the possibility of using chemicals in the conflict on the grounds that it was a domestic rather than military event (even though the belligerents were notably international).

### *Planning the trials*

Following the Cabinet approval, the High Commissioner and Director of Operations of Malaya Gerald Templer determined that trials in Malaya would need to be conducted before the gas was used operationally, which were to be co-ordinated by the Ministry of Supply. These trials were to involve “12 volunteers to act as guinea pigs (4 white and 8 bandit race).”<sup>610</sup> The use of the term “bandit race” was indicative of policy makers’ racial conception of the bandit that both came hand in hand with the idea of teargas as a technology suited for dealing with these populations. In conducting trials that constructed these distinctions between white and “bandit race” bodies as relevant to the efficacy of teargas, policy makers

---

<sup>606</sup> TNA, AIR 23/8593, Subject: Use of Non Lethal Gas in Malaya, from G.P.L. Weston, 6 February 1953.

<sup>607</sup> TNA, CAB 195/11/11, Cabinet Minutes, CC(53)3, 20 January 1953.

<sup>608</sup> Today, the conflict is commonly termed a ‘guerilla war.’

<sup>609</sup> National Army Museum, “Malayan Emergency”, National Army Museum, URL: <https://www.nam.ac.uk/explore/malayan-emergency> (accessed 20 September 2018).

<sup>610</sup> TNA, AIR 23/8593, HQ Malaya Cipher Office, Troopers to Directors Malaya.

envisaged teargas as a technology of racial ordering. As I shall show, scientists observing the trials specifically investigated how ‘bandit’ races responded to teargas in the jungle, using Europeans as a ‘control’ group. Moreover, they investigated differences within their category of “bandit race”, by comparing the effects of gas across Chinese, Malay and European (control) subjects – who they called “guinea pigs.”

The Malaya trials with BBC were born from desire within the Malayan High Commission and the CO to “prevent or impede terrorist movement by blanketing off areas of jungle.”<sup>611</sup> The year before, the Director of Chemical Defence Research and Development (DCDRD), Albert Childs, and the CDEE had discussed what forms of chemicals might be appropriate for such use; one wrote,

“I am somewhat doubtful with Geneva Conventions etc. if the powers that be would agree to an all out gas offensive. Smoke as such doesn’t seem much good and I am doubtful if harassment with DM for example (even if permitted) would have any lasting or worthwhile effect. From Beards’ report it seems to be an ideal role for Mustard (&/or [nerve gas]) but I suppose these are out. Do your best though to make suggestions but keep them realistic.”<sup>612</sup>

Policy makers were careful to frame whatever they decided upon within the terms of the GP, yet were not averse to tentatively considering cases “where the Geneva Convention could be disregarded.”<sup>613</sup> To this, Porton replied, “the only suggestion we could make was the use of the German Green Ring 3 Tabun bombs. These would probably be quite effective in the jungle and would most likely establish a lethal concentration for some time.”<sup>614</sup> Years after uncovering deadly nerve gases in Germany, they were still thinking about what their tactical potential might be, despite the fact that such gases would have been indisputably condemned in the international arena.

Arguing for the need for a gas in Malaya, Chief Superintendent at Porton S.A. Mumford exclaimed,

“...[bombing] is not very effective for the reasons that the areas known to contain bandits are uncertain and large, and further, once the bombing or shooting has finished, the bandits can move across the attacked area with impunity. It is therefore required to reinforce these lines

---

<sup>611</sup> TNA, WO 188/2585, Trials of persistent tear gas in Malaya, from CO, draft telegram, DEF 101/23/06.

<sup>612</sup> TNA, WO 188/2584, from A.E.C., not dated.

<sup>613</sup> *Ibid*, from S.A. Mumford, 19 May 1952.

<sup>614</sup> *Ibid*.

of interdiction with an irritant chemical which would remain for a number of hours and thus from a more effective deterrent to movement across the barrier.”<sup>615</sup>

Thus, policy makers saw BBC as a replacement to conventional lethal force (bombing), as well as a method of exerting control over spaces through the persistence of the gas. In contrast to other contexts, officials discussing Malaya identified the *persistence* of BBC teargas across spaces – rather than temporary physiological effects – as what made it tactically valuable. Moreover, the use of BBC in Malaya presented a balancing act challenge for policy makers, in which they had to be careful not to frame gas use as a military action – lest it be construed as a contravention of international law – despite the fact that its tactical counter-insurgency capabilities were precisely what they were most interested in. In this respect, British officials’ considerations about Malaya case were not dissimilar to the discourses and tensions related to US military use of chemicals (including CS) during the Vietnam War, though they were disguised by conflict’s classification as an ‘emergency’, a domestic rather than international event. Sarah Bridger, for example, has noted how US advisors in Vietnam used the language of ‘testing’ and ‘experimentation’ to characterise America’s early use of chemicals in that war, as a means of demarcating what they were undertaking with ‘use’ of chemical weapons (which would have provoked international scrutiny and condemnation).<sup>616</sup> Britain used the same rhetoric of experiment in its use of gas in Malaya.

With this rhetoric, the CDRD’s notes from the trials’ planning meeting constructed racial distinctions as an area for testing: “a proportion of [“guinea pigs”] should be as close to bandits in race and general characteristics as feasible, because of the possible differences in racial reaction to BBC. The remainder should be Europeans as a check on the results and to avoid giving grounds for adverse inter-racial propaganda.”<sup>617</sup> Thus, both scientists and officials deemed racial difference as an investigative focus, to the extent that they thought gas could have different effects between races. Indeed, even one sceptical CDEE scientist wrote in 1952, “the only useful trial would be to produce concentrations of BBC by simulated means in Malayan conditions and try them on a simulated bandit, Asiatic troops in fact.”<sup>618</sup> Yet such experiments were simultaneously part of attempts to control these colonial

---

<sup>615</sup> *Ibid.*

<sup>616</sup> Bridger, Chapter 3.

<sup>617</sup> TNA, AIR 23/8593, Trials with B.B.C. in Malaya, from G.A.A. Moir, 2.

<sup>618</sup> TNA, WO 188/2584, from S.A. Mumford, 8 November 1952.

populations, such that this notion of teargas as a body-controlling chemical was co-produced with notions of how, and on whom, it should be used – what a ‘terrorist’ was, for example. The expressed need “to avoid giving grounds for adverse inter-racial propaganda” further highlights that British policy makers were aware of the work’s potential for condemnation, particularly from the local communities, yet the primacy of technological investigation prevailed.

The Malaya trials, to be held in April, had to be conducted with the utmost discretion. In February 1953, Templer’s office wrote, “The importance of security both from the point of view of future operations and on political grounds cannot be stressed too strongly and you may wish to consider the adoption of a cover plan for the trials.”<sup>619</sup> Templer’s concerns centred upon fears that such chemical trials would garner international condemnation (that this use of BBC might be seen as contravening the GP), as well as furore from the Malayan population, which could compromise future experimentation as well as Britain’s position and legitimacy in the South East. As a result, the trial was to “be carried out on an uninhabited island.”<sup>620</sup> This location, following air reconnaissance of a number of islands off the Eastern coast of Malaya, was eventually decided as Pulau Tenggol. The trials were given the codename “Operation Crusoe.”

With regard to the cover story, the High Commissioner suggested, “consider cover story should approximate as far as possible to truth to obviate awkward explanations if leakage occurs. Propose therefore if necessity arises experiments will be described as trials of new bombing equipment for use against terrorists.”<sup>621</sup> The Colonial Secretary responded by suggesting that “advance guidance” of the trials “should be given to the United Kingdom/Commissioner of India and possibly other posts” and potentially the FO.<sup>622</sup> This guidance would allow for these posts to “give appropriate explanations to the governments to which they are accredited” in the case of an information leak, informing them of the “comparatively innocuous nature of the gas” and any cover story being used.

---

<sup>619</sup> TNA, AIR 23/8593, Subject:- Trials of BBC, from G.P.L. Weston, 17 February 1953.

<sup>620</sup> *Ibid*, Subject:- BBC Gas Trials. From Major General, General Officer Commanding, Malaya, 6 March 1953.

<sup>621</sup> TNA, AIR 23/8593, High Commissioner Federation of Malaya to Secretary of State for Colonies, Draft.

<sup>622</sup> *Ibid*, Telegram No. Personal 36, to High Commissioner Federation of Malaya from Secretary of State.

### *Conducting the trials*

The trial was staged in two parts; the first involved volunteers (some equipped with respirators) running through the trial area of jungle to a rendezvous point. The trial area had static bombs filled with BBC spaced to correspond with the approximate spread of air dropped gas bombs.<sup>623</sup> The volunteer party consisted of seven men without masks with six men with masks as escort. The volunteers were “briefed beforehand that the gas was quite harmless, that there would be no permanent effect and that if the irritation became intolerable they should put on respirators and retreat.”<sup>624</sup> The second part of the trial involved aircraft dropping smoke liquid bombs as representations of BBC bombs across the trial island, to determine whether bombs could be released “at the required spacing” and did break open as necessary across the relevant terrain.<sup>625</sup> The first experiment is primarily of interest here.<sup>626</sup>

A tabular summary of the results of the first part of the trial is shown below as it is written in a later version of the post-trial report [Table 2]. In addition to the tabular results, the report noted “symptoms were first a slight smell and then suddenly profuse lachrymatory, a burning sensation in the mouth and throat and a stinging sensation on the face, the neck, and in some cases the arms.”<sup>627</sup> Experiments were also held the following day to test the persistence of the gas: “Heavy and prolonged rain fell during the night. A party of two British and one Malay visited the site at 7 a.m. the next morning (19 hours after burst). They all penetrated and reported weaker symptoms than the previous day.” Another version of the experiment was staged with bombs at a minimum spacing (maximum gas density), in which “four British, one Malay and one Chinese” volunteers were successful, while “one British, two Malay and four Chinese turned back.” The site was also visited four and three days after the experiments respectively, at which time the “less dense contamination was still lachrymatory, while the more intense area still produced irritation to the eyes, throat and neck. In both areas defoliation and marks on the foliage delineated the area of liquid contamination.” The effect of BBC was thus also deemed to be ecological.

---

<sup>623</sup> TNA, WO 188/2585, Report on Operation Crusoe, from E.W. Bateman, 25 April 1953.

<sup>624</sup> *Ibid.*

<sup>625</sup> *Ibid.*; TNA, WO 188/2584, Trials in Malaya with BBC, 27 January 1952.

<sup>626</sup> Appendix 7 notes the impact of the Comet airliner crash on the trial reports.

<sup>627</sup> TNA, WO 188/2585, Operational Research Unit Far East. Memorandum No Q5/53. Operation Crusoe.

**Table 2. Results Table of Operation Crusoe<sup>628</sup>**

	British	Chinese	Malay	Totals
Unmasked Party	Two passed through both lots of gas.	One passed through both lots of gas.	One passed through both lots of gas.	4
	One was stopped by first lot of gas.	Two turned back at first lot of gas.		3
Masked Party	One removed mask after passing through first barrier and completed trip without mask.		One removed mask after getting into first barrier and completed trip without mask.	2
		One removed mask and replaced it.		1
	One wore mask continually.	One wore mask continually.	One wore mask continually.	3
Totals	5	5	3	
Equivalent pass	3	1	2	6
Fail	1	3	-	4
Not tried	1	1	1	3

The report concluded, “Persistent tear gas BBC will not stop a determined man who knows the physiological characteristics of BBC and the extent of the contamination... numbers employed...were too small to draw any firm conclusion as to the relative toughness of British, Malay and Chinese, but the trials give an indication that they may be in that order.”<sup>629</sup> Operation Crusoe was therefore not just an experiment to create ‘knowledge’ of the effects of BBC teargas, but also an attempt to actively produce a racial ordering of “toughness.” Meanwhile, the conclusion continued, “It is difficult to estimate the effect of this form of attack on Malayan bandits in the absence of any knowledge of the psychological effect on natives ignorant of the initial or permanent effects of BBC or the extent of the area contaminated. Against this ignorance must be balanced the desperation of hunted men.” The effects of BBC were therefore tied to conceptions of the knowledge frames of populations being gassed. For policy makers, achieving the maximum efficacy of BBC in future paradoxically depended on whether or not those being gassed knew whether the gas was non-

---

<sup>628</sup> *Ibid.*

<sup>629</sup> *Ibid.*

lethal: “It might have been more of a deterrent had the “observers” not been told beforehand of the essential non-lethal character of the cloud.”<sup>630</sup>

*“Tell the truth and shame the devil”: Navigating potential futures of public knowledge*

Regarding persistence, the conclusions stated, “BBC is likely to persist in the Malayan jungle for at least four days but at diminishing effect. It would be advisable to “top up” the contamination every 48 hours or at shorter intervals if this is possible.”<sup>631</sup> Throughout Operation Crusoe, policy makers had specifically referred to BBC as ‘persistent tear gas.’ When considering whether to make news about the trials public, some officials suggested the gas should be referred to in public as such.<sup>632</sup> Following the trials, however, discussions about publicity continued, now centering upon whether and how to make operational use of gas public knowledge beforehand. The FO, for example, felt that “wide publicity should be given to our intention before it is put into effect.”<sup>633</sup> They believed that secrecy about gas use would be very difficult to maintain, and that “the Communists” would “be able to persuade a great many people throughout the world that we have used poison gas” should the use of tear gas specifically not be mentioned beforehand. The FO feared that the ‘Communists’ would produce “evidence of deaths amongst those exposed to the gas, and possibly more convincing evidence in this case as it is likely that people subjected to the gas who died of other causes would sincerely be assumed to have died as a result of the gas.” Officials therefore struggled with the frictions involved in legitimating BBC for lethal operations on the basis that the gas itself was ‘non-lethal’.

High Commissioner Templer later expressed outright that “he might wish to use BBC in a major operation...to kill or capture the Communists’ Central Committee.”<sup>634</sup> However, given the limited nature of existing BBC stocks, and the massive quantities that would be required for large scale operations dispersing it by air (Templer’s favoured method), he suggested BBC instead be used for certain tactical uses within operations. Its “best use”, in Templer’s mind, would be against “for special pin point targets such as a bandit camp in

---

<sup>630</sup> *Ibid*, Trials of BBC in Malaya, from A.E. Childs, 1 June 1953.

<sup>631</sup> *Ibid*, Operational Research Unit Far East. Memorandum No Q5/53. Operation Crusoe.

<sup>632</sup> *Ibid*, from T.C. Jerrom, 26 March 1953.

<sup>633</sup> *Ibid*, from J.G. Tahourdin, 27 April 1953.

<sup>634</sup> *Ibid*, Operation CRUSOE,” B.B.C. Gas, enclosed from A.M. MacKintosh, 30 May 1953.

which prominent CTs [Communist Terrorists] were known to be present, to hamper the enemy and protect coup de main parties which might have landed nearby by helicopter.”<sup>635</sup>

The CO, in response to the FO, thought it unlikely that Templer would agree to advance publicity of BBC use before an operation.<sup>636</sup> Nevertheless, they requested further information from the Ministry of Supply regarding the “differences between BBC gas and tear gas as at present used by police forces in other countries.” What they desired “from the publicity point of view” was “a definition for the layman of any substantial difference in the effects of BBC and common tear gas on subjects in normal health.” It is interesting here that the CO saw the need for a distinction between BBC and ‘common’ teargas (CN), actively appealing to a demarcation between the contexts of civil policing and what was occurring in Malaya. Officials were hesitant to define the operations in Malaya according to categories of ‘military’ and ‘domestic’ operations, and rather focused on how the persistence of BBC made it suited for a role in counter-terrorist operations.

Tensions had emerged between the need to manage public knowledge of BBC and the potential disadvantages that doing so had for the tactical efficacy of gas use. On this latter point, the CO pointed out, “Trials indicated that few men would be prepared to go through this gas unless they knew beforehand that it was non-lethal. It was therefore of first importance to avoid such a major leakage of information before the operation as would necessitate a public statement that the gas was not lethal.”<sup>637</sup> Consequently, officials began to discuss whether to use a range of potential cover stories. In a telegram to the CO, Templer identified three potential types of leakage: “(a) that trials have taken place with a gas, (b) that gas arrived in Singapore and is being put into containers there, and (c) rumours that gas is going to be used against CTs.”<sup>638</sup> His position was that “if these leakages occur we can either produce cover story or tell the truth. The use of a lachrymator by police is now accepted as normal in many countries...I see no objection to saying that we are experimenting with new form of non-lethal lachrymatory agent in effort to reduce rather than produce casualties. This has its advantages. It is the truth.”

---

<sup>635</sup> *Ibid*, Telegram to the Secretary of State for the Colonies from Federation of Malaya (Gen. Sir G. Templer), 14 June 1953.

<sup>636</sup> *Ibid*, from T.C. Jerrom, 8 May 1953.

<sup>637</sup> *Ibid*, B.B.C. Gas, enclosed from A.M. MacKintosh, 30 May 1953.

<sup>638</sup> *Ibid*, Telegram to the Secretary of State for the Colonies from Federation of Malaya (Gen. Sir G. Templer), 14 June 1953.



Templer felt the accepted police use of teargas for crowd control would provide legitimacy to its possible use against terrorists in Malaya. He also explicitly acknowledged the gas's 'non-lethality', arguing that its application might be justified on the basis that it could reduce casualties, claiming that this was "the truth." That the gas was to be used in the context of lethal operations was beside the point if the effects of the gas alone were not lethal. Templer favoured this option "to tell the truth and shame the devil" because it would "cause no great surprise", anticipate enemy accusations and "cause uncertainty and lower morale" among "communist terrorists" that might hear of it.<sup>639</sup>

However, if the CO still desired to adopt a cover story, Templer suggested it must be one "only adapted to the circumstances, namely that another chemical preparation is being tested for use against jungle cultivation...it gains plausibility since I am spraying jungle crops with trioxone."<sup>640</sup> Trioxone, a herbicidal defoliant, was one of two acids that made up equal parts of Agent Orange (the other acid being 2,4-Dichlorophenoxyacetic acid), the defoliant that was also later used extensively by the USA during the Vietnam War. The British use of defoliants in Malaya later became the grounds for US Secretary of State Dean Rusk's advice to President John F Kennedy regarding defoliants in Vietnam in November 1961: "the use of defoliant does not violate any rule of international law concerning the conduct of chemical warfare and is an accepted tactic of war. Precedent has been established by the British during the emergency in Malaya in their use of helicopters for destroying crops by chemical spraying."<sup>641</sup> While it is not within the scope of this project to investigate how the British choice to use defoliants in Malaya first came about, Templer's note about "plausibility" provides an interesting example of how distinctions between chemicals were actively mobilised, or deconstructed, depending on context. In this instance, publicised use of defoliant chemicals might lend credibility to a story used to obscure the contrasting secret use of BBC. The CO agreed with Templer's proposition to "tell the truth and shame the devil."<sup>642</sup>

---

<sup>639</sup> *Ibid.*

<sup>640</sup> *Ibid.*

<sup>641</sup> United States Department of State, *Foreign Relations of the United States, 1961-1963, Volume 1, Vietnam, 1961* (US Government Printing Office, 1988), Document 275. Memorandum From the Secretary of State to the President, URL: <https://history.state.gov/historicaldocuments/frus1961-63v01/d275> (accessed 7 June 2018).

<sup>642</sup> TNA, AIR 23/8593, B.B.C. Publicity, to all members of the Director of Operations' Committee, November 1953.

In July 1953, the FO again came back with objections to secrecy, pressing Templer to give advanced publicity to use of BBC given its use was being considered for smaller operations rather than large scale ones. Templer's response, which was agreed upon by all the Services, the Secretary of Defence, Director of Intelligence and the Director General Information Services (DGIS), was that he did not agree but "would inform that Colonial Office of his intention and give full publicity to it on the day the operation was launched, but not before."<sup>643</sup> The situation did not develop any further, and Britain did not use BBC gas in its operations in Malaya after Crusoe. However, the case of Operation Crusoe as an experiment nevertheless provides a unique instance in which British policy makers actively transgressed and experimented with their previous iterations of teargas (and its role). In doing so, they had to re-evaluate and redefine where different forms of teargas (use) should lie in relation to distinctions between the military/non-military, international/national, and lethal/non-lethal. Nevertheless, the growing desire amongst colonial officials for a more effective form of teargas for policing remained. By 1956, scientists at Porton had been tasked with formally searching for "a riot control agent physiologically more potent and therefore more effective than CN."<sup>644</sup> It is to this search that we now turn.

### **Making 'CS' a teargas**

In January 1957, officials at Porton stated, "the present position is that o-chlorobenzal-malononitrile (T.792) and o-nitrobenzal-malononitrile are the best agents found to date from the point of view of aggressiveness, suitability for dispersion and, as far as is known at present, for storage at elevated temperatures."<sup>645</sup> While the nitro-compound invoked "somewhat more pronounced" physiological effects, it was also "difficult and expensive to make," whereas the chloro-compound was "readily prepared." T.792 was "superior to CN in that, in addition to its effect on the eyes, it causes pain in the throat and chest and hence goggles afford only partial protection against it."

Porton's Chemical Defence Experimental Establishment had developed T.792, also known as "CS" (named after the two American scientists, Ben Corson and Roger Stoughton, who first synthesised it in 1928), in 1956, in the midst of growing sentiment from the British

---

<sup>643</sup> *Ibid.*

<sup>644</sup> TNA, WO 195/14415, Porton technical paper no. 651, Summary.

<sup>645</sup> TNA, WO 188/2718, Anti-Riot Devices, from A.C. Peacock, 25 January 1957.

government that the UK needed to acquire both lethal and incapacitating chemical warfare capabilities.<sup>646</sup> Such sentiments led to an increased interest in R&D on incapacitating agents throughout the late 1950s and 1960s, what defence historian John Walker terms the “main period (1957-67) when there were active research programmes into the development of incapacitating chemical agents.”<sup>647</sup> Prior to 1956, work to find alternative forms of teargas had been “at low priority” at the CDEE, which had “accepted and to some extent overcome” the disadvantages of CN teargas.<sup>648</sup> However, early in 1956, this work “received fresh emphasis” and was given higher priority following a new draft of a War Office Policy Statement on riot control munitions.<sup>649</sup>

Thus, interest in CS specifically emerged from desire amongst British officials to find a replacement for CN (chloroacetophenone, also known as CAP), the teargas colonial police forces had been using for dealing with civil disturbances and dispersing crowds. The effects of CS were more intense and more immediate than CN, while its toxicity was lower than that of its predecessor.<sup>650</sup> Thus, by being more forceful than CN, but *less* toxic from a scientific point of view, CS represented a significant step toward finding the balance between force and non-lethality mentioned earlier in this chapter. Unpredictable explosive canisters, for example, might no longer be required if the effect of the vapour they contained was itself strong enough to effectively deter and disperse crowds.

In its official technical paper recommending T.792 as a replacement for CN, the CDEE began:

“Following a requirement for a riot control agent physiologically more potent and therefore more effective than CN ( $\omega$ -chloroacetophenone), 91 compounds, including derivatives of CN, benzyl halides and benzal malononitrile, have been prepared and tested physiologically as candidate agents... This report describes the work which led to the selection of T.792 ( $o$ -chloro-benzal malononitrile) as the best candidate agent for detailed toxicity studies and weapon development trials.”<sup>651</sup>

---

<sup>646</sup> Walker, Chapter 3; Spelling.

<sup>647</sup> Walker, 18.

<sup>648</sup> TNA, WO 195/14415, Porton technical paper no. 651, 2.

<sup>649</sup> *Ibid.*

<sup>650</sup> Spelling, 704.

<sup>651</sup> TNA, WO 195/14415, Porton technical paper no. 651, Summary.

It continued, “Apart from the severity and speed of its physiological effects, this choice was influenced by the availability of raw materials, anticipated good thermal and storage characteristics and an indication of low toxicity.”

The CDEE technical paper then laid out the three primary issues that had arisen with CN gas. First, that its melting point - “in the region of 51-53°C” – meant that the “agent can be molten at tropical temperature.”<sup>652</sup> This had led charging mechanisms to detach – problematic in the field – and to possible leakage of the agent during storage, and to accelerated decomposition (and decreased shelf life) over time. An earlier part of this chapter has already pointed out how such issues had been plaguing colonial police forces throughout the post war period. The second issue also pertained to storage and decomposition issues – CN was “not sufficiently stable in storage” and underwent an atmospheric oxidation at high temperatures that “may in turn lead to decomposition of the vaporiser or to further oxidation of the CN by the oxidising agents in the vaporiser.” Put simply, from a technical perspective, the issue was not simply decomposition of the CN agent, but also decomposition of the vapour used to disperse the chemical. Finally, the third issue was that “its effectiveness in the field is not adequate for incapacitating or even seriously discouraging fanatical or highly motivated rioters.” Furthermore, they had observed that, “tolerance to the effects develops after prolonged or repeated exposure to CN.”

#### *CS as a sternutatory agent?*

Most striking, though, is that “CS” had to be ‘made’ into a teargas. The WO draft policy statement on riot control had, in the words of the CDEE:

“made it clear that there was a requirement for a complete range of riot control equipment and munitions, and in particular for a new chemical agent which should: (a) be quick acting but capable of producing incapacitation for a longer period than “tear gas”, (b) produce delayed symptoms in order to prevent crowds re-assembling, (c) not produce permanent harmful physical effects and (d) not be more likely to produce fatal casualties than CN.”<sup>653</sup>

This excerpt reveals the first indication that, in 1958, for Porton scientists, CS *could* be defined as teargas but was not necessarily so – point (a) shows the CDEE drawing a

---

<sup>652</sup> *Ibid*, 1.

<sup>653</sup> *Ibid*, 2.

distinction between “tear gas” and the new agents they had been experimenting with. Ultimately, by replacing CN, the final agent (CS) would ‘become’ teargas. In the report, the term “tear gas” was used to refer to CN and chemicals with solely lachrymatory properties. The paper then clarified this distinction according to physiological effect with reference to the WO directive:

“Prior to the [WO] directive the search for new agents had been confined to compounds having a purely lachrymatory effect. It was understood from the terms of the new requirement that sternutatory agents might also be considered. This opened up a wider field for research, which, in short time, made it possible to select suitable agents from compounds previously examined at CDEE.”

T.792 was, then, originally understood not as simply a lachrymator, but as a *sternutatory* agent and, in some respects, a choking agent by the CDEE. This was expounded in a section of the report that described the characteristics used to select a new candidate agent: “2. It is most desirable that the agent selected should affect more than one physiological system. While lachrymatory properties are desirable, this characteristic is not of itself sufficient, since even when it is accompanied by blepharospasm [spasm of the eyelids] it does not cause any great degree of distress.”<sup>654</sup> CS was selected therefore not on the basis of its lachrymatory properties, but its ability to affect multiple physiological systems. The paper later stated, “it was clear at the beginning of this investigation that the most promising compounds were the derivatives of benzal malononitrile, since some of these compounds produced quite severe lachrymatory and sternutatory effects.” It should not go left unsaid that DM (adamsite), one of the most well known sternutatory chemical agents of the time, had also been “seriously considered,” but the Legal Branch of the WO eventually ruled that “in view of its poisonous nature the use of DM must be proscribed in accordance with the provisions of the Geneva Gas Protocol.”

Furthermore, whilst scientists noted that the agent “must not cause vesication or other damage to skin and must not be associated with any injury or pathological change in any system such as lungs or eyes,” they nonetheless stated that “the main disabling effect of T.792 involves the respiratory system.”<sup>655</sup> Taken in this respect, CS was *not* primarily a teargas, but a

---

<sup>654</sup> *Ibid*, 3.

<sup>655</sup> *Ibid*, 2, 6.

sternutatory agent and arguably a choking agent, if one takes a choking agent to be a chemical designed to target the ability to breathe. In fact, alongside lachrymation and blepharospasm, the paper reported physiological effects that included “an acutely painful burning sensation in the whole of the upper airway...the effect of this was a distressing cough and dyspnoea with intense burning pain from the nose down to the angle of the sternum.”<sup>656</sup> However, by focusing on the transience of these effects – that “the effects began to wear off after about two minutes exposure and by the end of five minutes exposure symptoms were minimal” – and the low “intrinsic toxicity” of the compound, scientists presented CS as suitable for riot control. By making it the agent of choice to replace CN, they were also asserting that its use would not “contravene any international agreement to which the United Kingdom is a signatory” (this was the final agent selection criterion).<sup>657</sup>

The CDEE report therefore provides an overt display of co-production – by categorising CS as an incapacitant that could replace CN, scientists were not only producing technical knowledge and distinctions, they were also defining the bounds of how CS should be used, governed and regulated under both national and international law. Furthermore, by designating CS as the result of the search for a definitive ‘riot control agent’, the CDEE report effectively co-produced the knowledge about CS with its specific role in the governance of civil disorder – a role that still endures to this day. In this, entire crowds (often dissenting the state and its legitimacy) were rendered legitimate targets for chemical intervention on the basis of the low toxicity of CS. Thus, with the recommendation of CS came a formalised construction of what the ontological category of a ‘riot control agent’ should be, legitimated through the authority of scientific expertise.

Thus, CS gas had to be ‘made’ into teargas. It had yet to be legally or formally defined as part of any particular category of chemical agents, nor did it affect a single physiological system; rather it was defined by its context of production – within a research and development programme to determine potential chemical agents that might have application for riot control. Making ‘CS’ into teargas – or rather, a riot control agent – entailed framing it

---

<sup>656</sup> *Ibid*, 5. “Dyspnoea” is a medical term for shortness of breath and difficult or laboured breathing. The British Medical Journal Best Practice site currently defines it as “a subjective sensation of breathing discomfort” that can be caused by “a broad range of pathologies from mild, self-limiting processes to life-threatening conditions.” See BMJ Best Practice, “Assessment of dyspnoea,” Summary, updated March 2018, URL: <https://bestpractice.bmj.com/topics/en-gb/862> (accessed 24 May 2018).

<sup>657</sup> TNA, WO 195/14415, Porton technical paper no. 651, 3.

within the technical limitations of CN and British geopolitical interests. It has already been mentioned that the ‘o-nitro’ compound, although offering the “greatest aggressive potential”<sup>658</sup>, was dismissed on the grounds of being “difficult and expensive to make.”<sup>659</sup> The ‘o-chloro’ compound, on the other hand, was “readily available in quantity.”<sup>660</sup>

The CDEE saw CS an appropriate replacement for “tear gas” on the basis that it lacked the prominent technical disadvantages of CN and therefore fulfilled British imperial needs. Its relatively low toxicity meant that, from a scientific perspective, its potential for lethality was less than that of CN, thus proving it to be a more benign agent for the purposes of colonial policing.<sup>661</sup> Accordingly, this ontological-normative move co-produced the emerging category of ‘riot control’ with toxicity – to the extent that similar arguments for the legitimacy of CS (on the basis of toxicity and ‘riot control’) surfaced in both Britain’s Himsworth Report and US discourse on CS use in Vietnam. A “stable” chemical composition and melting point of “95-96°C” meant that CS could satisfy storage and shelf-life demands that CN had failed to fulfil, especially in the hot, tropical climates of many of the colonies. Finally, its irritating and incapacitating effects were significantly more intense than CN – “at a concentration of 1 in 10 million the general effect of T.792 was comparable in severity with that resulting from exposure to a concentration of 1 p.p.m. of CN.” It would therefore impact “morale and physical capacity...such as to transcend high degrees of motivation and morale and discourage reassembly,” something that colonial police forces had struggled to achieve when using CN gas for crowd control.

### *Measuring a ‘Mob’*

In fact, the CDEE conducted trials specifically aimed at observing how much more CS would impact morale and physical capacity. One trial aimed “to confirm the effectiveness of the material under more stringent conditions when employed by troops inexperienced in its use against a well-motivated mob.”<sup>662</sup> Staged at Imber Village (a British Army training ground in Salisbury), the trial involved a “mob” of 160 officers and men from the 1<sup>st</sup> Battalion

---

<sup>658</sup> *Ibid*, 4.

<sup>659</sup> TNA, WO 188/2718, Anti-Riot Devices, from A.C. Peacock, 25 January 1957.

<sup>660</sup> TNA, WO 195/14415, Porton technical paper no. 651, 5.

<sup>661</sup> Toxicity was determined through human and animal experiments. The CDEE report on the toxicity of T.792 can be found at TNA, WO 195/14561, Porton technical paper no. 672.

<sup>662</sup> TNA, WO 189/2839, Porton note no. 71, 1.

Somerset Light Infantry without respirators and armed with sticks, whereas the “defenders” consisted of a platoon of one officer and 20 men with ten additional men “dressed up to act as civil police,” all equipped with respirators.<sup>663</sup> The trial began with a “rehearsal in which the mob assembled and made its attack” with no grenades or cartridges being used. Another “attack” was then made by the mob, against which defenders used CN munitions to control the “riot.” This was followed by a “similar attack” in which defenders used T.792 munitions to control the “riot” instead. According to the report, an “incentive” of a £5 prize was provided for the capture, by the mob, of a white painted can located inside the stockade.”

Like the WWII gas tests, these trials can be understood as simultaneously exercises, experiment, and simulation. Exercises in that they functioned as training procedures, not just in how to use gas, but also in which officers were taught to perform particular roles in such scenarios, and to expect particular kinds of performances from crowds. Experiment in that they involved observation, recording, and measurement – both social (observation of the behaviour of the ‘mob’ and the ‘defenders’) and technical (observation of concentration and dosage of T.792 in the clouds, for example). Simulation in that they used infantrymen as models of the potential mobs, as representations of imagined populations, in order to observe how CN and T.792 would affect such populations. Even the “incentive” was an attempt, albeit crude, at simulating the ‘motivation’ of a mob. It goes without saying that it is problematic to equate a financial reward (approximately £110-115 today adjusted for inflation) with the motivations that colonial populations may have had for rioting – be it freedom from oppression, the protest of socioeconomic or racial disparities, and desire for equality, voice and so on.<sup>664</sup>

With the use of CN, “about one third of the mob was dispersed,” though some “effectively avoided the clouds of CN...some avoided them by exploiting their right flank – the open taped boundary.” While the report noted that this was possible because of “extreme weather conditions...windspeed in the area was effectively zero...any appreciable windspeed would have made this impossible,” it remains pertinent that one of the methods by which gas was avoided (exploiting the open taped boundary) was tied to the nature of the trial as simulation. The taped boundary itself functioned as an imagined physical limit, though did not

---

<sup>663</sup> *Ibid*, 2.

<sup>664</sup> The exercise presumably tried to simulate this by having the ‘mob’ “shouting anti-British slogans.” See *Ibid*, 9.



have the characteristics of effect that any such limit might have had in the field. Overall, “casualties were slight and most of the men were still fighting fit when they reached the stockade.”<sup>665</sup>

The report on the T.792 run, began, “despite the lack of realism in the trial, which had become obvious during the two previous runs, the third run was carried out in exactly the same manner in order that the comparison of the two trials...should be as valid as possible.”<sup>666</sup> Thus, while the CDEE scientists saw issues of realism – such as the taped boundary, or simply that this was by the third run, a rehearsed event – as a hindrance, they did not consider the experiment as entirely compromised. Rather, its validity depended upon it being conducted in “exactly the same manner” as the control runs. Paradoxically, in doing so, the experiment restricted the imagined simulation to a limited scenario, to one instance of a potential riot being repeated, in an attempt to keep contextual factors constant such that the effects of T.792 in isolation could be monitored as far as possible. Once again, as in earlier cases in this chapter, the imaginary of chemical agent as riot control technology became what scientists and servicemen orientated themselves around and toward.

The T.792 run dispersed the mob “in confusion and a number of men who had been exposed to the agent had to be assisted through the cloud into fresh air to recover.” In consistency with the CN run, “many again exploited the gap (taped boundary),” but “only five men reached the stockade through the main cloud and all of them were in such a distressed state that they were incapable of offering any resistance or offence to the defenders...the stockade was not deemed to have fallen.” The report also noted, “all the men affected by exposure to the cloud made a quick and complete recovery after about 10 minutes in fresh air.” In the imagined scenario, T.792 was far more successful than CN at dispersing the mob, whilst remaining temporary in physiological effect. Furthermore, in an appendix, the report read, “the main physical effect [of T.792] is severe pain in the chest and the mental effect is depression.” The identification of the primary physical effect as chest pain highlights how CDEE scientists did not view CS as simply a lachrymator, but a sternutatory and choking chemical agent that was temporary in effect (and that had considerable mental effect).

Some colonial police also observed these effects. A report of a test with T.792 in 1960 by police in Tanganyika (now Tanzania) read, “There was in all cases acute respiratory and

---

<sup>665</sup> *Ibid*, 3.

<sup>666</sup> *Ibid*, 4.

lachrymatory discomfort entailing complete disability, while in a considerable number of cases there was also marked anti-peristalsis, although no actual vomiting occurred.”<sup>667</sup> Another 1960 test report, from Lagos, concluded, “The lachrymatory effects operate much more quickly and are infinitely stronger than CN grenades, and the choking and irritant sensations, although harmless, are so unpleasant as to deter men from undergoing a second exposure to the gas.”<sup>668</sup> Thus, police conducting experiments in the colonies also viewed the combination of lachrymatory, sternutatory and choking effects – all of which were temporary and “harmless” – as making CS distinctively suitable for crowd control.

#### *Addressing persisting effects*

In 1960, officials began discussing the possibility that CS was causing dermatitis, particularly amongst those working on production lines. While some less severe cases of dermatitis had occurred at Nancekuke, Britain’s chemical agent production facility, more prominent concerns were ignited by American reports that the hazard was “serious.”<sup>669</sup> Edgewood Arsenal, the United States’ chemical agent production facility, reported that men had developed “incapacitating dermatitis” to the extent that “about 25 per cent of the men at risk had been affected so far and the management is complaining that they are running out of helpers.”<sup>670</sup> American patch tests had determined that “CS produced erythema and even vesiculation,” in contrast to findings at Porton. In some contexts, then, CS not only had sternutatory and choking effects, but had the potential for vesicant (blistering) effects too. However, unlike the former effects, which were considered advantages to the efficacy of CS, these vesicant effects were deemed problematic due to their impact on both the production workforce and how CS might be categorised.<sup>671</sup> In fact, the USA was “considerably alarmed” by the development and had drafted a report that suggested, “in future CS should be treated from the safety point of view as an even more dangerous substance than mustard.”<sup>672</sup> In response to this, the CDEE wrote to the CDRD, “It is strange that no similar cases have

---

<sup>667</sup> TNA, CO 1037/192, Test Report by Commissioner of Police, Tanganyika.

<sup>668</sup> TNA, CO 1037/192, Test of Grenades, Hand Anti-Riot Irritant, 2.

<sup>669</sup> TNA, WO 188/2718, C.S. – Sensitivity and Dermatitis, 3 May 1960; for instances of dermatitis at Nancekuke see TNA, WO 188/2718, J.W.C. Phillips to G.D. Heath, 17 May 1960.

<sup>670</sup> *Ibid.*, CS Sensitivity, from W.S.S. Ladell, 7 April 1960.

<sup>671</sup> In fact, the issue of dermatitis was identified as distinct to the production workforce – “laboratory workers...although exposed for just as long and possibly to higher concentrations than the men in the factory, had never shown any dermatitis.” See *Ibid.*

<sup>672</sup> *Ibid.*

occurred in this country, although this compound was, as far as can be recollected, first considered by us in the thirties after mention...as an ‘urticant’ [agents that produce corrosive skin and tissue injury, but not blisters] or ‘nettle-gas’.”<sup>673</sup> Seemingly, then, British scientists had known of the vesicant potential of CS, but had produced a form of the agent for riot control in which these effects did not usually materialise.

Meanwhile, Canadian Defence officials wrote to the DCDRD with observations from their research that “some subjects may become sensitized to CS after several doses.”<sup>674</sup> The CDRD replied explaining that they had not found any cases of enhanced sensitivity in their experiments or training, nor heard of any reported.<sup>675</sup> Nevertheless, anxiety was mounting amongst British officials, who wondered if perhaps the US material differed from theirs in some way, and requested samples from America in order to conduct tests.<sup>676</sup> G.D. Heath (writing on behalf of the DCDRD) wrote personally to the director of the Nancekuke establishment, Dr J.W.C. Phillips, so as to “avoid the possibility of creating alarm and despondency.” He expressed the DCDRD’s hope that there were “no grounds for alarm and that the urticant effects of the US material may be due to a cause which is remediable.”<sup>677</sup>

In his response, Phillips suggested that the CDRD had “no doubt been aware for some time of the possibility of dermatitis being caused by CS,” pointing out that Nancekuke had in fact notified Porton of the suspected danger of dermatitis through contact with CS in March 1959, with “4 cases out of the 8 people engaged on the job, 3 of dermatitis and one of acute irritation of the nasal passages, including nose bleeding.”<sup>678</sup> One processman had developed a sensitivity to CS, developing a rash after being brought into contact with the agent. However, Phillips observed that, in April 1959, Nancekuke had changed its production method to the “Porton ‘bucket’ method”, as the “finer plant produced material was causing trouble on the cartridge filling line...besides being objectionable to handle.” Moreover, at the same time, they had “adopted a one-piece hip length air supplied hood, complete with welded-on gloves.” Since these changes, they had employed the same individuals without any

---

<sup>673</sup> *Ibid*, CS Sensitivity, CDEE to Heath, 12 April 1960.

<sup>674</sup> *Ibid*, Use of CS in Gas Chamber, from A.S. Shore, 11 April 1960.

<sup>675</sup> *Ibid*, Use of CS in Gas Chamber, from G.D. Heath, 6 May 1960.

<sup>676</sup> *Ibid*, C.S. – Sensitivity and Dermatitis, 3 May 1960.

<sup>677</sup> *Ibid*, G.D. Heath to J.W.C. Phillips, 6 May 1960.

<sup>678</sup> *Ibid*, J.W.C. Phillips to G.D. Heath, 17 May 1960.

recurrence of dermatitis, although it was “not possible to say” whether this was because of the coarser product, better protection, or a combination of both.

These changes, along with further information from Canadian officials, seemed to be enough to placate concern at the CDRD. The Canadian instance of sensitivity consisted of one NCO (non-commissioned officer) in over a hundred people who had been exposed to CS.<sup>679</sup> The NCO had worked in high concentrations for a “considerable periods of time,” and developed a rash when work in the CS chamber increased to ten hours a week. Following this, he was removed from CS exposure until he took a patch test then produced “large blisters and reddening of the skin accompanied by intense itching.” The Canadian defence official also made mention of “instances of after effects of CS and more severe symptoms by people with a history of hay fever, asthma, etc., have been noted by US workers.” After receiving the Canadian response, Heath wrote to the director of the CDEE exclaiming, “You will see from this that the position is not as bad as we feared. Indeed the fact that the NCO was able to withstand such high concentrations for so long without succumbing may be considered as quite a tribute to the innocuous nature of CS!”<sup>680</sup> Heath’s response effectively flipped his original concern on its head, appealing to the “innocuous nature of CS” on the basis that it took so long to produce any vesicant effects. This NCO was instead framed as an exception to the norm; one that further pointed out just how safe and reliable teargas exposure was for the majority.

For the CDRD, it was therefore enough that the urticant effects of CS were by no means universal, could be controlled, and seemed to be limited to those involved in the production process - which could itself be changed, and workers given protection. The persistence of CS’s vesicant and urticant effects, unlike its respiratory and sternutatory effects, had initially presented problems to the notion that it was temporary in effect. Ascribing to an imaginary that constructed CS as riot control technology, British officials therefore suggested that such cases were anomalous, and orientated production processes around limiting these transgressive effects. Appendix 8 examines the subsequent export of CS to the Empire, and some of the issues that colonial authorities faced when using it.

A crucial development had transpired over these years. In pursuing a sociotechnical imaginary of governance through non-lethal chemical control, Britain had accorded the

---

<sup>679</sup> *Ibid*, J.B. Reesor to G.D. Heath, 29 June 1960.

<sup>680</sup> *Ibid*, C.S. – Sensitivity and Dermatitis, from G.D. Heath, 6 July 1960.

responsibility of defining ‘riot control’ and ‘riot control agents’ in large part to scientists at Porton Down and the realm of military scientific authority.<sup>681</sup> In recommending CS as a replacement for CN, the CDEE had co-produced its suitability for ‘riot control’ with its low toxicity. This was no minor change – rather, this co-produced relationship soon appeared in the halls of parliament, the focus of the final part of this chapter.

### **Debating Teargas in Parliament: April 1965**

“Mr. Amery: Whilst most of us in the House would, I think, have disagreed with the slogan of a movement with which I believe the hon. Member for Fife, West (Mr. William Hamilton) was associated – “Better Red than Dead” – could we not all agree that it is better to cry than die?

Mr. Bessell: Would the Minister agree that it is far better to use tear smoke, which will probably be far less harmful in the long term than batons used indiscriminately, which might cause severe physical damage? Will he therefore take that into account, and not allow members of the Government to be over-emotional on the subject?”<sup>682</sup>

So unfolded a parliamentary discussion on the role of teargas in the colonies on 1 April 1965. In the excerpt above, Conservative MP for Preston North Julian Amery and Liberal Party MP for Bodmin Peter Bessell both mobilised a distinction between permanent and temporary harm in favour of the use of teargas in the colonies. Both Amery and Bessell tied the legitimacy of teargas to a non-lethal ontological status, rhetorically placed in stark contrast to lethal force. Furthermore, Bessell argued that the effects of teargas were less harmful in the long term than the physical damage associated with baton use, highlighting an imagined capacity of teargas to control populations without making permanent the use of force. Assessing Amery’s claim from a biopolitical standpoint, teargas emerges as a means by which the state enacted biopower over colonial populations – through its non-lethal status, teargas provided a means of controlling the conditions of life in the Colonies, and prevented Britain from taking on the role of executioner, rifle-in-hand. The legitimacy of teargas as a widespread imperial crowd control technology was now being given the stamp of approval –

---

<sup>681</sup> Though it must be noted that the scientists at Porton were mainly civilians working in a military establishment.

<sup>682</sup> TNA, CO 1037/201, Extract from Official Report of 1.4.65.

again, on the grounds of non-lethality – in the public arena of British parliament. These parliamentary discussions received coverage in the *Guardian*, *The Times*, the *Daily Mirror*, the *Daily Mail*, and the *New York Times*, amongst other news sources.<sup>683</sup>

The debate had begun when William Hamilton, the MP for West Fife (referred to by Amery), requested that the Secretary of State for the Colonies, Baron Greenwood of Rossendale of Harold Wilson’s Labour Party, “enumerate and identify the number of occasions in the last five years on which gas has been used as a weapon to maintain order in dependent territories.”<sup>684</sup> Greenwood responded by stating that police in dependent territories had used “two forms of non-toxic tear smoke,” CN and CS, on 124 occasions between 1960 and 1965, 97 of which were in British Guiana. The purpose of use included “to disarm persons running amok, to quell prison disturbances, to apprehend armed criminals and to disperse rioters.”<sup>685</sup> Greenwood included in the Official Report of the parliamentary discussion a list of all these instances of teargas use between 1960-1965, reproduced below [Table 3]. This list had been compiled following a CO circular to all territories requesting for information on such cases in preparation for the parliamentary question on 1 April 1965.

**Table 3. Greenwood’s list of Teargas Use in Dependencies, 1960-65**<sup>686</sup>

Territory	Date	Circumstances
Aden	September 1962	To disperse illegal assemblies
	30 May 1963	To disperse demonstrators
	31 May 1963	To disperse demonstrators
Bahamas	(Two occasions in last 5 years)	In apprehending armed criminal barricaded in house.
Basutoland	May 1960	To disperse demonstrators
	Oct 1961	To restore order and prevent destruction of property
Bechuanaland Protectorate	Nov 1963	To disperse rioting youths
Bermuda	Feb 1965	To disperse rioters

<sup>683</sup> “Use of tear gas in Guiana explained,” *The Guardian*, 2 April 1965, 5; “Tear gas use restricted,” *The Times*, 2 April 1965, 6; “‘We, Too, Use Gas’ Shock,” *Daily Mirror*, 2 April 1965, 16; “Greenwood calls it tear-smoke but not gas,” *Daily Mail*, 2 April 1965, 2; “Riot Gases Used by British 124 Times in Last 5 Years,” *The New York Times*, 2 April 1965, 5; TNA, CO 1037/201, minute 69.

<sup>684</sup> TNA, CO 1037/201, Extract from Official Report of 1.4.65.

<sup>685</sup> *Ibid.*

<sup>686</sup> List included in *Ibid.*

British Guiana	1960	Twice
	1961	Once
	1962	Six times
	1963	51 times (during serious disturbances in the course of the general strike, during which there were 9 deaths)
	1964	37 times (during the prolonged disturbances and inter-racial violence during which some 160 lives were lost)
British Honduras	Nov 1961	To disperse looters following Hurricane Hattie
Fiji	March 1965	To restore order in prison disturbance
Hong Kong	May 1964	To apprehend murderer armed with machine gun
	Jan 1965	To arrest and disarm without injury armed madman
Mauritius	Nov 1961	To disperse illegal procession
	Nov 1963	To disperse disorderly crowd
	Apr 1964	To disperse disorderly crowd
	Aug 1964	To disperse rioting strikers
St Lucia	July 1963	To apprehend armed criminal
	Aug 1963	In attempt to recapture escaped prisoner
	Oct 1963	To restore order in local prison
Swaziland	April 1962	To disperse crowd and prevent destruction of property
	May 1963	To prevent crowd attempting to remove persons from lawful police custody
	May 1963	To disperse crowd attempting to release person under arrest
	June 1963	To restore order after prison riot
	March 1964	To disperse rioters
	January 1965	To disperse demonstrators

While Greenwood's list did not specify whether police used CS or CN on each occasion, it served as a geographical archive of the use of tear smoke across the British dependencies in the early 1960s, for various purposes. Hamilton, responding to Greenwood, exclaimed, "Does not my right hon. Friend think it appalling that this information has been withheld from this House for so long? Can he give an undertaking that if and when the Government take a decision to use this substance again, a specific statement to that effect will be made to the House in order that we may question him on it?"<sup>687</sup> Hamilton's accusation decried the fact that knowledge and dialogue about Britain's teargas use in its colonies had not been open to wider scrutiny until then. Greenwood reassured Hamilton that he was unaware of any attempt to withhold such information, stating that it had "simply...not been asked for in the past," and instead pointed out, "it is important to remember that the use of this tear smoke is not indiscriminate; that there is not known to be any case within the period in question where permanent harmful effects have been caused, and that the other agent of this kind, which has been much in the news recently – DM – is not supplied to Colonial police forces."

Greenwood, like many British officials before him, believed the temporary effects of tear smoke as providing its use with a broad legitimacy – to the extent that he had not perceived any need to open up the question of gas use for civil disturbances to wider democracy. Rather, as such information had not been asked for, it had therefore not been openly discussed. The temporary and non-lethal effects of teargas were understood as not only legitimating its use as a crowd control technology, but also legitimating this use without any need of a consensus of its acceptability outside the colonial establishment. Furthermore, Greenwood referred to the distinction between DM and tear smoke (something that Porton had also done in its search for a replacement for CN), as a means of presenting tear smoke as a more legitimate, benevolent and acceptable technology for colonial policing. It was also to Hamilton's accusation that Amery and Bessell responded with the words quoted at the beginning of this section (and opening of this thesis). Their claims that "it is better to cry than die", and that tear smoke was "probably... far less harmful in the long term than batons," were also effectively dismissing Hamilton's concerns about transparency and democracy on the basis that tear smoke was non-lethal, and had only temporary effects.

---

<sup>687</sup> *Ibid.*



Following Amery and Bessell, Greenwood responded again, rather more diplomatically: “I do not think that any of us could be very happy about the use of this tear smoke on any occasion, but I think, equally clearly, that it must be regarded as preferable to the use of other forms of violence.” For Greenwood, teargas was both an ideal and non-ideal solution – he was unhappy about gas being used, yet he also believed it remained the best possible form of violence that could be used in the circumstances. He continued:

“There are many situations, of course, in which it is difficult to effect arrest or avoid a riot without the use of tear smoke of the kind issued to Colonial police, but, certainly, it is extremely important that its use should be kept to the minimum. That is why the Colonial Police Regulations contain a reference to its use, and that is why I shall circulate this Question and Answer to all Colonial Governments.”<sup>688</sup>

From this excerpt, it appears that, for Greenwood, being “unhappy” about the use of tear smoke was more a case of being unhappy that circumstances might arise in which tear smoke was necessary, rather than a dissatisfaction with tear smoke as a means of force in and of itself.

Like the scientists at the CDEE in the late 1950s, Greenwood’s notion of tear smoke as non-lethal and non-toxic was anchored in a physiological framing of its effects. This became pertinent when Tom Driberg, the Labour MP for Barking, asked if Greenwood could “define the difference between this tear gas and the “other agent” [DM]...which is described as non-lethal but is clearly much more than mere tear gas and is clearly, to some extent, toxic?”<sup>689</sup> Greenwood admitted to finding it “difficult” to define DM “at this notice”, but stated that he “can say that neither CN nor CS in itself produces permanent harmful effect. CN is a lachrymatory agent which also causes irritation of the respiratory passages, and may cause irritation of the skin. Its effects last approximately three minutes. CS causes more severe irritation, and the average period of incapacity is from five to fifteen minutes.” This framing of the effects of tear smoke foregrounded short-term physiological effects, but did not take into account long term mental effects of the gas, for instance. Or, if it did, it presented these as positive evidence of the effect gas might have on morale, and how it might encourage populations to disperse in future instances of use.

---

<sup>688</sup> *Ibid.*

<sup>689</sup> *Ibid.*

*Responses following the Parliamentary Q&A*

The parliamentary discussion led to a degree of confusion amongst some colonial police commissioners, who wrote to the CO for clarification. The Hong Kong commissioner, for instance, requested that the CO elucidate the “Colonial Police Regulations” that Greenwood had mentioned, noting that the Hong Kong police “had always thought (and in fact our Orders are) that the sequence was batons before tear smoke and tear smoke should only be used if batons failed.”<sup>690</sup> The CO returned by explaining that there were in fact “no “Colonial Regulations” as such,” describing Greenwood’s wording as “an unfortunate phrase.”<sup>691</sup> Rather the CO suggested, “whilst the use of Tear Smoke must be a local decision in every case it is now the generally accepted practice in our territories to use it, if practical, in preference to baton charges on the grounds of “minimum force”.” In the minutes associated with his letter, this particular CO official (Stourton) also noted that wind conditions meant that it was not always possible for tear smoke to be used instead of baton charges. He subsequently believed it was for “police on the spot to make the decision as to whether they use tear smoke or batons.”<sup>692</sup> The deference to the need for “local decision” making harks back to points made earlier in this chapter. In practice, the ‘non-lethality’ of teargas, and its role as a riot control agent, were enacted according to the judgments, expertise and experiences of the various local police forces – not solely that of the state. By using (or not using) teargas in line with their interpretations of applicability, force, control and efficacy, police forces thus operated as both agential and enforced subjects of the state in an order of subjectivity (in the sense that I elaborated in Chapter 1).

Stourton’s comments demonstrate the considerable room police in British dependencies were given to interpret when circumstances demanded the use of teargas, or other means of force. There were no official colonial police regulations regarding when to use gas or batons, although the CO encouraged the use of gas first wherever possible in the grounds that “not only [are] the ‘opposition’ less likely to receive serious physical damages...it reduces the possibility of police receiving injuries or being caught by the mob.” What constituted “minimum force” was therefore left for local police forces to decide on an as and

---

<sup>690</sup> *Ibid*, Parliamentary Question on Tear Smoke, from E. Tyrer, 14 June 1965.

<sup>691</sup> *Ibid*, Parliamentary Question on Tear Smoke, from I. Stourton, 21 June 1965.

<sup>692</sup> *Ibid*, minute 74, I. Stourton to Mr. Blaikley, 23 June 1965.

when basis. These conceptions of minimum force and the role of gas varied across the British dependencies, to the extent that some colonial police forces (such as those in Barbados)<sup>693</sup> never used tear smoke between 1960-1965, whilst those in British Guiana had used it on almost 100 occasions. The administrator for St. Kitts, Nevis and Anguilla, considered that the kind of force used should always be decided so as “to minimize the risk of injury which might result from anti riot action being taken.”<sup>694</sup> While it is unclear whose injuries specifically this administrator desired to minimise (e.g. those of the police or the ‘opposition’ to use Stourton’s term – presumably both), they did believe that on these grounds there would be certain cases in which it would be “clearly preferable to use gas first.” It was the role of the local colonial police forces in the various dependencies – often under high-pressure circumstances in the field – to determine where and when these cases had arisen.

The press reaction to the parliamentary debate revealed a spectrum of perspectives on the issue. The *Daily Mail* headline, for instance, focused on Greenwood’s use of the term “smoke” rather than gas, noting that the “horror word” of gas had been replaced by a substitute that was “soft and homely...but not quite.”<sup>695</sup> *The Times*, on the other hand, simply used the headline “Tear gas use restricted” with a text that was simply a verbatim excerpt from the parliamentary discussion. It is unclear why this translated to a story regarding the restriction of use. The *Daily Mirror* employed the headline “‘We, Too, Use Gas’ Shock”, presumably referring to the fact that Britain had been using gas abroad as the USA was in Vietnam – America had been assisting South Vietnamese forces in using CS gas from 1964, use that was rapidly escalating.<sup>696</sup> The headline represented concerns similar to those that Hamilton had regarding the transparency and democracy of chemical agent use. The *Guardian*, in contrast, emphasised the fact that gas was a substitute for baton use with the headline, “Use of teargas in Guiana explained, ‘Preferable to batons’.”

The Vietnam situation is a point for further discussion. The British use of teargas in the dependencies was raised during discussion of the Vietnam situation later on during the Commons sitting on the 1 April. MP Tom Driberg exclaimed, “As will have been apparent to

---

<sup>693</sup> *Ibid*, Inward Telegram to the Secretary of State for the Colonies from Barbados (Sir J. Stow), 27 March 1965.

<sup>694</sup> *Ibid*, Parliamentary Question on Tear Smoke, Telegram to the Secretary of State for the Colonies from Administrator, St. Kitts, Nevis, Anguilla, 14 June 1965.

<sup>695</sup> “Greenwood calls it tear-smoke but not gas”.

<sup>696</sup> Jeanne Guillemin, *Biological Weapons: From the Invention of State-sponsored Programs to Contemporary Bioterrorism* (New York: Columbia University Press, 2005), 115-116.

those who were present this afternoon...the kind or kinds of gas used experimentally in Vietnam, with the Vietnamese people, or some of them, as guinea-pigs, is apparently very different in form, and much more toxic or noxious than, what one might call the ordinary tear-gas often used to disperse riots.”<sup>697</sup> The “more toxic” gas Driberg referred to, however, was indeed CS gas. Nevertheless, Driberg drew a distinction between the US use and British imperial use on the basis of lethality and toxicity (yet this lethality in Vietnam was presumably because it was employed in lethal military operations). The *toxicity* of the gas became the means to delineate acceptable use of gas from the abhorrent. Notions of toxicity (technical knowledge) were simultaneously notions of governance; policy makers co-produced ‘toxicity’ with the bounds of what counted as acceptable use of force. This is not to say the US form of CS at this time was in fact more toxic than that which Britain was using – MP for Manchester Withington Robert Cary, for example, later pointed out that he believed they were the same gas.<sup>698</sup> It is instead to demonstrate the level of authority that toxicity had garnered in the minds of policy makers by 1965 as a means to determine acceptable chemical force.

## Summary

This chapter has explored Britain’s use of teargas as a means of crowd control in the empire from 1939 to 1965, beginning with what was most likely the first such use by police in Burma. I highlighted how this first use in Burma involved police forces actively working out of what counted as effective use of teargas according to their local contexts and expertise as well as the expectations of the British state. Notions of ‘non-lethality’, though expounded at the policy making level, were enacted in ways unique to geographical contexts of police expertise. These various developments return us to Mol’s idea of ontological multiplicity; teargas was multiple, enacted differently by these various subjects of power in each of these contexts (though broadly still part of an exercise of bio-power on behalf of the state). The chapter then traced the subsequent early use of teargas elsewhere in the Empire, highlighting the problems that policy makers, police forces and colonial governments encountered with the technology in practice. I suggest that, by the post-war period, the interwar visions that policy makers had of imperial governance through non-lethal chemical control had evolved into a sociotechnical imaginary within British governments, exemplified by the extensive

---

<sup>697</sup> “HC Debate: Foreign Affairs”, 1 April 1965, vol 709 cc1915-16, Hansard.

<sup>698</sup> *Ibid*, cc1922-23. Hansard.

amount of research and development being done both in military research laboratories at home, and ‘in the field’ abroad (such as Operation Crusoe in Malaya). Moreover, by the late 1940s policy makers had noticed how colonial populations were learning ways to resist the effects of teargas, to the extent that Britain embarked on a search for a more powerful teargas weapon and later for an effective ‘riot control agent’ in the 1950s. Thus, teargas was also ‘multiple’ in an iterative sense – what it was changed and evolved over time with these contextually emergent sociotechnical classifications.

The imaginary of imperial chemical control accorded this future as something to be realised through research and development in science and technology, specifically tasking scientists at Porton Down with this mission. Doing so afforded scientific expertise with the authority to guide the governance of the emerging category of riot control policing, while legitimating the very enterprise of riot control through its construction as a scientifically approved task – it was a ‘civilised’ and humane mission. Consequently, the CDEE embarked on a search for a new chemical agent that would address some of the issues that colonial police forces were experiencing with teargas at the time. In 1958, they concluded this search by recommending CS as a replacement for CN teargas, which they did on the basis of its low toxicity. In doing so they co-produced ‘toxicity’ with social judgments regarding acceptable force, and what could or could not be a ‘riot control agent’. In short, the ontological category of the ‘riot control agent’ emerged with the idea that a less toxic chemical was one more suited for domestic operations. When Britain shared its development of CS with American and Canadian allies at the Tripartite Conference of 1958, Britain’s sociotechnical imaginary of chemical control, and the sociotechnical category of ‘riot control’ that it produced, had an impact that reverberated on the international stage for years to come – one that still lives on today with the RCA category in the CWC.

By the mid 1960s, police across the empire were using teargas (both CS, and the remains of Britain’s supplies of CN) in a variety of riot control scenarios, though they still encountered many of the problems that they had experienced with CN years earlier. Yet when British parliament addressed the issue of teargas in April 1965, the overwhelming consensus in government was that teargas was the best possible means of force available, on the grounds that it was ‘non-toxic’ and – as policy makers had argued since the interwar period – that it was a more humane option than the baton or gun. The control of the boundary between lethality and non-lethality (and correspondingly, the international/national, military/domestic,

toxic/non-toxic) – enabled through scientific expertise – had become a means for the British state to assert its legitimacy in governing the use of force. This form of governance retained the rhetoric of ‘humaneness’ and care that had characterised teargas policy in both the interwar and WWII, encapsulated by Amery’s comment, “it is better to cry than die”.

## **6 Discussion: Teargas the Weapon of Gas Warfare, to Teargas the Riot Control Agent**

This chapter closes the thesis by re-situating the contribution of this project within the broader historical and thematic context of teargas technology. It begins by demonstrating how the argument of the previous chapter helps us better understand later events, in particular Britain's decision to use CS gas in Northern Ireland, and more notably the approach taken by the Himsworth Committee in investigating that use. It also shows how the entangled issues of defining, classifying, and governing teargas (particularly with regard to its non-lethality, safety, toxicity, in comparison to other forms of force) have continued to pervade deliberations about the use and legitimacy of teargas – particularly during the adoption of CS sprays by British police in the 1990s, and on the international stage with the 1993 Chemical Weapons Convention. The chapter then situates the arguments across the three empirical chapters alongside one another as a means to trace out the 'big picture' of the project's period of focus, before discussing the significance of the project for STS and the avenues of future research that it reveals. In closing, I contemplate the implications that my work has for those interested in arms control policy and activism, highlighting why the history of teargas is a vital case study for anyone wishing to navigate the future of chemical agents in a democratic fashion.

### **Toxicity as Safety: From the Empire, to Northern Ireland, to Policing at Home**

Less than five years after the parliamentary advocacy of the use of teargas across the British Empire described in the previous chapter, the British government found itself accountable for answers regarding the legitimacy of the RUC's use of CS gas in Derry, Northern Ireland. Chapter 1 of this project has already discussed the establishment and activities of the Himsworth Committee, set up to investigate evidence regarding the lasting medical effects of CS. There I mentioned Feigenbaum's and Balmer, Spelling and McLeish's recent work on Himsworth, both of which highlighted the 'weapons as drugs' framing that the committee adopted toward CS. Feigenbaum points out how this framing lent authority to experimental (laboratory and clinical) studies over other forms of evidence, whereas Balmer, Spelling and McLeish note how it co-produced the legitimacy of the use of CS upon entire crowds (despite heterogeneity – should they include children, the elderly, or the pregnant – or

whether or not everyone was involved in violence). Furthermore, they demonstrate how the Himsworth Report constructed judgments regarding drug safety with notions of (and judgments regarding) toxicity, which forged an “overt translation...of the CS problem from one primarily involving military expertise to one primarily involving medical expertise.”<sup>699</sup>

In fact, the Himsworth report also explicitly stated that it would confine its attention to the “toxicological aspects” of the case, on the basis that police training and protocols would reliably and properly enforce any instructions regarding the operational and contextual circumstances of CS use.<sup>700</sup> Balmer, Spelling and McLeish use this point to argue that this “discursive manoeuvring” was indicative of the co-production of the safety of teargas with its circumstances of use. However, if we situate this outcome with a broader perspective – namely, the trajectories of teargas that have been examined in this project – we can also read it as a moment in which the authority of experiment and scientific (and in this case, medical) expertise legitimated the status of teargas as a crowd control technology. And, as importantly, vice versa – the longstanding vision of ‘teargas’ as a ‘non-lethal’ humane means of civil control, dating back to the interwar years, had continued to lend authority to the scientific programmes that could actualise it, to the medical knowledge that could make it ‘safe’, and to the experimental programmes that could render its ‘non-lethality’ as evidence. That moment of co-production that Balmer and colleagues refer to, then, was not just an instance of the power of a particular Committee (with predominantly medical expertise) to define and govern a technology; it was also the performance of a mode of British governance existing in the context of a sociotechnical imaginary (emerging over the course of the mid twentieth century) that had allocated scientific research and medical expertise the mission of realising a future of ‘safe’ riot control through ‘non-lethal’ chemical means.

### *Policing in the 1990s: Gas becomes Spray*

While the empirical contribution of my project effectively finishes in 1965, and its narrative with the Himsworth Report, a brief discussion of the trajectory of teargas since 1970 is beneficial for grasping the broader impact and relevance of this PhD. In mainland Britain, the only use of CS gas for riot control in the two decades after Himsworth was in 1981, in Toxteth, Liverpool. Teargas had been used by British police prior to this, but only for use in

---

<sup>699</sup> Balmer, Spelling and McLeish, 109.

<sup>700</sup> *Ibid*, 111.



raids and sieges against armed individuals. Feigenbaum accounts the climate of fear and distrust, linked to issues of race relations and social inequality, in which the police use of CS in Toxteth transpired.<sup>701</sup> On 6 July 1981, the Merseyside police used CS grenades and cartridges in attempts to regain control of protestors, resulting in five men being treated for injuries caused by CS projectiles.<sup>702</sup> In the subsequent police review of the incident, Merseyside chief constable Kenneth Oxford maintained, “I firmly believe the decision to use CS gas was a correct use of the minimum force which was necessary and available.”<sup>703</sup> While British police did not use teargas on a large scale for riot control again in the decade following Toxteth, Feigenbaum argues that the proliferation of crowd-control technology within British policing in that period corresponded with the growth of a neoliberal risk-assessment model toward policing under the Thatcher government, which had a capital-driven approach to training and police capacity and power.<sup>704</sup>

The 1990s saw the widespread adoption of CS sprays by British police after Home Secretary Michael Howard approved CS for trial by selected police forces in April 1995.<sup>705</sup> These trials began in March 1996, and by August 1996 (before the end of the trial period) police forces were given authorisation for the everyday use of CS sprays to protect against violent assaults. While the rhetoric for providing police with CS sprays cited rising rates of armed and violent crime and assaults, Evans notes that the number of serious assaults on police officers decreased in the five years prior to the CS trials.<sup>706</sup> Feigenbaum points to how the discourse of legitimacy surrounding the widespread adoption of CS sprays in the UK returned to the narrative of Himsworth, with the CS spray trial report reading: “We have no

---

<sup>701</sup> Feigenbaum, *Tear Gas*, Chapter 6. According to Waldren, 25-26, Toxteth remains the only case of CS being used on a large scale on the UK mainland during public disorder.

<sup>702</sup> Waldren, 27.

<sup>703</sup> Philip Jordan, “Oxford defends use of CS gas cartridges,” *The Guardian*, 17 September 1981, 28.

<sup>704</sup> Feigenbaum, *Tear Gas*, 124-25. In making her argument, Feigenbaum draws from historian of policing and security Steve Wright, “Your unfriendly neighbourhood bobby”, *The Guardian*, 16 July 1981, 17.

<sup>705</sup> This came following considerable pressure from police chiefs and officers as well as certain policy makers. See Feigenbaum, *Tear Gas*, Chapter 6. Meanwhile, in America, police departments began using OC (oleoresin capsicum a.k.a. pepper spray) in preference to CS during the early 1990s, following an FBI study that supposedly showed that OC had no adverse health effects. The study led to widespread adoption by American police and manufacturing of OC. Considerable controversy ensued when it emerged that the FBI agent conducting the study was receiving payouts from a pepper spray manufacturer. Davison; Rappert, *Non-Lethal Weapons as Legitimizing Forces*, both note the adverse effects that are now associated with OC, and discuss the various reports that identified these potential health effects during its uptake.

<sup>706</sup> Evans, 262.

indication of long-term harm from CS, and there is nothing in the reports from police surgeons to indicate that, in their view, CS has caused serious injury to those sprayed or otherwise affected.”<sup>707</sup> She notes that advocates maintained this position in spite of both a lack of empirical evidence that they were any safer (and did not reduce assaults or police baton use), and body of medical research that linked CS to various health issues, including permanent lung damage, prolonged shortness of breath, heart failure and aneurysms.<sup>708</sup> Rappert, however, points out how the scientific and technical validation that has afforded teargas and CS sprays their legitimacy as technologies of policing has at the same time obscured a host of broader social, political, and ethical concerns, framing them as solutions to what are not technical problems (for example, social instability). He writes, “the use of less lethal weapons is considered in largely technical terms. They are treated as options that resolve difficulties, not ones that would raise social, ethical, and political questions of their own.”<sup>709</sup>

The use of gas in Toxteth in 1981, and police adoption of CS sprays throughout the 1990s, thus marked further developments in the imaginary in British policy of chemical control, developments which have been examined in more comprehensive detail by the aforementioned authors.<sup>710</sup> Ultimately, that period was not the focus of my project. Nevertheless, I suggest that we might read many of those developments, at least in part, in the context of what has been covered here. CS spray adoption in the 1990s derived largely from a framing of the CS issue as one of safety, of toxicology, and of drug regulation, which allowed trials to effectively construct social, ethical, and political ambiguities (such as who was a legitimate target for gassing, or why populations should be gassed) in what were largely technical and scientific terms.<sup>711</sup> In that respect, CS spray trials continued to echo the form of judgments regarding teargas emerging from the intersection of British policy makers, scientists and medical experts, and police authorities – a set of relations that had emerged as significant to teargas across the mid twentieth century, and two decades earlier in the Himsworth report.

---

<sup>707</sup> Feigenbaum, *Tear Gas*, 126.

<sup>708</sup> *Ibid*, 132.

<sup>709</sup> Brian Rappert, “Policing & the Use of Force: Less Lethal Weapons,” *Policing: A Journal of Policy and Practice* 1, no. 4 (2007): 472-484.

<sup>710</sup> Feigenbaum, *Tear Gas*; Rappert, *Non-Lethal Weapons as Legitimizing Forces*; Rappert, “Safety in policing”; Rappert, “Constructions of Legitimate Force”.

<sup>711</sup> Brian Rappert, “Policing & the Use of Force”.

*The Chemical Weapons Convention*

While CS sprays proliferated amongst police forces within Britain during the 1990s, landmark steps were being made in chemical weapons control on the international stage. The most significant legal prohibition since the Geneva Protocol, the Chemical Weapons Convention (CWC) remains to this day the most important chemical arms control treaty in the world. Implemented by the Organisation for the Prohibition of Chemical Weapons (OPCW), it opened for signature in January 1993 and entered into force on 29 April 1997, 180 days after the 65<sup>th</sup> state ratification of the treaty (Hungary). Like the GP, the CWC prohibits the use of chemical weapons in warfare. Its scope, however, is more expansive than the GP, prohibiting the development, acquisition, production, transfer, and stockpiling of chemical weapons.<sup>712</sup> Nevertheless, the CWC remains ambiguous regarding the legal applications of RCAs and incapacitating agents.<sup>713</sup> The term “Riot Control Agent” is defined in Article II, 7, as “any chemical not listed in a Schedule, which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure.”<sup>714</sup> While Article I, 5 of the Convention bans the use of RCAs as methods of warfare (“Each State Party undertakes not to use riot control agents as a method of warfare”<sup>715</sup>), the term ‘method of warfare’ is left undefined.

Article II, 1(a) specifies: “‘Chemical Weapons’ means the following, together or separately: (a) Toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes.”<sup>716</sup> These purposes are clarified in Article II, 9:

“‘Purposes Not Prohibited Under this Convention’ means:

- (a) Industrial, agricultural, research, medical, pharmaceutical or other peaceful purposes;

---

<sup>712</sup> These are monitored through OPCW inspections and verification measures.

<sup>713</sup> Michael Crowley, “What Counts as a Chemical Weapon?”; Michael Crowley, *Chemical Control: Regulation of Incapacitating Chemical Agent Weapons, Riot Control Agents and their Means of Delivery* (Basingstoke: Palgrave Macmillan, 2016); Dando; Davison; Julian Perry Robinson and Matthew Meselson, “New Technologies and the Loophole in the Convention,” *Chemical Weapons Convention Bulletin*, no. 23 (March 1994): 1–2; Julian Perry Robinson, “Difficulties Facing the Chemical Weapons Convention,” *International Affairs* 84, no. 2 (2008): 223–239.

<sup>714</sup> *Ibid*, Article II, 7.

<sup>715</sup> OPCW, Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Article I, 5.

<sup>716</sup> *Ibid*, Article II, 1(a).

- (b) Protective purposes, namely those purposes directly related to protection against toxic chemicals and to protection against chemical weapons;
- (c) Military purposes not connected with the use of chemical weapons and not dependent on the use of the toxic properties of chemicals as a method of warfare;
- (d) *Law enforcement including domestic riot control purposes.*<sup>717</sup> [italics added]

There is a large scope for different interpretations of various terms within the CWC, and in particular Article II, 9(d) has been cited as a major source of ambiguity regarding legitimate use of RCAs. The practices that constitute ‘law enforcement’ are not defined in the Convention, the differences between ‘methods of warfare’ and ‘law enforcement’ being instead left to interpretation. Furthermore, Davison notes that what counts as a *law enforcement chemical* is not defined, thus leaving room for different interpretations of what kinds of chemicals can be used for law enforcement.<sup>718</sup> The term ‘including’ is also ambiguous – it is unclear whether the Convention allows for *all* law enforcement purposes, which include riot control, or if it *only* permits the use of chemicals in law enforcement *for domestic riot control purposes*. Finally, what constitutes riot control, and what counts as law enforcement, are other terms that can have multiple interpretations. The other ‘purposes not prohibited’, such as those in Article II, 9(b) still afford the possibility of use of chemicals in activities regarding defensive research, while (c) makes an elision between the toxicity of weaponry and its employment in warfare, regulating the intention to use the toxic properties of chemicals specifically.

I noted how the USA had justified its use of CS in Vietnam on the grounds that it was using gas for military operations that were analogous to riot control. Indeed, when ratifying the CWC, the US Senate upheld their 1975 position, which permitted RCAs to be used against combatants in various kinds of military operations. The USA was also a major proponent of the law enforcement exemption because of concerns that the convention could then be interpreted to prohibit lethal injection.<sup>719</sup> Accordingly, the US national legislation

---

<sup>717</sup> *Ibid*, Article II, 9.

<sup>718</sup> Davison.

<sup>719</sup> ILPI, “Chemical weapons and law enforcement under international law”, International Law and Policy Institute (ILPI) background paper (December 2016), URL: <http://nwp.ilpi.org/?p=5667> (accessed 14 September 2018). For further discussion on the various ambiguities within (and functions of) the CWC, see Walter Krutzsch, Eric Myjer and Ralf Trapp (eds.), *The Chemical Weapons Convention: A Commentary* (Oxford: Oxford University Press, 2014); Christian Enemark, “‘Non-lethal’ weapons

implementing the CWC specifically interprets law enforcement purposes as “any law enforcement purpose, including any domestic riot control purpose and including imposition of capital punishment.”<sup>720</sup> Thus, implementation of the CWC legislation continues to be entangled with respective national contexts, state interpretations of terms, and the politics on which they are contingent.

### **The Arc of my Arguments: Teargas in British Policy, 1925-1965**

This section pulls together my arguments throughout the previous three chapters as a means to attending to the shape of the overall narrative that I have presented throughout the PhD regarding teargas in Britain across the twentieth century. In doing so, it contemplates how the chapters speak to one another, and subsequently how they generate areas of interest for STS and the history of CBW, particularly with regard to the thematic focuses of the project.

In Chapter 3, I suggested that Britain’s shift from interpreting teargas as part of broader military arsenals of chemical weapons, to a technology for police use in crowd control, was intimately tied to the changing demands of British imperialism in the interwar period. The emergence of teargas as a ‘humane’ technology for police use in the colonies was a normative commitment co-produced with the nascent classification of teargas as a distinctly ‘non-lethal’ chemical agent, an achievement both afforded by and emblematic of the progression of Western science. For British colonial makers, the pursuit of this ‘humanity’ would open up a range of possibilities of force for police to use in the colonies; the ‘non-lethality’ of gas could thereby avoid the instability caused by shooting and killing mobs, instead offering a means to control how liveable certain colonial spaces were. However, this framing of teargas

---

and the occupation of Iraq: technology, ethics and law”, *Cambridge Review of International Affairs* 21, no. 2 (2008): 199-215; David P. Fidler, “The meaning of Moscow: “Non-lethal” weapons and international law in the early 21<sup>st</sup> century”, *International Review of the Red Cross* 87, no. 859 (2005): 525-552; Abraham Chayes and Matthew Meselson, “Proposed Guidelines on the Status of Riot Control Agents and Other Toxic Chemicals under the Chemical Weapons Convention”, *Chemical Weapons Convention Bulletin*, 35 (March 1997): 13-18; Julian Perry Robinson, “Non Lethal Warfare and the Chemical Weapons Convention”, Further Harvard Sussex Programme submission to the OPCW Open-Ended Working Group on Preparations for the Second CWC Review Conference (October 2007); Jonathan B. Tucker, “The Role of the Chemical Weapons Convention in Countering Chemical Terrorism” *Terrorism and Political Violence* 24, no. 1 (2012): 105-119.

<sup>720</sup> United States Chemical Weapons Conventions Web Site, LEGISLATION – Chemical Weapons Convention Implementation Act of 1998, Section 3: Definitions. URL: [https://www.cwc.gov/cwc\\_authority\\_legislation\\_s3.html](https://www.cwc.gov/cwc_authority_legislation_s3.html) (accessed 14 September 2018).

technology as having intrinsic humane or non-lethal properties was not inevitable. Rather, it emerged along with social instruments of imperial governance (the management of force in colonial policing) and the authority of (Western) scientific expertise. The adoption of teargas in the colonies was not merely the consequence of the discovery of intrinsic chemical properties of teargas ('humanity', 'non-lethality'), but rather a process in which understandings of these very properties were themselves worked out in tandem with the normative ideologies of British colonial policy makers, governments, and police authorities. Changing imperial geopolitical pressures, Britain's commitment to its role as a 'civilised' nation, and the practices of colonial police, all contributed to making the 'non-lethality' of teargas a specific focus for attention.

Furthermore, I argued that British political culture shaped a conception of teargas distinct from that envisioned by their American counterparts – though these two visions were not entirely independent of one another. In the USA, the character of teargas (for example, the nature of its 'non-lethality') and its co-produced social order (the role that it should have in society) emerged from burgeoning private chemical companies that had numerous links to the government's CWS. In this respect, its legitimacy in the USA was also tied to its economic value for these groups; teargas was a means to generate capital from meeting the changing demands of police forces around the country. Moreover, following the 1921 rescinding of federal law prohibiting police gas use (which itself came about through pressure from the CWS)<sup>721</sup>, legal concerns regarding teargas would have fallen under the jurisdiction of city or state law, should citizens wish to register any objections to its use. Hence, the US approach to teargas was more reactionary – structured to address any objections or problems in hindsight – than the precautionary British approach.

Britain by contrast took a more 'communitarian' approach to the teargas issue that placed the relations of imperial orders of sovereignty and subjectivity at the fore. Although policy discourse about the value of teargas had featured in British government throughout the 1920s, most notably in Worthington-Evans' list of advantages (see Chapter 3), it was not until the 1930s that the ontological-normative status of teargas as a humane and legitimate crowd control weapon was officially enforced by the state. This came about through communal (but restricted) negotiation at the intersection of colonial officials, police forces and the chemical research establishment – a process that was itself a working out of whose voices were relevant

---

<sup>721</sup> Jones, 162.

to conversations about teargas. This negotiation centred upon how teargas might fulfil the role of ‘civilising’ governance – partly envisioned as what I termed attempts to care – that imperialism offered to its colonial subjects, as well as meeting the demands of local police authorities (who were, too, subjects of the imperial state).

Subsequently, the British Cabinet authorised police use of gas on crowds in the colonies – based in large part on a developed version of Worthington-Evans’ list of advantages of gas – as well as police use of gas for experimental purposes. In contrast with US policy, colonial authorities never made use of teargas for colonial crowd control, choosing only to employ it in the limited experimental settings in the interwar period (aside from Burma, 1939). In the UK, the restriction of gas use to these limited experiments, despite the Cabinet’s authorisation, was in part due to Britain’s precautionary approach to teargas due to public relations concerns, supply issues, and because colonial police forces never perceived occasion to use teargas to have arisen. Experimentalism was, as has been throughout Britain’s approach to teargas historically, an acceptable starting point that would come to legitimate broader use in future. Nevertheless, throughout the interwar period, Britain had slowly but surely re-constructed teargas as something distinct from its chemical weapons counterparts, as uniquely suited for domestic riot control and, more specifically, suited to the imperialist exercise of biopower.

Specifically, Chapter 3 traced the deliberations over teargas in this interwar period back to officials such as Worthington-Evans in the WO, Hoare in the IO, Cunliffe-Lister in the CO (and even Churchill in the early 1920s), colonial government officials such as Chancellor and Wauchope, as well as certain scientists (Haldane) and militarists (Liddell Hart). These deliberations were early visions of what grew throughout the mid twentieth century into a British sociotechnical imaginary of chemical non-lethal force as a means for imperial control and (taking) care. In this imaginary, these futures could be achieved through the pursuit of non-lethality by experiment and technical research and development. With the onset of WWII, some colonial authorities began to adopt teargas for crowd control purposes, however this vision was limited as British focus remained mainly on the development of defensive measures against the possibility of German lethal gas use, as well as offensive measures that would enable Britain to retaliate in kind.

However, in other ways, British WWII policy also began to demarcate teargas even more so from other chemical weapons: firstly, through the re-classification of forms of

teargas as ‘smokes’, which occurred primarily in military circles; and secondly, through its extensive use of teargas in civil defence gas tests upon British publics. Chapter 4 argued that these gas tests situated teargas within a sociotechnical apparatus of British civil defence that performed a multitude of functions. They operated as a national programme of state care for the local populations through the simulation of anticipated futures, and as informal programmes of (human) experimentation that transformed local populations into measurable entities who could be controlled, and therefore ‘protected’ at a national level.

In these tests, an order of subjectivity emerged that constructed local publics and individual bodies as subjects for chemical intervention, in an attempt to protect the subject of the national population body. Furthermore, this order was made more complex by the autonomy afforded by the MOHS to local civil defence authorities in conducting gas tests – local authorities did not only operate with government interests in mind, but rather chose to hold tests according to their own judgments. They were both subjects (to be trained in, and to extend to the public) of the apparatus of state care, as well as agential subjects that dictated the terms of civil defence for their locales. Conversely, some members of local populations also refused their roles as subjects for protection, arguing that gas tests were not valuable nor caring, but were rather dangerous, potentially harmful and distressing. Nevertheless, these voices appeared as the minority, particularly within the controlled environment of the British press (which was monitored by the MOHS). However, pressure from local authorities pushed the MOHS and MoI to adopt a PR approach that allowed discussion of the tests in press to be at least partially open for public comment.

In this negotiated, ‘communitarian’ fashion, the MOHS envisioned itself as providing public service to local populations through the expertise of regional authorities. It thereby tasked these authorities with passing civil defence knowledge downstream to local publics and demonstrating it empirically through experiment. In this approach, the responsibility for the tests was also negotiated from a legal perspective, as lines of liability were drawn with reference to the ‘innocuous’ non-lethal character of teargas. These legal constructions also accorded particular expectations to subjects – for example, the MOHS assumed that some form of press announcement of tests would precipitate informed publics, which they then legally interpreted as suitably warned and therefore legitimate participants in tests. The end of Chapter 4 showed how this legal position was negotiated through ongoing consultation between the MOHS, and its regional authorities and local authorities (often through regional



authorities). Thus, by WWII, Britain had committed both ontologically and normatively to a conception of ‘teargas’ that was exceptional from chemical weapons as a whole, to the extent that it was appropriate to use on populations at home.

In another respect, the orders of subjectivity involved in the use of teargas on publics in WWII gas tests constructed local populations as subjects to be protected and trained. Broadly, the MOHS and regional civil defence authorities conducted tests as part of a national effort to preserve the national population body, the state’s source of capital generation from a biopolitical perspective. Generating public familiarity with and regular use of gas masks played a major role in these efforts. By contrast, use of teargas by colonial authorities constructed populations as subjects to be disciplined into ‘civilisation’, a means of both rendering the ‘uncivilised’ into ‘civilised’ subjects for the service of the circulation of capital in imperial society – capital that was to be fed back to the seat of power in the metropole, to return to Said’s phrasing (see Chapter 1).

By the end of the war, with the German threat of invasion dwindling, this exceptional moment of national public tear-gassing had passed, and teargas receded from public view in Britain for some time. It was in this post war period, however, that Britain’s sociotechnical imaginary of chemical colonial control began to gain momentum in a significant sense, both in terms of application and investment in research and development. Chapter 5 investigated the finer workings of this imaginary through a series of vignettes. In the first, it argued that the early use of gas in Burma operated as a form of experimentation with teargas in the field, a case that policy makers could interrogate and use as a reference point for future possibilities. The Burma incidents became instances with which policy makers could both define the bounds of the possibilities of gas (the types of dispersal mechanisms that should be used, what form of police training was required before use, the kind of control its use could give police) and also experiment with where these boundaries lay (for example, what counted as ‘control’). However, in doing so, policy makers also made teargas an object around which police forces should order themselves (and other technologies). As such, an envisioned future of gas use in colonial policing became an objective in and of itself.

Furthermore, I showed how police reports of the incidents adopted a conception of control that focused on the prevention of anticipated states of disorder in the short-term, and deferred the responsibility to make decisions about gas use to the judgment of police forces involved in a given scenario. The police reports thus highlighted how the applications of

teargas involved distinct orders of subjectivity – orders that defined who could use it and whom it should be used upon, when, and why – based largely on racial distinctions. These distinctions remained at the heart of the governance of gas throughout the twentieth century, for example emerging again in the Ministry of Supply’s co-ordination of Operation Crusoe in Malaya. During and shortly after the war, Britain continued to struggle to establish a home market to supply gas to the empire, whilst police forces increasingly began to raise pragmatic issues they were experiencing with gas (such as problems with storage, wind conditions, or that certain forms offered too much or too little force). At the same time, Porton embarked on a search for other forms of teargas that could be both produced by industry at home and would meet the requirements of these police forces. As such, in the middle of Chapter 5, I argued that teargas weapons were therefore not static, defined technologies but rather ‘dynamic and ambiguous – being continually reiterated through experimentation, while also ontologically (and normatively) constrained by notions of non-lethality.’

I also highlighted the growing role of medical expertise in defining the bounds of non-lethality, and therefore teargas policy, in this period. The recommendations of the Peshawar jail incident report were largely shaped by the expertise of the civil staff surgeon; whereas police assessment of the Kohat bazaar incidents continued to defer to the binaries of lethal and non-lethal force as means to justify acceptable state force, even though many police forces recognised that they would have to use shooting alongside, or following, gas use rather than instead of it (Appendix 6). Indeed, this points to another theme raised in Chapter 5: that local police forces had a considerable degree of power in shaping the role of teargas in their locales. Some chose to adopt gas, others chose not to, for a variety of reasons. Colonial police authorities had to some extent their own interpretations of what counted as legitimate force, lethality, and so on – interpretations that depended on factors such as political situations, climate conditions, police training resources, topography, or urban layouts. In 1948, Colonial Secretary Creech Jones had advocated ‘tear smoke’ as ‘effective and humane’ in a circular sent to the governments throughout the empire. So, to return to ‘orders of subjectivity’, then, Britain’s colonial police subjects did not enact this state position homogeneously. Rather, as at once agential subjects and subjects exercising biopower on behalf of the state, they interpreted these demands according to their own knowledge and experience.

By contrast, in the case of Britain’s 1953 Operation Crusoe in Malaya, the ‘non-lethality’ of BBC gas legitimated its use in the field experiments, yet was also being actively

challenged, assessed and measured through the trials – particularly given that officials were considering how it might be used in potentially lethal operations in Malaya. Then, by 1957, Porton had determined CS to be a suitable replacement agent for CN teargas. As already mentioned, this search had been significantly shaped by the demands of, and problems faced by, colonial police authorities. However, in Chapter 5, I argued that CS had to be ‘made’ into a kind of teargas. During the experiments, Porton scientists had primarily associated the value of CS with its sternutatory properties rather than its lachrymatory ones. Thus, before this point, CS had not yet been classified as anything. This was thus a moment of co-production, in which Porton scientists ‘made’ CS a ‘teargas’ (and riot control agent) through their judgments regarding both its classification and role. This classification, however, was not without mess – as officials struggled to address some of the problems raised by CS’s more persistent effects, and its storage (Appendix 8).

Nevertheless, as the chapter demonstrated, these problems were ultimately dismissed by deference to the rhetoric of non-lethality, determined through both laboratory and field experiments at Porton. Around this time, Britain shared their research on CS with the USA and Canada at the 1958 Tripartite Conference, where all three countries made a commitment to developing new incapacitating agents through scientific research. By this point, then, an imaginary of non-lethal chemical control was well established in British government, such that the Tripartite Conference might be read as an instance of the alignment between the chemical imaginaries of three nation states.<sup>722</sup> Indeed, the decade following Tripartite saw Britain embark on its most extensive use of teargas throughout the empire to date, with imperial police forces using CS and CN on 124 occasions between 1960 and 1965. In 1965, this use was being debated in British parliament, which ultimately acknowledged tear smoke to be ‘preferable to other forms of violence’ on the basis that it was ‘non-toxic’ (and that it was better to ‘cry’ than ‘die’). Furthermore, some MPs deferred to ‘non-toxicity’ as a means of demarcating the acceptable British use of teargas from the more noxious gas employed by the USA in Vietnam. Thus, by 1965, toxicity had now become a significant means of determining acceptable chemical force. As mentioned at the beginning of this chapter, notions of toxicity returned later that decade in the deliberations of the Himsforth Committee, to ultimately give the RUC’s use of CS in Northern Ireland a ‘clean bill of health’.

---

<sup>722</sup> Schmidt has gone into more detail regarding the chemical weapons research programmes in Canada and the USA around this time.

The role of care in this post-war period is perhaps less obvious than during the interwar and WWII years. The growing resistance to chemical force from populations in the colonies (that contributed to the search that culminated in the adoption of CS), Britain's waning imperial power, the expanding strategic applications of incapacitants for the military, and (by the 1960s) the contested use of teargas both in Vietnam and the USA, all made it harder for the British government to construct teargas use as care in the public, national and international eye. That said, US policy makers at this time continued to appeal to the rhetoric of 'saving lives' with regard to their use of CS in Vietnam (as the British did in their contemplation of gas use in Malaya), whilst the British parliamentary debate on teargas still foregrounded 'crying' as a humane – almost caring – alternative to 'dying'.

To use the concept of care here, then, it must be loosened up – though it does fulfil Puig de la Bellacasa's definition as 'an affective state, a material vital doing, and an ethico-political obligation.' Britain's imperial use of teargas can indeed be understood as an 'affective state'<sup>723</sup>, a material doing (and a vital one if the alternative is shooting), and an ethico-political obligation (the government should rule 'humanely'). Furthermore, thinking in terms of 'taking care' as Weiss Evans and Frow have (see Chapter 1), we might consider how the use of teargas represents a state sentiment that the use of force is something to be 'careful' about. The British government was aware of the potentially disruptive repercussions that its use of lethal force in its dependencies could have for its imperial legitimacy. At the same time, the use of gas was also a way of 'taking care' of (as disposing of) political disruption that already existed in British colonies. We might recall Mol's demarcation of the 'logic of care' from 'logic of choice' – the state never provided a choice to colonial populations (or to British locales in WWII, for that matter) as to whether they might be gassed, though it did give its authorities the leeway to decide which forms of force they might use. Whilst the MOHS suggested that placing warnings of tests in local press gave the public the 'choice' to be put at risk of exposure, this was more like an illusion of 'choice', given that tests took place in public spaces and affected nearby residents, commercial businesses, and the like.

The ever-present rhetoric of 'humanity' and 'saving lives' that surrounds teargas hence provides a unique case in which forms of coercion and care come together. Historically,

---

<sup>723</sup> Affective in the sense that both being tear-gassed and tear-gassing are emotional experiences associated with feelings of fear, anxiety, anger, pain. Moreover, observing someone being teargassed is also affective – as they appear to be crying (associated with sadness) and distressed.

British policy makers have over and over again attributed the legitimacy of teargas to its capacity to enable police authorities to care for – or rather, be careful with – populations in their use of force. A particularly valuable topic for further consideration and future work, then, would be one that examines when, where, and why different understandings and enactments (and whose) of care diverge, converge and emerge with regard to teargas. This project most notably engaged with this phenomenon in Chapter 4, investigating how the wartime context brought together various group's concepts of care and civil defence protection in such a way that teargas tests en masse were relatively unprotested. In other instances in the history of teargas, the opposite effect has occurred – scientists in the anti-war movement, for example, extensively contested the US government's rhetoric that CS use in Vietnam was in the interest of saving lives.

### **Further implications for STS and avenues for future work**

It is valuable to identify what this work has not been, and what it has not examined or argued, as a way of further outlining its final shape and pointing to avenues it opens for future work (such as that on the relationship between coercion and care outlined above). Firstly, this project has focused on the story of teargas within British policy, particularly its colonial policies. It has not examined the contexts that have shaped the adoption, use, and status of teargas in other nations (though it touched on numerous aspects of the American story for comparative purposes). Nor has it investigated the British story of teargas outside of 1925-1965 in detail – though I have discussed how this PhD relates and engages with work that does address that topic.

Valuable, then, would be work on the trajectory of teargas (specifically, rather than CBW more broadly) in other nations, particularly within other historically colonial powers as well as postcolonial states. This could reveal the role that social and political culture in these nations had in shaping unique ontological-normative conceptions of teargas, and sociotechnical imaginaries of chemical futures. An intriguing case for study would be the role Swedish political culture played in shaping its strong disarmament stance throughout the mid twentieth century towards both CS gas and chemical weapons as a whole. In 1970, Swedish Ambassador Alva Myrdal to the United Nations Conference of the Committee for Disarmament had urged that CS was a teargas whatever other names attached to it and

“prohibited for use in war.”<sup>724</sup> To uncover a more diverse set of ways to understand chemical control, we might examine this stance that Swedish officials adopted in classifying teargas. Moreover, in examining and comparing the emergence of contrasting cultural visions of chemical control, we can interrogate the mechanisms of geopolitical power at play in defining and governing things such as chemical agents across national boundaries.

The case of teargas also offers an entry point to the potential bridges between work in STS on assemblage and new materialism (which predominantly engages with affective and material aspects of knowledge and its enactment) and STS scholarship on co-production, imaginaries, and bio-power (which focuses on more structured relationships between knowledge, power and governance). Here I attend to how these cultural and structural analyses of power might help to bring contours to the sometimes-flat topologies that emerge in analyses of highly complex assemblages.

Take Chapter 4’s case of civil defence and the use of teargas on domestic populations as an example of a sociotechnical assemblage, together with that chapter’s engagement with the themes of care and anticipation that drew partly from new materialist work. In discussing the various newspaper accounts of gas tests, I pointed out how both the language used in these reports, and the events they described, were often affective in nature. Feelings of excitement, spectacle, and even cheerful humour were palpable in the accounts of gas tests from both these published sources and ARP wardens’ accounts of tests. By contrast, some citizens expressed strong feelings of frustration, anxiety and exhaustion regarding tests. Furthermore, national (and local) feelings of insecurity about the war in general, and future gas attacks in particular, played a significant role in shaping the choice to hold tests at the national, regional and local levels. Future work could contemplate how these affective components of teargas, gas tests, and gas defence-related materials might provide insight into emotional aspects of the construction of boundaries between the legitimate/illegitimate use of force, and the international/national. For example, how does emotive rhetoric differ when associated with an internal threat rather than a foreign/external one? It could also contemplate how materiality and affect might themselves constitute elements of cultural and organisational structures of power and governance (and vice versa). We might ask who had power to define the emotive character of the gas mask, for example, or how certain emotional aspects of gas tests were unique to British culture.

---

<sup>724</sup> Spelling, 714.

My reference to ‘orders of subjectivity’ throughout the chapters has highlighted how actors’ roles within assemblages can be contingent upon the arrangement of sociotechnical relations around them. During tests, for example, ARP wardens shifted from being subjects for training to agents that trained publics, according to how the role of test umpire was enacted (itself related to the monitoring of various civil defence objects/technologies). Similarly, the gas mask, with its material and affective properties, undertook a role in establishing not just what tests were, but how and why they took place. In the civil defence assemblage, the status of the material gas mask thus played a role in the meaning and means of state governance and care. We might also consider how certain discourses of risk or threat establish “affective relation[s] to the future as the only available basis for decision-making”, to use Melinda Cooper’s words.<sup>725</sup>

Finally, this has not been a history of resistances, nor a history of a specific institution, or a history of the relevant chemistry (as far as ‘teargas’ is a number of chemical compounds). The works that have undertaken these tasks have been detailed extensively in Chapter 1. That said, histories of resistance to teargas (that focus on the agency of non-state actors particularly) are scarce – especially those that stretch further back into the twentieth century, though Anna Feigenbaum’s recent work is a very welcome contribution in this regard.<sup>726</sup> I am aware that this PhD, on the other hand, has been a history that has focused on ‘teargas’ primarily through the lens of state structures, institutional research and development, policy makers, civil authorities (whether defence or police) and certain medical and scientific professionals. It has not investigated in great detail the agency of colonial resistance movements in the history of teargas, for example. This omission was in large part due to language and resource limitations, but also because my research question – how teargas transformed from a military into a civilian riot control technology in Britain over the twentieth century – dictated that I foreground the powerful role of the state and its related social structures in fashioning what ‘teargas’ was and how it was to be governed during this period. I now turn to the implications that this work has brought into view for the fields of arms control activism and chemical weapons policy.

---

<sup>725</sup> Cooper, 120.

<sup>726</sup> Feigenbaum, *Tear Gas*.

## Implications for Arms Control, Policy and Activism

Numerous professionals working at the intersection of arms control, peace studies, and technology policy have raised concerns over growing commercial and state manufacture of NLWs technologies, such as wide area RCA dispersal mechanisms, and the broadening range of applications that such NLWs are finding in (para)military and domestic contexts, including those of state suppression, violence and lethal force.<sup>727</sup> Sales of teargas have grown significantly over the past two decades, with the expanding international NLW market becoming more and more lucrative.<sup>728</sup> A recent project, led by Anna Feigenbaum, has mapped out the instances throughout 2013 when teargas was fired upon groups of people and large crowds, declaring it to be “a year in mass tear gassing.”<sup>729</sup> Many scholars fear these developments are indicative of the ‘erosion’ of an international ‘norm’ against CBW, and of the international moral and legal opprobrium surrounding CBW.<sup>730</sup> In particular, there is marked concern that they risk undermining the robustness of the Chemical Weapons Convention – especially given various ambiguous terms in the convention that enable states to classify particular technologies or actions as falling outside the purview of its limitations.<sup>731</sup> The game of ontological-normative classification is ongoing.

Work such as in this thesis, which scrutinises taken-for-granted distinctions and modes of governance in historical (and) sociological perspective, provides an opportunity to consider how, when, and why these moments emerge, remain and transform. We obtain an understanding of social, cultural and political values that historically underpin legal, scientific

---

<sup>727</sup> Crowley, *Chemical Control*; Davison; Dando; Brian Rappert, *Non-Lethal Weapons as Legitimizing Forces?*; Kai Ilchmann and James Revill, “Chemical and Biological Weapons in the ‘New Wars,’” *Science and Engineering Ethics* 20, no 3. (2014): 753-767; Perry Robinson, “Difficulties facing the Chemical Weapons Convention”.

<sup>728</sup> Visiongain, “Non-Lethal Weapons (NLW) Market 2014-2024”, *Visiongain.com*, 9 June 2014, URL: <https://www.visiongain.com/report/non-lethal-weapons-nlw-market-2014-2024/> (accessed 7 September 2018); Feigenbaum, *Tear Gas*, Chapter 7.

<sup>729</sup> Anna Feigenbaum, “100 Years of Tear Gas”, *The Atlantic*, 16 August 2014, URL: <https://www.theatlantic.com/international/archive/2014/08/100-years-of-tear-gas/378632/> (accessed 7 September 2018).

<sup>730</sup> See Ilchmann and Revill, 765. They write: “particularly pernicious are research and development efforts on incapacitating agents as ‘humanitarian alternatives’ to lethal force. Superficially persuasive, the humanitarian argument masks much less humanitarian implications simmering underneath, the erosion of the norm against hostile use of disease and poison weapons. Accepting the narrative of CBW as a humanitarian alternative carries the substantial threat that certain areas of research, development, and use of CBW become accepted. Even implicit approval has the potential to dramatically undermine the norm, by slowly normalising these weapons and making their use banal.”

<sup>731</sup> Crowley, “What Counts as a Chemical Weapon?”



or technical, institutional, governmental and international approaches to the governance and control of teargas and chemical agents generally. Additionally, we have seen how such developments have then become emergent categories that contribute to re-shaping the world around them. With a depth of understanding about the ways that particular stakeholders have defined and governed teargas in the past – be it according to conceptions of non-lethality, humanity, toxicity, smokes, etc. – we can critically consider how these predispositions might still underpin British policy on teargas and related technologies. What of increasingly prominent chemical classifications like the ambiguous ‘incapacitating chemical agents’ category (ICA)? Do these constitute re-iterations of longstanding sociotechnical imaginaries, or do they indicate novel, emergent ones? If the latter, from where and from whom did they emerge? Are we seeing rhetoric of care mobilised in such a way to legitimate technology? Whose (taking) care does it involve?

In reflecting on these questions, we gain a sense of the ‘landscape’ of the issue for democracy – Who, and what, is represented where and when? And what orders of subjectivity do these modes of governance entail? In thinking about sociotechnical imaginaries of chemical control in our societies, I contend that we should consider whether current approaches to CW governance function to realise chemical control of democratic futures, rather than to realise democratic control of chemical futures. In other words, does CW governance work to render the state use of certain chemicals to enforce order as a legitimate part of ‘democratic’ society? Or does it rather work to enable broader discussion – that includes a range of voices – on what we collectively want the role of chemical agents within our societies to be?

A paper summarizing a 2016 Workshop on Syria by the Harvard Sussex Program on Chemical and Biological Weapons highlighted how attempts to control and condemn chemical weapons use do not necessarily result in providing victims with more voice. It notes:

“Although the destruction of chemical weapons [in Syria] was perceived as a huge success for the disarmament community, few Syrians spoke of this process in positive terms. Rather, the predominant perception of many Syrians was that this process legitimised the Assad regime and exacerbated the levels of brutality without effectively stopping the use of chemical weapons.”<sup>732</sup>

---

<sup>732</sup> James Revill, Caitriona McLeish, Steve Johnson, Alex Ghionis and Brett Edwards, “Workshop Summary”, Harvard Sussex Program Occasional Paper, Syria Collection (June 2016), 11–12.

Measures of control in a geopolitical space, while valuable in their own right, do not translate to a reduction in the sense of vulnerability that those living within spaces of conflict might feel. So too with teargas – we might ask whether use of teargas, for many, has come to represent the moment that disorder becomes visible through the material and affective properties of the chemical, rather than a moment where order is being instilled or restored. If that is so, should we really speak of teargas as a technology of ‘control’?<sup>733</sup> Is it not something far more complex, a technology that constitutes a means to order for police forces, yet the manifestation of disorder for societies at large?

With this in mind, contemporary use of teargas can be seen as both a representation of the contours of control, (dis)order, and inequality within democratic societies, and an emergent means of shaping these contours. For example, for many the extensive use of teargas by American police during the unrest in Ferguson, Missouri in 2014 and 2015 foregrounded the ways in which the role of teargas in the USA remains entangled with institutional structures that control marginalised populations and enforce geopolitical systems of ‘othering’ through exercises of biopower.<sup>734</sup> In the UK, police continue to use CS sprays in dealing with dispersing protests and in making arrests, with controversy still centering upon questions of police conduct and excessive use of force rather than investigations regarding the safety and role the technology itself plays in shaping such situations.<sup>735</sup> In a recent case, a thirty-year-old man died after police deployed CS spray to detain him (before putting him in the back of a police van), and the incident was determined to be an investigation for the Independent Office for Police Conduct. Yet the incident is simultaneously a demonstration of the contextually variable nature of these technologies –that they are not always ‘non-lethal’ as purported.

---

<sup>733</sup> See Brian Rappert, *Controlling the Weapons of War: Politics, Persuasion and the Prohibition of Inhumanity* (London: Routledge, 2006) for an in-depth sociological study of control and chemical weapons.

<sup>734</sup> See video at BBC News, “Ferguson unrest: Police ‘used tear gas on peaceful protesters’”, 19 August 2014, URL: <https://www.bbc.co.uk/news/av/world-us-canada-28848692/ferguson-unrest-police-used-tear-gas-on-peaceful-protesters> (accessed 7 September 2018).

<sup>735</sup> BBC News, “University of Warwick protest: ‘Excessive force’ claims investigated”, 4 December 2014, URL: <https://www.bbc.co.uk/news/uk-england-coventry-warwickshire-30325135> (accessed 7 September 2018); for the recent death see Alina Polianskaya, “Man dies in custody after police use CS spray on him, prompting investigation into officers”, *The Independent*, 7 July 2018, URL: <https://www.independent.co.uk/news/uk/home-news/man-dies-police-custody-cs-spray-investigation-iopc-oldham-greater-manchester-tear-gas-a8436336.html> (accessed 7 September 2018).

Of similar concern, police forces throughout the USA, the UK and the rest of Europe have widely adopted PAVA sprays (pelargonic acid vanillylamide) in recent years. A more potent synthetic version of OC pepper spray, but supposedly less variable in its potency, some British police forces have deemed PAVA to be safer and more effective than its predecessors – with much of the rhetoric and comparisons to more permanent forms of force present in the history examined by this project.<sup>736</sup> For example, police forces in Cambridgeshire adopted PAVA on the basis that “it could reduce the need for officers in close encounters to use batons which could result in injury” and “will be much more effective in the restraint of violent or unruly offenders and safer for officers and members of the public.”<sup>737</sup> The rhetoric of safety and comparisons to baton force returned once again.

Work in STS akin to this project often functions to make visible those bodies rendered less visible, or absent, by certain forms of knowledge production and their related regulatory processes. Guthman and Brown have shown how chloropicrin<sup>738</sup> fumigant buffer zones and toxicity thresholds in the regulation of California’s strawberry farming industry actively privilege the protection of local residential populations over and above farmworkers.<sup>739</sup> Similarly, Brian Rappert and Chandré Gould have foregrounded aspects of absence and secrecy in the history of the South African CBW research programme Project Coast as a means to bring forth a multitude of constructions of the past from a variety of social groups, particularly those who might have been harmed by the program. These constructions become narratives with which these groups can demand democracy and justice.<sup>740</sup> Likewise, this project has demonstrated how conceptions of non-lethality, toxicity, and humanity regarding teargas functioned to render particular forms of (often state) harm, oppression, and subjugation less visible. In the history of teargas, certain bodies – particularly those of populations in Britain’s empire – have been exploited as sites for experimentation, for the testing of boundaries between non-lethality/lethality, and for the ‘working out’ of ideas of imperial control.

---

<sup>736</sup> BBC News, “‘Safer’ Pava to replace CS spray” 22 January 2018, URL: <http://news.bbc.co.uk/1/hi/england/cambridgeshire/7202603.stm> (accessed 7 September 2018).

<sup>737</sup> *Ibid.*

<sup>738</sup> Chloropicrin is also a form of teargas.

<sup>739</sup> Julie Guthman and Sandy Brown, “Whose Life Counts: Biopolitics and the “Bright Line” of Chloropicrin Mitigation in California’s Strawberry Industry”, *Science, Technology, & Human Values* 41, no. 3 (2016): 461-482.

<sup>740</sup> Rappert and Gould; Rappert, Smith and Gould.

The forms of secrecy that swirl around histories of CBW do not prevent us from identifying such implications, nor from democratising or calling for accountability regarding the past. Brian Rappert and Brian Balmer have spoken of how “what is not of concern in social and political life is the ever-shifting shadow to what is of concern.”<sup>741</sup> Thus, instead of treating absence and presence, or secrecy and transparency, as mere opposites in a dichotomy of access, we might instead ask what is (more, or less) absent/present for whom, when, in what manner, and by what practices.<sup>742</sup> Rather than conditions that render assemblages impervious to scrutiny and immalleable to change, absence and secrecy can be taken as spaces that are themselves sociotechnically constituted – strategic spaces of power for study in their own right. Using the case of UK policy on offensive chemical weapons in the 1960s, Balmer has shown how what does not exist can be as related to secrecy as what does.<sup>743</sup> He also shows how, as a means of defining the distinction between ‘safe’ and ‘dangerous’ knowledge, secrecy operates as a “spatial-epistemic tool” that enables different readings and enactments of technologies across spaces and social contexts.<sup>744</sup>

We might consider how secrecy has operated as such in the history of teargas. In the latter part of the twentieth century, medical professionals increasingly noted how the secrecy associated with military medical research and toxicological data on CS has contributed its long-term effect on humans remaining relatively unknown.<sup>745</sup> Nevertheless, through examination of its use in situations of civil unrest – despite the fact that such use makes epidemiological investigation difficult – they have contended that CS is by no means harmless, and rather have generated an alternative body of medical literature on CS that contrasts with that of the medical military establishment.<sup>746</sup> Secrecy generated both new approaches to

---

<sup>741</sup> Brian Rappert, “Sensing Absence: How to See What Isn’t There in the Study of Science and Security” in Rappert and Balmer (eds.), *Absence in Science, Security and Policy*: 3.

<sup>742</sup> Michael Aaron Dennis, “Secrecy and science revisited: From politics to historical practice and back” in Ronald E. Doel and Thomas Söderqvist (eds.) *The Historiography of Contemporary Science, Technology, and Medicine: Writing recent science* (London: Routledge, 2006): 172-184.

<sup>743</sup> Brian Balmer, “Keeping Nothing Secret: United Kingdom Chemical Warfare Policy in the 1960s”, *Journal of Strategic Studies* 33, no. 6 (2010): 871-893.

<sup>744</sup> Balmer, “A Secret Formula”.

<sup>745</sup> Howard Hu, Jonathan Fine, Paul Epstein Karl Kelsey, Preston Reynolds and Bailus Walker, “Tear Gas—Harassing Agent or Toxic Chemical Weapon?” *JAMA* 262, no. 5 (1989): 660-663; H.J. Schindel, “Assessment of health effects of CS gas”, *Gesundheitswesen* 55, no. 7 (1993): 372-375; Peter J. Gray, “Treating CS gas injuries to the eye”, *BMJ* 311, no. 7009 (1995): 871; Niroshan Sivathanan, “Educating on CS or ‘tear gas’”, *Emerg. Med. J.* 27, no. 11 (2010): 881-882.

<sup>746</sup> Hu et al.

scientific knowledge production and social demarcations regarding the legitimacy of particular forms of medical expertise.

### **The Making of a War Gas; The Making of a Riot Control Agent; What Next?**

As already discussed, scholars are becoming increasingly concerned over the growing role of teargas and other NLWs in (para)military operations, noting the potential this has for the erosion of the international norm against CBW.<sup>747</sup> It is therefore all the more important for us to pay particular attention to the, perhaps forgotten, past instances in which distinctions of harm/harmlessness and military/domestic emerged with new conceptions of technologies (such as ‘chemical weapons’, ‘riot control agents’, ‘smokes’). This project has shown how, in British policy, teargas transformed from a war gas, to a ‘humane’ technology for colonial policing, to a technology of protection in civil defence, to Britain’s go-to ‘riot control agent’ across the span of just 40 years. These considerations are therefore vital given the implications they have for identifying how, when, where, and by whom such distinctions are being mobilised in our contemporary moment, and the kinds of futures these actions might be pulling us toward. Without such awareness, we risk falling into what Langdon Winner has called “technological somnambulism” – sleepwalking through “the process of reconstituting the conditions of human existence” – in our navigation of chemical futures.<sup>748</sup>

There is a great deal at stake in what we have previously taken for granted about ‘teargas’ – in its classification, governance, and use. This project demonstrated crucial cases of what can happen when these taken for granted visions are left unexamined. Over the mid-twentieth century, a vision of non-lethal chemical control, which primarily began in the minds of a cohort of British colonial policy makers, governors, police forces, and militarists, increasingly gained support across British government (and arguably from some members of the public, given their role in WWII gas tests). This vision provided the grounds for a research programme that ultimately co-produced the (low) toxicity of CS gas with its role as a ‘riot control agent’. By 1965, the vision of replacing lethal force with non-lethal force, and specifically non-lethal chemical force, had permeated parliamentary discourse as an international, national, and public imaginary, exemplified by Julian Amery’s exclamation

---

<sup>747</sup> Ilchmann and Revill; Perry Robinson, “Difficulties Facing the Chemical Weapons Convention”.

<sup>748</sup> Langdon Winner, *The Whale and the Reactor: A Search for Limits in an Age of High Technology* (London: University of Chicago Press, 1986), 3-18.

“could we not all agree that it is better to cry than die?” There are, surely, better ways of thinking about use of force in policing than as bringing about ‘crying’ or ‘dying.’ This project has contended that we must rid ourselves of these binaries and distinctions if fruitful, democratic, and historically informed discussion is to take place regarding the governance of teargas.

## **Bibliography**

- “Aberdeen Under Gas And H.-E. “Bombs”,” *Aberdeen Press and Journal*, 9 July 1941, 3.
- Amoore, Louise. “Data Derivates: On the Emergence of a Security Risk Calculus of Our Times,” *Theory, Culture & Society* 28, no 6 (2011): 24-43.
- Aradau, Claudia, and Tobias Blanke. “Governing Circulation: A Critique of the Biopolitics of Security”, in *Security and Global Governmentality: Globalization, Governance and the State*, edited by Miguel de Larrinaga and Marc G. Doucet, 44-58. London: Routledge, 2010.
- Arnold, David. “The Armed Police and Colonial Rule in South India, 1914—1947.” *Modern Asian Studies* 11, no. 01 (February 1977): 101-125.
- Aucouturier, Etienne. “Biological Warfare, Chemical Warfare and the Public Body,” in *Chemical Bodies: The Techno-Politics of Control*, edited by Alex Mankoo and Brian Rappert, 59-76. London, New York: Rowman & Littlefield, 2018.
- Balfour, Sebastian. “Secret Wars in Forgotten Africa.” *The Journal of Romance Studies* 1, no. 3 (2001): 121-131.
- Balmer, Brian. *Britain and Biological Warfare: Expert Advice and Science Policy, 1930-65*. Basingstoke: Palgrave, 2001.
- Balmer, Brian. “Using the Population Body to Protect the National Body: Germ Warfare Tests in the UK after WWII,” in *Useful Bodies: Humans in the Service of Medical Science in the Twentieth Century*, edited by J. Goodman, A. McElligott, and L. Marks, 27-52. John Hopkins Press: Baltimore, 2003.
- Balmer, Brian. “How does an accident become an experiment? Secret science and the exposure of the public to biological warfare agents”, *Science as Culture* 13, no. 2 (2004): 197-228.
- Balmer, Brian. “A Secret Formula, a Rogue Patent and Public Knowledge about Nerve Gas: Secrecy as a Spatial-Epistemic Tool”, *Social Studies of Science* 36, no. 5 (2006): 691-722.
- Balmer, Brian. “Keeping Nothing Secret: United Kingdom Chemical Warfare Policy in the 1960s”, *Journal of Strategic Studies* 33, no. 6 (2010): 871-893.
- Balmer, Brian. *Secrecy and Science: A Historical Sociology of Biological and Chemical Warfare*. Burlington, VT: Ashgate, 2012.
- Balmer, Brian, Alex Spelling and Caitríona McLeish. “Tear Gas Epistemology: The Himsworth Committee and Weapons as Drugs,” in *Chemical Bodies: The Techno-Politics of*

- Control*, edited by Alex Mankoo and Brian Rappert, 103-124. London, New York: Rowman & Littlefield, 2018.
- Barad, Karen. *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning*. Durham, London: Duke University Press, 2007.
- Baudrillard, Jean. *Simulacra and simulation* (Ann Arbor: University of Michigan Press, 1994).
- BBC News. "Ferguson unrest: Police 'used tear gas on peaceful protestors'", 19 August 2014. Accessed 7 September 2018. URL: <https://www.bbc.co.uk/news/av/world-us-canada-28848692/ferguson-unrest-police-used-tear-gas-on-peaceful-protesters>.
- BBC News. "'Safer' Pava to replace CS spray" 22 January 2018. Accessed 7 September 2018. URL: <http://news.bbc.co.uk/1/hi/england/cambridgeshire/7202603.stm>.
- BBC News. "University of Warwick protest: 'Excessive force' claims investigated", 4 December 2014. Accessed 7 September 2018. URL: <https://www.bbc.co.uk/news/uk-england-coventry-warwickshire-30325135>.
- Bernazzoli, Richelle M., and Colin Flint. "Power, Place, and Militarism: Toward a Comparative Geographic Analysis of Militarization," *Geography Compass* 3, no. 1 (January 1, 2009): 393-411.
- Beswick, F.W. "Chemical Agents Used in Riot Control and Warfare." *Human & Experimental Toxicology* 2, no. 2 (April 1, 1983): 249.
- Blaho, Kari, and Margaret M. Stark. "Is CS spray dangerous?" *BMJ* 32, no. 7252 (2000): 46.
- Blain, Peter G. "Tear Gases and Irritant Incapacitants". *Toxicological Reviews* 22, no. 2 (2003): 103-110.
- Blaustein, Albert P., Jay A. Sigler & Benjamin R. Beede (editors). *Independence Documents of the World*, Volume 1. Oceana Publications: Dobbs Ferry, NY, 1977.
- Blumenfeld, Stewart, and Matthew Meselson. "The Military Value and Political Implications of the Use of Riot Control Agents in Warfare" in *The Control of Chemical and Biological Warfare*, 64-93. New York: Carnegie Endowment for International Peace, 1971.
- BMJ Best Practice, "Assessment of dyspnoea," Summary, updated March 2018. Accessed 24 May 2018. URL: <https://bestpractice.bmj.com/topics/en-gb/862>.
- Bolton, Tal. "Putting Consent in Context: Military Research Subjects in Chemical Warfare Tests at Porton Down, UK". *The Journal of Policy History* 23, no. 1 (2011): 53-73.



- Bonneuil, Christophe, Pierre-Benoit Joly and Claire Marris. "Disentrenching Experiment: The Construction of GM–Crop Field Trials as a Social Problem", *Science, Technology, & Human Values*, 33, no. 2 (2008): 201-229.
- Bowker, Geoffrey C., and Susan Leigh Star. *Sorting Things Out: Classification and its Consequences*. Cambridge, MA: MIT Press, 1999.
- Bridger, Sarah. *Scientists at War: The Ethics of Cold War Weapons Research*. Cambridge, MA: Harvard University Press, 2015.
- "Britain Stages Gas Maneuver As Warning", *The Washington Post*, 18 February 1941, 3.
- British Red Cross in partnership with St. John Ambulance. "Air raids", Caring on the Home Front – Volunteer memories from World War Two. Accessed 30 August 2018. URL: <http://www.caringonthehomefront.org.uk/stories/air-raids/>.
- "British Stage Real Gas Test to Warn Public", *The New York Times*, 18 February 1941, 5.
- "British Test Gas Defenses", *Los Angeles Times*, 18 February 1941, 1.
- Brown, Mike. *Put That Light Out!: Britain's Civil Defence Services at War 1939-1945*. Sutton Publishing Ltd: Gloucester, 1999.
- Bryman, Alan. *Social Research Methods*, 3rd edition. Oxford: Oxford University Press, 2008.
- Bucchi, Massimiano. *Science in Society: An Introduction to Social Studies of Science*. London: Routledge, 2004.
- Bunn, George. "Banning Poison Gas and Germ Warfare: Should the United States Agree?" *Wisconsin Law Review* 1969 (1969): 375-420.
- Butler, Judith. *Prekarious Life: The Powers of Mourning and Violence*. London; New York: Verso, 2004.
- Callon, Michel. "Some Elements of a Sociology of Translation: Domestication of the Scallops and the Fishermen of St Brieuc Bay" *The Sociological Review* 32, no 1 (suppl, 1984): 196-233.
- "Careless Weep in Mock Gas Attack", *Daily Mirror*, 22 March 1941.
- Carter, G.B. *Porton Down: 75 Years of Chemical and Biological Research*. London: HMSO, 1992.
- Casper, M. J., and A. E. Clarke. "Making the Pap Smear the 'Right Tool' for the Job," *Social Studies of Science* 28, no. 2 (1998): 255-290.
- Chayes, Abraham, and Matthew Meselson. "Proposed Guidelines on the Status of Riot Control Agents and Other Toxic Chemicals under the Chemical Weapons Convention", *Chemical Weapons Convention Bulletin*, 35 (March 1997): 13-18.

- Christie, Nils. "The Ideal Victim" in *From Crime Policy to Victim Policy*, edited by E. Fattah, 17-30. Basingstoke: Macmillan, 1986.
- "City Seeks Guidance on Tear Gas Test", *Manchester Evening News*, 4 Apr 1941, 3.
- Cole, Simon A., and Michael Lynch. "The Social and Legal Construction of Suspects," *Annual Review of Law and Social Science* 2 (2006): 39-60.
- Coleman, Kim. *A History of Chemical Warfare*. New York: Palgrave Macmillan, 2005.
- Collins, Harry M. *Changing order: replication and induction in scientific practice*. Chicago: Chicago University Press, 1992.
- Collins, Harry, and Trevor Pinch. *The Golem at Large: What You Should Know about Technology*, (Cambridge: Cambridge University Press, 2002).
- Cooper, Melinda. "Pre-Emptying Emergence: The Biological Turn in the War on Terror", *Theory, Culture & Society* 23, no. 4 (2006): 113-135.
- "Correspondence with the Palestine Arab Delegation and the Zionist Organization". Cmd. 1700. London: HMSO, 1922.
- Corson Ben B., and Roger W. Stoughton. "REACTIONS OF ALPHA, BETA-UNSATURATED DINITRILES." *Journal of the American Chemical Society* 50, no. 10 (October 1928): 2825-37.
- Correspondence, Chief CWS. Correspondence of the Chief of the Chemical Warfare Service, 1918-42, Records of the Chemical Warfare Service, Record Group 175, entry 1, National Archives, Washington, D.C.
- Crogan, Patrick. *Gameplay Mode: War, Simulation and Technoculture* (Minneapolis: University of Minnesota Press, 2011).
- Crowley, Michael. *Chemical Control: Regulation of Incapacitating Chemical Agent Weapons, Riot Control Agents and their Means of Delivery*. Basingstoke: Palgrave Macmillan, 2016.
- Crowley, Michael. "What Counts as a Chemical Weapon? The Category of Law Enforcement in the Chemical Weapons Convention," in *Chemical Bodies: The Techno-Politics of Control*, edited by Alex Mankoo and Brian Rappert, 125-150. London, New York: Rowman & Littlefield, 2018.
- Dando, Malcolm. *A New Form of Warfare: The Rise of Non-Lethal Weapons*. London, Washington: Brassey's, 1996.
- Davies, Gail, Beth Greenhough, Pru Hobson-West and Robert G.W. Kirk. "Science, Culture, and Care in Laboratory Animal Research: Interdisciplinary Perspectives on the

- History and Future of the 3Rs,” *Science, Technology, & Human Values* 43, no. 4 (2018): 603-621.
- Davison, Neil. *“Non-Lethal” Weapons*. Basingstoke; New York, NY: Palgrave Macmillan, 2009.
- Dennis, Michael Aaron. “Secrecy and science revisited: From politics to historical practice and back” in *The Historiography of Contemporary Science, Technology, and Medicine: Writing recent science*, edited by Ronald E. Doel and Thomas Söderqvist, 172-184. London: Routledge, 2006.
- Douglas, R.M. “Did Britain Use Chemical Weapons in Mandatory Iraq?” *The Journal of Modern History* 81, no 4 (2009): 859-887.
- “Dundee Led in Tear Gas Tests”, *Dundee Courier*, 14 Mar 1941, 4.
- Edgerton, David. *Shock Of The Old: Technology and Global History since 1900*. London: Profile Books, 2011.
- Enemark, Christian. “‘Non-lethal’ weapons and the occupation of Iraq: technology, ethics and law”, *Cambridge Review of International Affairs* 21, no. 2 (2008): 199-215.
- Eubanks, Virginia. *Automating Inequality: How High-Tech Tools Profile, Police and Punish the Poor*. St. Martin’s Press: New York, 2018.
- Evans, Rob. *Gassed: Behind the Scenes at Porton Down*. London: House of Stratus, 2000.
- “Excerpts from transcripts of Rusk news parley on use of gas in Vietnam.” *New York Times*, 25 March 1965.
- Faith, Thomas. “‘As Is Proper Republican Form of Government’: Selling Chemical Warfare to Americans in the 1920s.” *Federal History* 2 (2010): 28-41.
- Faith, Thomas. *Behind the Gas Mask: The U.S. Chemical Warfare Service in War and Peace*. University of Illinois Press, 2014.
- Feigenbaum, Anna. “Resistant Matters: Tents, Tear Gas and the ‘Other Media’ of Occupy.” *Communication and Critical/Cultural Studies* 11, no. 1 (2014): 15–24.
- Feigenbaum, Anna. *Tear Gas: From the Battlefields of WWI to the Streets of Today*. London; Brooklyn, NY: Verso Books, 2017.
- Feigenbaum, Anna. “100 Years of Tear Gas”, *The Atlantic*, 16 August 2014. Accessed 7 September 2018). URL: <https://www.theatlantic.com/international/archive/2014/08/100-years-of-tear-gas/378632/>.

- Feigenbaum, Anna. "A Hundred Years of Toxic Humanitarianism," openDemocracy, 24 July 2013. Accessed 22 August 2018. URL: <https://www.opendemocracy.net/opensecurity/anna-feigenbaum/hundred-years-of-toxic-humanitarianism>.
- Feigenbaum, Anna. "Tear Gas and Colonial Bodies in the British Interwar Period," in *Chemical Bodies: The Techno-Politics of Control*, edited by Alex Mankoo and Brian Rappert, 151-164. London, New York: Rowman & Littlefield, 2018.
- Feigenbaum, Anna, Fabian Frenzel, and Patrick McCurdy. *Protest Camps*. London: Zed Books, 2013.
- Felt, Ulrike, and Brian Wynne. *Taking European knowledge society seriously*. Luxembourg: European Commission, DG for Research, 2007.
- Felt, Ulrike, Rayvon Fouché, Clark A. Miller and Laurel Smith-Doerr (editors). *The Handbook of Science and Technology Studies*, fourth edition. Cambridge, MA: MIT Press, 2017.
- Fidler, David P. "The meaning of Moscow: "Non-lethal" weapons and international law in the early 21<sup>st</sup> century", *International Review of the Red Cross* 87, no. 859 (2005): 525-552.
- Foucault, Michel. *The History of Sexuality, Vol. 1: An Introduction*. New York: Pantheon Books, 1978.
- Foucault, Michel. *Security, Territory, Population: Lectures at the College de France, 1977-78*. Basingstoke: Palgrave Macmillan, 2009.
- Fowler, William, and John Norris. *NBC: Nuclear, Biological and Chemical Warfare on the Modern Battlefield*. London ; Herndon, VA: Brassey's, 1997.
- Fradkin, E.K. "Chemical Warfare- Its Probabilities and Possibilities," *International Conciliation* 248 (1929): 113–192.
- Fraser, C.F. "The Status of the International Settlement at Shanghai," *Journal of Comparative Legislation and International Law* 21, no 1 (1939): 38-53.
- French, David. *The British Way in Counter-Insurgency, 1945-1967*. Oxford: Oxford University Press, 2011.
- Fries, Amos A. "The Humanity of Poison Gas," *Chemical Warfare* 1, no 11 (1919): 1-6.
- Fries, Amos A., and Clarence J. West. *Chemical Warfare*. McGraw-Hill: New York, London, 1921.
- Fuller, J.F.C. "The Development of Scientific Warfare". Two lectures, Royal Air Force Staff College, July 12, 1922.

- Fuller, J.F.C. *The Reformation of War*. London: Hutchinson & Co., 1923.
- Fuller, J.F.C. *The First of the League Wars*. London: Eyre and Spottiswoode, 1936.
- Furmanski, M. "Historical Military Interest in Low-Lethality Biochemical Agents: Avoiding and Augmenting Lethal Force," in *Incapacitating Biochemical Weapons: Promise or Peril?*, edited by A.M. Pearson, M.I. Chevrier, and M. Wheelis, 35–66. Lanham, MD: Lexington Books, 2007.
- "Gas Exercise But everybody laughed", *Newcastle Evening Chronicle*, 19 April 1941, 5.
- "Gas Exercise in Birmingham. Citizens' Behaviour Under Attack. Large-Scale Defence Scheme", *The Birmingham Post*, 11 August 1941.
- "Gas "Exercise". Vicinity of Tests Avoided In Barnstaple," *Western Morning News*, 1 October 1941, 6.
- "Gas Mask Parades", *Sussex Agricultural Express*, 21 Feb 1941, 4.
- "Gas-Mask Test", *West Sussex Gazette*, 19 September 1940, 4.
- "Gas Test Proposal", *Dundee Courier*, 13 Mar 1941, 2.
- "Gas Test Without Warning", *The Rochdale Observer*, 12 April 1941, 7.
- Ghamari-Tabrizi, Sharon. "Simulating The Unthinkable: Gaming Future War in the 1950s and 1960s," *Social Studies of Science* 30 no 2 (2000): 163-223.
- Gill, Natalie, Vicky Singleton, and Claire Waterton. *Care and Policy Practices Sociological Review Monograph*. London, UK: Sage, 2017.
- "Give us the tools, and we'll finish the job", Speech Broadcast by Prime Minister Winston Churchill, 9 February 1941. Accessed 20 October 2018. URL: <http://www.ibiblio.org/pha/timeline/410209awp.html>
- Grange, William. *Cultural Chronicle of the Weimar Republic*. Plymouth: Scarecrow Press, 2008.
- Gray, Peter J. "Treating CS gas injuries to the eye", *BMJ* 311, no. 7009 (1995): 871.
- "Greenwood calls it tear-smoke but not gas," *Daily Mail*, 2 April 1965, 2.
- Gregory, Jane, and Steve Miller. *Science in Public: Communication, Culture, and Credibility*. Cambridge, MA: Basic Books, 1998.
- Grint, Keith, and Steve Woolgar. "Computers, Guns and Roses: What's Social about Being Shot?" *Science, Technology & Human Values* 17, no 3 (1992): 366-380.
- Grint, Keith, and Steve Woolgar. "On Some Failures of Nerve in Constructivist and Feminist Analyses of Technology," *Science, Technology, & Human Values* 20, no 3 (1995): 286-310.

- Grint, Keith, and Steve Woolgar. *The Machine at Work: Technology, Work and Organisation*. Cambridge: Polity Press, 1997.
- Grunden, Walter E. "No Retaliation in Kind: Japanese Chemical Warfare Policy in World War II" in *One Hundred Years of Chemical Warfare: Research, Deployment, Consequences*, edited by Bretislav Friedrich, Dieter Hoffman, Jürgen Renn, Florian Schmaltz, Martin Wolf, 259-271. Cham: Springer, 2017.
- Guillemin, Jeanne. *Biological Weapons: From the Invention of State-sponsored Programs to Contemporary Bioterrorism*. New York: Columbia University Press, 2005.
- Guillemin, Jeanne. *Hidden Atrocities: Japanese Germ Warfare and American Obstruction of Justice at the Tokyo Trial*. New York: Columbia University Press, 2017.
- Guillemin, Jeanne. "From Reviled Poisons to State Arsenals: The Un(necessary) Proliferation of Chemical Weapons" in *Chemical Bodies: The Techno-Politics of Control*, edited by Alex Mankoo and Brian Rappert, 23-40. London, New York: Rowman & Littlefield, 2018.
- Guthman, Julie, and Sandy Brown. "Whose Life Counts: Biopolitics and the "Bright Line" of Chloropicrin Mitigation in California's Strawberry Industry", *Science, Technology, & Human Values* 41, no. 3 (2016): 461-482.
- Haber, Ludwig Fritz. *The Poisonous Cloud: Chemical Warfare in the First World War*. Oxford: Clarendon Press, 1986.
- Hackett, Edward J., Olga Amsterdamska, Michael Lynch and Judy Wacjman (editors). *The Handbook of Science and Technology Studies*, third edition. Cambridge, MA: MIT Press, 2008.
- Hacking, Ian. *The Social Construction of What?* Cambridge, MA: Harvard University Press, 1999.
- Haldane, J.B.S. *Callinicus: A Defence of Chemical Warfare*. London: Kegan Paul, Trench, Trubner & Co., 1925.
- Haraway, Donna. "Situated knowledges: The science question in feminism and the privilege of partial perspective," in *Simians, Cyborgs, and Women: The Reinvention of Nature*, edited by Donna J. Haraway, 183–201. New York: Routledge, 1991.
- Harris, Robert, and Jeremy Paxman. *A Higher Form of Killing: The Secret History of Chemical and Biological Warfare*. London: Random House, 1982.
- Harris, Sheldon. *Factories of Death: Japanese Biological Warfare, 1932–1945, and the American Cover-up*. New York: Routledge, 2002.
- "HC Debate: Poison Gas", 18 February 1930, vol 235 col 1170W, Hansard.

- “HC Debate: CS Gas”, 19 June 1968, vol 766 col 147, Hansard.
- “HC Debate: Foreign Affairs”, 1 April 1965, vol 709 cc1915-16, Hansard.
- “HC Debate: Maintenance of Order (Tear Smoke)”, 1 April 1965, vol 709 cc1823-24, Hansard.
- Hechter, Michael. *Internal Colonialism: The Celtic Fringe in British National Development*. London: Routledge & Kegan Paul, 1975.
- Hermes, Walter G. *Truce Tent and Fighting Front*. Washington, DC: Center of Military History, US Army, 1966. Accessed 21 August 2018. URL: <http://www.history.army.mil/books/korea/truce/ch11.htm>.
- Hingkanonta, Lalita. *The police in colonial Burma*. PhD Thesis. SOAS, University of London, 2013.
- Hilmas, Corey J., Jeffery K. Smart and Benjamin A. Hill, Jr. “History of Chemical Warfare” in *Medical Aspects of Chemical Warfare*, edited by Shirley D. Tuorinsky, 38-41. US Government Printing Office, 2008.
- Hobson, John, George Lawson and Justin Rosenberg. “Historical sociology” in *The International Studies Encyclopedia*, edited by Robert A. Denemark. Malden, MA: Wiley-Blackwell; International Studies Association, UK, 2010.
- Hoeyer, Klaus L., and Anja M.B. Jensen. “Transgressive ethics: Professional work ethics as a perspective on ‘aggressive organ harvesting’”, *Social Studies of Science* 43, no. 4 (2012): 598-618.
- “Home Guards Took The Honours. Mock Invasion Test of Hull Defences”, *Hull Daily Mail*, 2 Sep 1941.
- “Home News. Tear Gas Among Shoppers”, *The Times*, 1 April 1941, 2.
- Howe, Stephen. *Ireland and Empire*. Oxford: Oxford University Press, 2000.
- Howell, Alison. “Forget “militarization”: race, disability and the “martial politics” of the police and of the university”, *International Feminist Journal of Politics* 20, no. 2 (2018): 117-136.
- Hu, Howard, Jonathan Fine, Paul Epstein Karl Kelsey, Preston Reynolds and Bailus Walker. “Tear Gas—Harassing Agent or Toxic Chemical Weapon?” *JAMA* 262, no. 5 (1989): 660-663.
- Ilchmann, Kai, and James Revill. “Chemical and Biological Weapons in the ‘New Wars,’” *Science and Engineering Ethics* 20, no 3. (2014): 753–767

- ILPI. “Chemical weapons and law enforcement under international law”, International Law and Policy Institute (ILPI) background paper, December 2016. Accessed 14 September 2018. URL: <http://nwp.ilpi.org/?p=5667>.
- Ingelbien, Raphaël. “Irish Studies, the Postcolonial Paradigm and the Comparative Mandate,” in *Affecting Irishness: Negotiating Cultural Identity Within and Beyond the Nation*, edited by James P. Byrne, Pádraig Kirwan, and Michael O’Sullivan, 21-41. Bern: Peter Lang, 2009.
- Jasanoff, Sheila. “Acceptable Evidence in a Pluralistic Society,” in *Acceptable Evidence: Science and Values in Risk Management*, edited by D.G Mayo and R.D. Hollander, 29–47. Oxford University Press, 1991.
- Jasanoff, Sheila. “Beyond Epistemology: Relativism and Engagement in the Politics of Science,” *Social Studies of Science* 26, no. 2 (1996): 393–418.
- Jasanoff, Sheila. *States of Knowledge: The Co-Production of Science and the Social Order*. London, New York: Routledge, 2004.
- Jasanoff, Sheila. *Designs on Nature: Science and Democracy in Europe and the United States*. Princeton: Princeton University Press: 2011.
- Jasanoff, Sheila. “Taking Life: Private Rights in Public Nature,” in *Lively Capital: Biotechnologies, Ethics, and Governance in Global Markets*, edited by Kaushnik Sunder Rajan, 155-183. Duke University Press: Durham and London, 2012.
- Jasanoff, Sheila. “Future Imperfect: Science, Technology, and the Imaginations of Modernity” in *Dreamscapes of Modernity: Sociotechnical Imaginaries and the Fabrication of Power*, edited by Sheila Jasanoff and Sang-Hyun Kim, 1-33. Chicago: University of Chicago Press, 2015.
- Jones, Daniel P. “From Military to Civilian Technology: The Introduction of Tear Gas for Civil Riot Control.” *Technology and Culture* 19, no 2 (1978): 151-168.
- Jordan, James. “Audience Disruption in the Theatre of the Weimar Republic.” *New Theatre Quarterly* 1, no. 3 (August 1985): 283-291.
- Jordan, Philip. “Oxford defends use of CS gas cartridges,” *The Guardian*, 17 September 1981, 28.
- Kenny, Kevin. “Ireland in the Empire”, in *Ireland and the British Empire*, edited by Kevin Kenny, 90-122. Oxford: Oxford University Press, 2004.
- “Kirkintilloch and District Wardens’ Association – The Annual Meeting”, *Kirkintilloch Herald*, 26 Feb 1941.



- Krutzsch, Walter, Eric Myjer and Ralf Trapp (editors), *The Chemical Weapons Convention: A Commentary*. Oxford: Oxford University Press, 2014.
- Lakoff, Andrew. "Preparing for the Next Emergency," *Public Culture* 19 no. 2 (2007): 247-271.
- Laqueur, Walter. *The Israel-Arab Reader*. New York: Bantam Books, 1976.
- Larrinaga, Miguel de. "(Non)-Lethality and War: Tear Gas as a Weapon of Governmental Intervention", *Critical Studies on Terrorism*, 9, no. 3 (2016): 522-540.
- Latour, Bruno. *Science in Action: How to Follow Scientists and Engineers Through Society*. Cambridge, MA: Harvard University Press, 1987.
- Latour, Bruno. "From the world of science to the world of research?" *Science* 280, no. 5361 (1998): 208–209.
- Latour, Bruno. *Reassembling the Social: An Introduction to Actor-Network Theory*. Oxford: Oxford University Press, 2005.
- Law, John. "Notes on the theory of the actor-network: Ordering, strategy, and heterogeneity" *Systems practice* 5, no 4 (1992): 379-393.
- Law, John. *Aircraft Stories, Decentering the Object in Technoscience*. Durham: Duke University Press, 2002.
- Lejaille, Arnaud. 'Introduction: PRELUDE A LA GRANDE GUERRE CHIMIQUE', *La Guerre des gaz*, 29 August 2011, original copyright 2003. Accessed 19 October 2018. URL: <http://www.guerredesgaz.fr/these/Introduction/introduction.htm>.
- Lejaille, Arnaud. "La Contribution Des Pharmaciens Dans La Protection Individuelle Contre Les Gaz De Combat Durant La Premiere Guerre Mondiale Extension A La Periode 1920-1940". Henry Poincaré University - Nancy I. 1999.
- Lend Lease Act of 1941, Pub. L., No. 77-11, 55 Stat. 31 (1941).
- Lewer, Nick and Steven Schofield. *Non-lethal Weapons—a Fatal Attraction?: Military Strategies and Technologies for 21<sup>st</sup> Century Conflict*. London: Zed Books, 1997.
- Liddell Hart, B.H. *Paris, or the Future of War*. London: Kegan Paul, Trench, Trubner & Co., 1925.
- Liddell Hart, B.H. *The Remaking of Modern Armies*. London: John Murray, 1927.
- Lloyd, David. "After history: Historicism and Irish Postcolonial Studies," in *Ireland and Postcolonial Theory*, edited by Clare Carroll and Patricia King, 46-62. Notre Dame: University of Notre Dame Press 2003.

- MacKenzie, Donald. *Inventing Accuracy: A Historical Sociology of Nuclear Missile Guidance*. Cambridge, MA: MIT Press, 1990.
- Mankoo, Alex. "Teargas – We haven't got the foggiest: Deconstructing the Ambiguities of Creeping Legitimation." MSci Dissertation, Department of Science and Technology Studies, University College London, 2011.
- Mankoo, Alex. "Controlling and Caring for Public Bodies: Civil Defence Gas Tests in World War II Britain" in *Chemical Bodies: The Techno-Politics of Control*, edited by Alex Mankoo and Brian Rappert, 165-184. London, New York: Rowman & Littlefield, 2018.
- Mankoo, Alex, and Brian Rappert. "'Chemical Bodies' and the Future of Control" in, edited by Alex Mankoo and Brian Rappert, 185-204. London, New York: Rowman & Littlefield, 2018.
- Mankoo, Alex, and Brian Rappert (editors). *Chemical Bodies: The Techno-Politics of Control*. London, New York: Rowman & Littlefield, 2018.
- "Many Hurt in Indian Riots", *Sheffield Evening Telegraph*, 13 February 1939, 1.
- Mayor, Adrienne. *Greek Fire, Poison Arrows & Scorpion Bombs: Biological and Chemical Warfare in the Ancient World*. Woodstock: Overlook Books, 2003.
- McGarry, W.A. "Philadelphia's 'Tear Bombs and Mobs,'" *Scientific American* 125 (1921): 197.
- Melson, Matthew, and Julian Perry Robinson. "Chemical Warfare and Chemical Disarmament," *Scientific American* 242, no 4 (April 1980): 38-47.
- Miller David. "Colonialism and Academic Representations of the Troubles," in *Rethinking Northern Ireland: Colonialism, Power and Ideology*, edited by D. Miller, 3-39. London: Longman, 1998.
- Millett, Allan R. "War Behind The Wire: Kojé-Do Prison Camp." *Military History Quarterly* (January 20 2009). Accessed 21 August 2018. URL: <http://www.historynet.com/war-behind-the-wire-koje-do-prison-camp.htm>
- Mol, Annemarie. "Ontological politics. A word and some questions." *The Sociological Review* 47, no 1 (suppl, 1999): 74-89.
- Mol, Annemarie. *The Body Multiple: Ontology in Medical Practice*. Durham and London: Duke University Press, 2002.
- Mol, Annemarie. *The Logic of Care: Health and the Problem of Patient Choice*. London, New York: Routledge, 2008.

- Mol, Annemarie, Ingunn Moser, Jeannette Pols (editors). *Care in Practice: On Tinkering in Clinics, Homes and Farms*. Bielefeld: Transcript, 2010.
- “Monday’s Gas Exercise,” *Rochdale Observer*, 17 May 1941, 4.
- Moshenska, Gabriel. “Government gas vans and school gas chambers: preparedness and paranoia in Britain, 1936–1941”, *Medicine, Conflict and Survival* 26, no. 3 (2010): 223-234.
- “Mr. Baldwin’s Speech”. *The Times*, 20 April 1936.
- Müller, Rolf-Dieter. “Total War as a Result of New Weapons? The Use of Chemical Agents in World War I,” in *Great War, Total War: Combat and Mobilization on the Western Front, 1914-1918*, edited by Roger Chickering and Stig Förster, 95-111. Cambridge: Cambridge University Press, 2000.
- National Army Museum. “Malayan Emergency”, National Army Museum. Accessed 20 September 2018. URL: <https://www.nam.ac.uk/explore/malayan-emergency>.
- Newlands, Emma. “‘They Even Gave Us Oranges on One Occasion’: Human Experimentation in the British Army During the Second World War”, *War & Society* 32, no. 1 (2013): 19-63.
- “News in Brief”, *Birmingham Daily Post*, 28 September 1940, 8.
- O’Brien, Terence H. *Civil Defence*. London: HMSO & Longmans, Green and Co, 1955.
- O’Grady, Nathaniel. “Protocol and the Post-Human Performativity of Security Techniques,” *Cultural Geographies* 23, no. 3 (2016): 495-510.
- Omissi, David E. *Air Power and Colonial Control: The Royal Air Force, 1919-1939*. Manchester: Manchester University Press, 1990.
- O’Neil, Cathy. *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. London: Allen Lane, Penguin Random House UK, 2016.
- OPCW. Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction, Organisation for the Prohibition of Chemical Weapons, Paris, 13 January 1993 (updated 2005).
- Owen, Wilfred. *Poems*. New York: Viking Press, London: Chatto & Windus, 1921.
- “Palestine Royal Commission: Report.” Cmd. 5479. London: HMSO, 1937.
- Perry Robinson, Julian. “Disabling Chemical Weapons: A Documented Chronology of Events, 1945-2003”. Harvard Sussex Program, SPRU-Science & Technology Research, University of Sussex, 2003.

- Perry Robinson, Julian. "Non Lethal Warfare and the Chemical Weapons Convention", Further Harvard Sussex Programme submission to the OPCW Open-Ended Working Group on Preparations for the Second CWC Review Conference. October 2007.
- Perry Robinson, Julian. "Difficulties Facing the Chemical Weapons Convention," *International Affairs* 84, no. 2 (2008): 223–239.
- Perry Robinson, Julian, and Milton Leitenberg. *The Problem of Chemical and Biological Warfare: Vol I. The Rise of CB Weapons*. Stockholm, New York: Humanities Press, 1971.
- Perry Robinson, Julian, and Matthew Meselson. "New Technologies and the Loophole in the Convention," *Chemical Weapons Convention Bulletin*, no. 23 (March 1994): 1–2.
- "Perth Anti-Gas Demonstration," *Perthshire Advertiser*, 2 April 1941, 7.
- Pinch, Trevor J., and Wiebe E. Bijker. "The Social Construction of Facts and Artefacts: or How the Sociology of Science and the Sociology of Technology might Benefit Each Other," *Social Studies of Science* 14 (1984): 399-441.
- Platt, Jennifer. "What Can Case Studies Do?" in *Studies in Qualitative Methodology: Volume 1, Conducting Qualitative Research*, edited by Robert G. Burgess, 1-23. London: JAI Press, 1988.
- Plümecke, Tino. "Genes, symptoms, and the "asymptomatic ill": toward a broader understanding of genetic discrimination," *New Genetics and Society* 35, no 2 (2016): 124-148.
- Polianskaya, Alina. "Man dies in custody after police use CS spray on him, prompting investigation into officers", *The Independent*, 7 July 2018. Accessed 7 September 2018. URL: <https://www.independent.co.uk/news/uk/home-news/man-dies-police-custody-cs-spray-investigation-iopc-oldham-greater-manchester-tear-gas-a8436336.html>.
- Prentiss, Augustin Mitchell, and George J.B. Fisher. *Chemicals in War: A Treatise on Chemical Warfare*. New York: McGraw-Hill, 1937.
- Price, Richard. *The Chemical Weapons Taboo*. Ithaca and London: Cornell University Press, 1997.
- Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare. Signed at Geneva, 17 June 1925. Accessed 20 August 2018. URL: <https://www.un.org/disarmament/wmd/bio/1925-geneva-protocol/>.
- "Public Notices. Tear Gas Exercise," *Dundee Courier*, 19 April 1941, 1.

- “Public Opinion. Tear Gas”, *Evening Despatch*, 14 August 1941, 3.
- Puig de la Bellacasa, Maria. “Matters of care in technoscience: Assembling neglected things,” *Social Studies of Science* 41, no. 1 (2011): 85-106.
- Puig de la Bellacasa, María. “‘Nothing comes without its world’: thinking with care”, *The Sociological Review* 60, no. 2 (2012): 197-216.
- Rappert, Brian. *Non-lethal Weapons as Legitimizing Forces? Technology, Politics, and the Management of Conflict*. London, Portland, OR: Frank Cass, 2003.
- Rappert, Brian. “Safety in policing: lessons from the regulation of CS sprays in the UK,” *Social Science & Medicine* 56 (2003): 1269-1278.
- Rappert, Brian. “Constructions of Legitimate Force: The Case of CS Sprays,” *British Journal of Criminology* 42 (2002): 698-708.
- Rappert, Brian. *Controlling the Weapons of War: Politics, Persuasion and the Prohibition of Inhumanity*. London: Routledge, 2006.
- Rappert, Brian. “Policing & the Use of Force: Less Lethal Weapons,” *Policing: A Journal of Policy and Practice* 1, no. 4 (2007): 472-484.
- Rappert, Brian. “Sensing Absence: How to See What Isn’t There in the Study of Science and Security” in *Absence in Science, Security and Policy: From Research Agendas to Global Strategy*, edited by Brian Rappert and Brian Balmer, 3-33. Basingstoke: Palgrave Macmillan, 2015.
- Rappert, Brian, and Chandré Gould. *The Dis-eases of Secrecy*. Johannesburg: Jacanda, 2018.
- Rappert, Brian, and Alex Mankoo. “Transgressive Chemicals”, in *Chemical Bodies: The Techno-Politics of Control*, edited by Alex Mankoo and Brian Rappert, 1-22. London, New York: Rowman & Littlefield, 2018.
- Rappert, Brian, Kathryn Smith and Chandré Gould. “Opening Spaces through Exhibiting Absences: Representing Secretive Pasts” in *Chemical Bodies: The Techno-Politics of Control*, edited by Alex Mankoo and Brian Rappert, 77-102. London, New York: Rowman & Littlefield, 2018.
- Raymond, Jack. “Decision On Gas Not President’s, White House Says,” *New York Times*, 24 March 1965.
- Reid, B.H. “Gas Warfare: The Perils of Prediction,” in *Reassessing Arms Control*, edited by D. Carlton and C. Schaerf, 143–58. London: Macmillan, 1985.
- “Respirator Test”, *Portsmouth Evening News*, 18 February 1941.

- Revill, James, and Marcos Favero. "Lesser Appreciations: A History of Interwar Chemical Warfare," in *Chemical Bodies: The Techno-Politics of Control*, edited by Alex Mankoo and Brian Rappert, 41-58. London, New York: Rowman & Littlefield, 2018.
- Revill, James, Caitriona McLeish, Steve Johnson, Alex Ghionis and Brett Edwards. "Workshop Summary", Harvard Sussex Program Occasional Paper, Syria Collection. June 2016.
- Rheinberger, Hans-Jörg. *Toward a History of Epistemic Things: Synthesizing Proteins in the Test Tube*. Stanford, CA: Stanford University Press, 1997.
- Richter, Donald. *Chemical Soldiers: British Gas Warfare in World War I*. Lawrence: University Press of Kansas, 1992.
- "Riot Gases Used by British 124 Times in Last 5 Years," *The New York Times*, 2 April 1965, 5.
- "Riots in Rangoon", *The Scotsman*, 1 February 1939, 8.
- Rottenburg, Richard. "Social and public experiments and new figurations of science and politics in postcolonial Africa," *Postcolonial Studies* 12, no. 4 (2009): 423-440.
- Said, Edward W. *Orientalism*. New York: Vintage Books, 1979 edition; originally published 1978.
- Sanford, Jay P. "Medical Aspects of Riot Control (Harassing) Agents". *Annual Review of Medicine* 27, no. 1 (1976): 421-429.
- Schindel, H.J. "Assessment of health effects of CS gas", *Gesundheitswesen* 55, no. 7 (1993): 372-375.
- Schmidt, Ulf. *Secret Science: A Century of Poison Warfare and Human Experiments*. Oxford: Oxford University Press, 2015.
- Scott, James Brown (editor). *The Reports to the Hague Conferences of 1899 and 1907*. Oxford: Clarendon Press, 1917.
- Scott, James Brown (editor). *The Reports to the Hague Conferences of 1899 and 1907, vol. 2: Documents*. Baltimore: Johns Hopkins Press, 1909.
- Shah, Nisha. "Gunning for war: infantry rifles and the calibration of lethal force," *Critical Studies on Security* 5, no. 1 (2017): 81-104.
- Shoul, Simeon. "British Tear Gas Doctrine between the World Wars." *War in History* 15, no 2 (2008): 168-190.
- "Siege of the Paris Bandits", *The Times*, 29 April 1912, 8.
- Simons, Geoff. *Iraq: From Sumer to Saddam*. Basingstoke: Macmillan, 1994.

- Sismondo, Sergio. "Reply to Taylor," *Social Studies of Science* 25, no. 2 (1995): 359–62.
- Sismondo, Sergio. *An Introduction to Science and Technology Studies*, Second edition. Oxford: Blackwell, 2010.
- Sivathasan, Niroshan. "Educating on CS or 'tear gas'", *Emerg. Med. J.* 27, no. 11 (2010): 881-882.
- Sloterdijk, Peter. 'Airquakes', *Environment and Planning D: Society and Space*, 27, no. 1 (2009): 41-57.
- Sloterdijk, Peter. *Terror from the Air*, translated by Amy Patton and Steve Corcoran. Los Angeles: Semiotext(e); Cambridge, MA: MIT Press, 2009.
- Slotten, Hugh R. "Humane Chemistry or Scientific Barbarism? American Responses to World War I Poison Gas, 1915–1930," *The Journal of American History* 77, no. 2 (1990).
- Smith, Susan L. "Mustard Gas and American Race- Based Human Experimentation in World War II", *J. Law Med. Ethics* 36, no. 3 (2008): 517-21.
- Spelling, Alex. "'Driven to Tears': Britain, CS Tear Gas, and the Geneva Protocol, 1989-1975." *Diplomacy & Statecraft* 27, no. 4: 701-725.
- Spiers, Edward M. "Gas and the North-West Frontier," *Journal of Strategic Studies* 6, no. 4 (1983): 94–112.
- Spiers, Edward M. "Gas Disarmament in the 1920s: Hopes Confounded." *Journal of Strategic Studies* 29, no. 2 (2006): 281–300.
- Stavrianakis, Anna, and Jan Selby. "Militarism and International Relations in the Twenty-First Century" in *Militarism and International Relations: Political Economy, Security, Theory*, edited by Anna Stavrianakis, and Jan Selby, 3-18. London: Routledge, 2013.
- Stilgoe, Jack. *Experiment Earth: Responsible Innovation in Geoengineering*. Abingdon, New York: Routledge, 2015.
- Sunder Rajan, Kaushik. "Two Tales of Genomics: Capital, Epistemology, and Global Constitutions of the Biomedical Subject" in *Reframing Rights: Bioconstitutionalism in the Genetic Age*, edited by Sheila Jasanoff, 193-216. Cambridge, MA: MIT Press, 2011.
- Szinicz, L. "History of Chemical and Biological Warfare Agents." *Toxicology* 214, no. 3 (2005): 167–81.
- Taylor, Peter. "Co-Construction and Process: A Response to Sismondo's Classification of Constructivisms," *Social Studies of Science* 25, no. 2 (1995): 348–59.
- "Tear Gas," *Gloucestershire Echo*, 21 May 1941, 3.

- “Tear-Gas Damages Claim,” *Daily Mail*, 20 August 1941, 1.
- “Tear Gas. More Experiments in Birmingham. A.R.P. Chief’s Advice”, *The Birmingham Mail*, 20 August 1941, 4.
- “Tear Gas Test,” *Surrey Advertiser*, 13 December 1941, 2.
- “Tear Gas Test at Broughty,” *Dundee Courier*, 25 June 1941, 3.
- “Tear Gas Test in Streets”, *Liverpool Evening Express*, 31 March 1941, 1.
- “Tear gas use restricted,” *The Times*, 2 April 1965, 6.
- “Tense Days in Rangoon”, *The Yorkshire Evening Post*, 31 January 1939, 11.
- The National Archives website. “Administrative/biographical background” on Reference *HO Division 2*. Accessed 20 October 2018. URL:  
<http://discovery.nationalarchives.gov.uk/details/r/C511>.
- “The Nogent Siege”, *The Times*, 16 May 1912.
- The United States Army in World War II, Statistics. Lend-Lease. Office of the Chief of Military History, Department of the Army, Washington, D.C. 15 Dec 1952.
- “They were ready”, *Daily Herald*, 31 March 1941, 3.
- “Third Time Like The Rest”, *West Sussex Gazette*, 7 November 1940, 1.
- “Threat to Senators”, *Newcastle Evening Chronicle*, 13 February 1939, 1.
- Thuillier, H.F. *Gas in the Next War*. London: Geoffrey Bles, 1939.
- “Town Stages Tear Gas Surprise Test”, *Liverpool Evening Express*, 17 February 1941.
- Townshend, Charles. *Britain’s Civil Wars: Counterinsurgency in the Twentieth Century*. London, Boston: Faber & Faber, 1986.
- Townshend, Charles. “Civilization and ‘Frightfulness’: Air Control in the Middle East between the Wars,” in *Warfare, Diplomacy, and Politics: Essays in Honour of A. J. P. Taylor*, edited by Chris Wrigley, 142-162. London: H. Hamilton, 1986.
- Treaty relating to the Use of Submarines and Noxious Gases in Warfare, Washington, 25 L.N.T.S. 202. 1922. Accessed 20 August 2018. URL:  
<http://hrlibrary.umn.edu/instree/1922a.htm>.
- Trumpener, Ulrich. “The Road to Ypres: The Beginnings of Gas Warfare in World War I.” *The Journal of Modern History* 47, no. 3 (September 1, 1975): 460–80.
- “Trust Mask After Tear Gas “Raid””, *Daily Mirror*, 18 February 1941.
- Tucker, Jonathan B. “The Role of the Chemical Weapons Convention in Countering Chemical Terrorism” *Terrorism and Political Violence* 24, no. 1 (2012): 105-119.



- Tydd, Bill. *Peacock dreams*. Putney, London, British Association for Cemeteries in South Asia (BACSA), 1986.
- United States Chemical Corps. *Summary of Major Events and Problems: Fiscal Year 1959*. Army Chemical Center, Maryland: US Army Chemical Corps Historical Office, January 1960. Accessed 21 August 2018. URL: <https://rockymountainarsenalarchive.wordpress.com/category/u-s-army-chemical-corps/>
- United States Chemical Weapons Conventions Web Site. LEGISLATION – Chemical Weapons Convention Implementation Act of 1998, Section 3: Definitions. Accessed 14 September 2018. URL: [https://www.cwc.gov/cwc\\_authority\\_legislation\\_s3.html](https://www.cwc.gov/cwc_authority_legislation_s3.html).
- United States Department of State. *Foreign Relations of the United States, 1961-1963, Volume 1, Vietnam, 1961*, Document 275, Memorandum From the Secretary of State to the President. US Government Printing Office, 1988. Accessed 7 June 2018. URL: <https://history.state.gov/historicaldocuments/frus1961-63v01/d275>.
- United States, War Department, Military Intelligence Division. *Tactical And Technical Trends Nos. 1-20* (1942), No 9: 14. Accessed 20 August 2018. URL: <http://archive.org/details/TacticalAndTechnicalTrendsNos1-20>.
- US Department of the Army. Employment of riot control agents, flame, smoke, antiplant agents and personnel detectors in counterguerilla operations. April 1969. Department of the Army training circular TC3-16.
- “Use of tear gas in Guiana explained,” *The Guardian*, 2 April 1965, 5.
- Visiongain. “Non-Lethal Weapons (NLW) Market 2014-2024”, *Visiongain.com*, 9 June 2014. Accessed 7 September 2018. URL: <https://www.visiongain.com/report/non-lethal-weapons-nlw-market-2014-2024/>.
- Vogel, Hermann. “Weapons of Mass Destruction, WMD.” *European Journal of Radiology* 63, no. 2 (2007): 205-213.
- Waldren, Mike. *Tear Gas and Empire*. Chatteris: Police Firearms Officers Association, 2013.
- Walker, John R. *Britain and Disarmament: The UK and Nuclear, Biological and Chemical Weapons Arms Control and Programmes 1956-1975*. Farnham, Surrey; Burlington, VT: Ashgate, 2012.
- Walters, Douglas B., Pauline Ho and Jasper Hardesty. “Safety, Security and Dual-Use Chemicals,” *J. Chem. Health Safety* 22, no. 5 (2015): 3-16.

- “We, Too, Use Gas’ Shock,” *Daily Mirror*, 2 April 1965, 16.
- Weinhauer, Klaus. “Controlling Control Institutions: Policing of Collective Protests in 1960s West Germany” in *Control of Violence: Historical and International Perspectives on Violence in Modern Societies*, edited by Wilhelm Heitmeyer, Heinz-Gerhard Haupt, Andrea Kirschner and Stefan Malthaner, 213-229. New York: Springer Science & Business Media, 2011.
- Weiss Evans, Sam, and Emma K. Frow. “Taking Care in Synthetic Biology,” in *Absence in Science, Security and Policy: From Research Agendas to Global Strategy*, edited by Brian Rappert and Brian Balmer, 132-153. Basingstoke: Palgrave Macmillan, 2015.
- West, Clarence J. “The History of Poison Gases.” *Science* 49, no. 1270 (May 2, 1919): 412–17.
- White, Timothy J. “The Impact of British Colonialism on Irish Catholicism and National Identity: Repression, Reemergence and Divergence.” *Études irlandaises* 35-1 (2010): 21-37.
- Williams, Peter, and David Wallace. *Unit 731: The Japanese Army’s Secret of Secrets*. New York: Free Press, 1989.
- Winner, Langdon. *The Whale and the Reactor: A Search for Limits in an Age of High Technology*. London: University of Chicago Press, 1986.
- Woolven, Robin. *Civil defence in London 1935-1945: the formation and implementation of the policy for, and the performance of, the ARP (later C.D.) services in London*. PhD thesis. Kings College London, 1 October 2001.
- Wright, Steve. “Your unfriendly neighbourhood bobby”, *The Guardian*, 16 July 1981, 17.
- Yearley, Steven. *Making Sense of Science: Understanding the Social Study of Science*. London: Sage, 2005.
- “You’ll Cry If You Forget Gas Mask,” *Manchester Evening News*, 1 May 1941, 4.
- Zalampas, Michael. *Adolf Hitler and the Third Reich in American Magazines, 1923-1939*. Ohio: Bowling Green State University Popular Press, 1989.

## Appendix 1: The Development of Teargas in France, 1900-1915

Most English language accounts of CW in the 20<sup>th</sup> century introduce the use of teargas with either the aforementioned Bonnot case or WWI. However, an extension of a French doctoral thesis on the history of chemical weapons in early twentieth century France, hosted on author Arnaud Lejaille's website, includes extracts from primary sources and provides more detailed insight into the decision by the French police to adopt ethyl bromoacetate before WWI.<sup>749</sup> Lejaille explains that in 1900, Captain Nicolardot, a chemist in the chemical laboratory in the Technical Section of the Artillery was commissioned by the French War Department to write a report on chemical substances likely to be of military interest. This seems to have been partly motivated by the Universal Exhibition of 1900 in Paris as well as a growing awareness of Germany's status as world leader in chemical research and its production of impressive amounts of chlorine and bromine. Nicolardot became head of the chemical laboratory a few years later and in 1905 was entrusted with *La Commission secrète des substances puantes* (Secret Commission of Stinking Studies), a secret Commission set up to study gases that might not fall under the Hague Convention – not asphyxiating or deleterious, but rather stinking gases that would be felt so badly by enemies that holding a position would be impossible. The intention behind the Commission was to discover substances that might be of military significance that would not violate the terms of international conventions, while also potentially examining the utility of prohibited substances in military conflict. Consequently, French chemists studied many of the substances that were later used in WWI, including teargases (bromoacetone, chloroacetone, benzyl bromide, chloromethyl chloroformate). According to Lejaille, they considered these to be corrosive, but not asphyxiating or deleterious and therefore not prohibited under the Hague Convention.

In 1909, a second Commission, *La Commission d'Etudes du Génie* (The Commission of Engineering Studies), was set up to experiment with and find devices that could distribute gas in such a way that it would render a fortified position uninhabitable and expel occupants. Again, the search was for a substance that did not break The Hague conventions, a non-toxic gas with a powerful incapacitating effect, so that teargases were again a focus of the study.

---

<sup>749</sup> Arnaud Lejaille, 'Introduction: PRELUDE A LA GRANDE GUERRE CHIMIQUE', *La Guerre des gaz*, 29 August 2011, original copyright 2003, URL: <http://www.guerredesgaz.fr/these/Introduction/introduction.htm> (accessed 19 October 2018).

Work included experiments with grenades filled with benzyl chloride (and grenade launcher pistols). From Lejaille's primary sources, it would appear that the Commission of Engineering Studies did not seem to have any knowledge of the work of the Secret Commission of Stinking Studies, nor (according to Lejaille) do they surface in military archives accounting the research on such agents carried out from April 1915.

In 1912, a new Commission was set up under Police Commissioner Louis Lépine of the Seine department to develop methods of dealing with barricaded criminals. This Commission included staff at the Municipal Laboratory of the City of Paris (such as Kling), the Pasteur Institute, the Academy of Medicine and the Technical Engineering Section of Captain Delacroix. The Commission recommended the use of ethyl bromoacetate, which Nicolardot had also supported in 1906. According to Lejaille's account, this is what led to the use of ethyl bromoacetate in apprehending the Bonnot gang in Choisy-le-Roi, the success of which prompted trials of the substance by the Central Institution of Equipment Engineers and its adoption by the French army on 8 July 1913.

## Appendix 2: Table of Teargases Used by the WWI Belligerents

Chemical name	Common name/shell marking	Date of First Use	Used by	Remarks
Ethyl bromoacetate	EBA	Aug 1914	France (F)	Minor lachrymator WWI/civilian use
Chloroacetone	Tonite; A-Stoff; White Cross	Nov 1914	F, Germany (G), Russia (R)	Minor lachrymator WWI
Xylyl bromide	T-Stoff; White Cross	Jan 1915	G, Austro-Hungary (AH)	Major lachrymator WWI, Substitute for EBA in hand/rifle gas grenades
Xylylene bromide		Jan 1915	G	Major lachrymator WWI
Benzyl bromide	Cyclite; T-Stoff; White Cross	Mar 1915	G, F	
Chloromethyl chloroformate		Jun 1915	G, F	Minor lachrymator WWI
Dichloromethyl chloroformate		Jun 1915	G	Minor lachrymator WWI
Bromoacetone	Martonite; BA; B-Stoff; White Cross	Jun 1915	G, F, AH	Most used lachrymator WWI
Bromomethylethyl ketone	Homomartonite; Bn-Stoff; White Cross	Jul 1915	G, F, AH	Major lachrymator WWI/civilian use
Iodoacetone	Bretonite	Aug 1915	F	Minor lachrymator WWI
Ethyl iodoacetate	SK	Sep 1915	Britain (B)	Major lachrymator WWI, principal British WWI lachrymator
Benzyl iodide (more overleaf)	Fraissite	Nov 1915	F, Italy (I)	Minor lachrymator WWI

Chemical name	Common name/shell marking	Date of First Use	Used by	Remarks
<i>o</i> -Nitrobenzyl chloride		End of 1915	F	Minor lachrymator WWI
$\alpha$ -chlorotoluene (Benzyl chloride)		End of 1915	F	
Acrolein	Papite	Jan 1916	F	Minor lachrymator WWI
Trichloronitromethane	Chloropicrin (PS); Aquinite; Nitrochloroform; NC; Klop	Aug 1916		Major agent WWI, WWII stockpiled as lachrymator
Phenylcarbylamine chloride	Phenylisocyanide chloride	May 1917		WWI lachrymator
$\alpha$ -Bromobenzyl cyanide	BBC (CA); Camite; CN	Jul 1918	F	Major lachrymator WWI/stockpiled WWII, only WWI teargas manufactured by the US CWS
<i>N</i> -(4-hydroxy-3-methoxybenzyl)-8-methylnon-trans-6-enamide	Capsaicin			Minor WWI agent/civilian use
$\omega$ -Chloroacetophenone	CAP (CN)			Stockpiled WWII/civilian use
2-Chlorobenzalmalonitrile	CS			Post WWII irritant, use in Vietnam War/civilian use

### Appendix 3: My Approach to Cataloguing Archive Entries

On receiving the archival files I had requested, I read through them to determine whether the content was relevant to the question (some on chemical warfare, for example, might be referring to a range of topics tangential to my research question); if it was relevant, I took photographs of each page that I then stored in a catalogued archive on my computer. When it came to more careful analysis of these files, I paid particular attention to the following details in order to develop an understanding of the policy narratives and situations in question:

1. Identity of the sender/author(s)
2. Identity of intended recipient(s)
3. Date(s) and time(s) of circulation/writing
4. Department of both sender/author(s) and recipient(s)
5. What is being said?
6. Information on other documents or cases referred to within the file (for example, Cabinet papers or proposals, a particular experiment with gas, use of gas elsewhere, a prior request for authorisation). This could include attachments such as newspaper clippings, catalogues, and adverts. [This could also function as ‘contextual’ information; see below]

These points are what we might call ‘navigational’ information, in that they provided me with the ‘who, what, when and where’ of what I was looking at, and allowed me to situate the correspondence within government. A second type of information, then, we might term the ‘contextual’ information of the documents – a hermeneutical component that enables linkage “between understanding the text from the point of view of the author and the social and historical context of its production.”<sup>750</sup> This might involve asking, for example:

7. How are documents mentioned in (6) presented? To what purpose are they used; what is highlighted or ignored in them?
8. (How) Do the documents (and the notes written in the corresponding minutes) help contextualise what is being said with the interests, beliefs and values of the relevant actors?

---

<sup>750</sup> Bryman, 533.

9. How is teargas understood and framed in these accounts?
10. What relationships are being made between teargas and other (human and non-human) social actors? What function are these performing?
11. How do draft versions and minutes differ from official documents? If so, are reasons given as to why if so?

The distinction I make between the 'navigational' and 'contextual' information is not a strict one in any sense. On the contrary, in many cases particular pieces of text could function as both. Or, what is 'navigational' information with regard to one question could be 'contextual' with regard to another. The identities of those in correspondence, too, could easily be classified as 'contextual' as well as 'navigational', especially if they refer to officials whose views and policy stances have been already well documented. These categories are obviously heavily dependent on my standpoint as a researcher. In short, it is a somewhat crude distinction that I am making in order to point out that both what was being said (the text) and deeper, more contextual, narrative information was of interest to me.



**Appendix 4: Maps of Civil Defence Teargas Tests in Britain From February to June 1941, By Month**



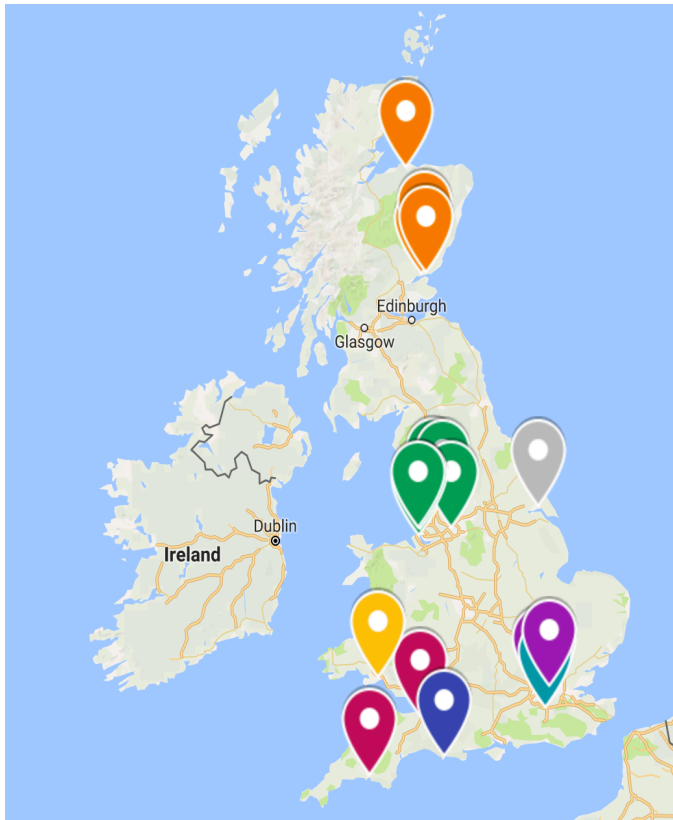
**Feb 1941**  
**1 test**

Region	Colour Code
Northern	Bright Yellow
North Eastern	Grey
North Midland	Blue
Eastern	Lime Green
London	Purple
Southern	Dark Blue
South Western	Crimson
Wales	Dark Yellow
Midland	Rose
North Western	Dark Green
Scotland	Orange
South Eastern	Turquoise
Northern Ireland	Brown



**March 1941**  
**5 tests**





**June 1941**  
**20 tests**

## Appendix 5: Text of the Report of the Civil Staff Surgeon, Peshawar

The following excerpt is text of the Civil Staff Surgeon's report on the clinical aspects of the cases affected by the discharge of teargas at Peshawar Central Jail on 20 May 1947. This excerpt was included in the Northern Command reports of the incident.

“(1) The cases were divisible into three groups:

- (a) Those affected by the vapour alone. They suffered from lacrymation, conjunctivitis, cough, giddiness, nausea, vomiting, mental depression and unconsciousness of short duration, in degrees which probably varied with the dosage of tear gas received. No severe respiratory involvement occurred. I do not know the number of cases in this group.
- (b) Those with wounds and either no burns or minimal erythema of the skin. The wounds of groups 2 and 3 were either multiple “peppering” or cleanly incised or punctured wounds of little depth. The largest wound was a gutter 2½” long across the back of the calf of the patient. Retained foreign bodies have been localised in 6 cases. These consist of thin metallic fragments. Total 28 cases.
- (c) Those with wound and adjacent skin lesions resembling first and second degree burns. The worst skin lesions and wounds occurred on the lower limbs. Total 13 cases. One fatal case, who died on 23 May, 47, had extensive second degree burns on the lower limbs, especially the right leg below the knee: and first degree burns on the trunk and upper limbs. Associated with small peppered wounds about 30% of the total body surface was involved...no distress until about 7.30pm on 23 May. Collapse was ushered in by sudden haematemesis and maleaca, and death occurred in about 4 hours. No post mortem could be performed because the body was seized by unauthorised person[s], so the cause of death was not precisely determined.

(2) I have no hesitation in ascribing the death of this patient to toxæmia [blood poisoning from infection] of burns. But I cannot say what proportion of the burning was chemical and what thermal. However, I suggest that thermal burning was a major factor because:

- (i) The more severe burns looked more like thermal than chemical burns.

(ii) No case of severe burns without wounds occurred i.e. all cases must have been very near to exploding gas canisters.

(iii) He did not suffer burns from burning clothing.”<sup>751</sup>

---

<sup>751</sup> TNA, WO 188/2108, Subject:- I.S. – Use of 92 Grenade, 5 June 1947.

## **Appendix 6: Kohat, the gassing of a procession of 300 in a bazaar**

On 18 April 1947, during a hot, still afternoon, the Punjab police threw a No. 92 teargas grenade “into the midst” of the leading half of a 300 strong procession “advancing in quick time shoulder to shoulder” down a narrow street “approx. 12 ft wide” in the main bazaar area of Kohat city.<sup>752</sup> According to the Northern Command report, this resulted in the “immediate dispersal” of the procession “partly owing to [the] moral effect of [the] explosion.”<sup>753</sup> There were 16 civilian casualties, of which 12 were admitted to hospital, and three civilians “suffered extensive lacerations of [which] one was severe.” The lacerations, caused by grenade fragmentation, varied from “minute” to 2 inches in length and were “mostly confined to arms and legs” although one was facial.

Like the Peshawar report, the Kohat report had a “technical details” section, which noted that the gas cloud was “instantaneous and strongly persistent, rendering [the] immediate area uncomfortable to stand in up to 2 hours after [the] burst.” It also documented that the explosion produced “high fragmentation” with a danger area of 25 yards. Once again, these technical aspects of the situation led the report to make a policy-related conclusion: “it appears that [the use of these grenades] will achieve an object not otherwise obtainable except by firing.” In short, police believed that dispersal of the crowd would only be brought about by the use of teargas (and/or to an extent, batons) or firing. In being the less lethal option in this binary, teargas became a normative means of instilling state control. The Kohat report ended with an explicit acknowledgement of this: “It may be alleged that this grenade does NOT conform with the principles of use of minimum force, but it is for consideration whether casualties produced so far are NOT less than those that would be produced by a vigorous lathi [baton] charge. Even with present casualties, the effect of the grenade is far less severe than bullets.”<sup>754</sup>

Perhaps most striking here is the report’s consideration that “it may be alleged” the No. 92 grenade did not conform to “principles of use of minimum force.” Officials at the

---

<sup>752</sup> Kohat is now the capital of the Kohat District in the Khyber Pakhtunkhwa province of Pakistan. TNA, WO 188/2108, Subject:- I.S. Use of 92 Gren., 21 April 1947.

<sup>753</sup> In this case, the criteria of ‘moral effect’ and dispersal of crowd aligned to achieve crowd control. Conversely, however, it was the effects of the gas dispersal mechanism (which injured 16 civilians) that became in this instance an issue of (lack of) control.

<sup>754</sup> *Ibid.*

Northern Command acknowledged that it *could* hypothetically be argued that gas grenades did not meet minimum force principles, but believed this to be unproblematic because they were definitively “less severe” than bullets and possibly less severe than baton charge. It was beside the point whether teargas was in fact the minimum force option available to police, because it was less lethal than firing. By continuously comparing the use of teargas with the use of firearms (and, in the Peshawar case through medical knowledge), the use of gas became an ontologically distinct kind of force – a form of non-lethal (or at the very least, less lethal) force – to firearms. Delineating the bounds of lethality as such allowed requirements of minimum force to be ignored, or at least suspended, on the basis that gas use was a kind of non-lethal rather than lethal force – even when gas use had led to the death of a prisoner in Peshawar.

By never opening up the question of *why* shooting was undesirable or illegitimate to discussion, and by never asking whether the contrast between shooting and ‘non-lethal’ gas use had to be adopted in the first instance, this approach rendered the colonial populations as subjects for legitimate violence. Using such a distinction made lethal force, and severe force, legitimate responses to these incidents (in some circumstances) from the offset. In this respect, colonial populations were still being condemned to the possibility of death. There was no trial or justice for the killed prisoner at Peshawar, after all. Furthermore, for many police officials, if teargas was not effective, firing remained the legitimate alternative. In 1948 the Governor of Trinidad and Tobago wrote to the CO: “tear smoke is not invariably effective especially against crowds who have experienced it before and know how to smother it. It is then that the man on the spot has to decide whether or not fire should be opened.”<sup>755</sup> Similarly, the Governor of Aden informed the CO that tear smoke had “only limited use in the peculiar conditions in Aden.” Recalling disturbances when tear smoke shells were fired from riot guns, he complained, “they were not effective...owing to the ubiquity of the rioting. Small sections of mobs were dispersed momentarily...but escaped down the many side streets of Crater and joined other sections elsewhere in looting and arson; even rifle fire was later ineffective in breaking up parties of loot-mad rioters.”<sup>756</sup> Specifically, Aden was “far from being an ideal place for the use of tear smoke as there is so often a high wind.”

---

<sup>755</sup> TNA, CO 537/2712, from J.V.W. Shaw, 31 July 1948.

<sup>756</sup> *Ibid*, from R.S. Champion, 27 August 1948.

Thus, while policy makers justified the adoption of teargas across the colonial empire on the grounds of non-lethality, minimum force, and saving lives, in practice these discourses were entangled with imperial geopolitical (and local) interests, and pre-emptive attempts to secure anticipated futures (in a short term sense). For police forces in the colonies, the tensions between these objectives – and need to secure and control on shorter timescales – meant teargas was just one of a number of ways of enforcing control and securing spaces, dispelling the relevance of either/or distinctions regarding lethal/non-lethal force. This is particularly apparent in situations such as those mentioned above in Aden or Trinidad and Tobago, where police saw firing as necessary in addition to gas use rather than instead of gas use. The objective of control took precedent over and above minimum force commitments.



## Appendix 7: The Comet Airliner Crash and Operation Crusoe

Write-up of the Operation Crusoe trials was not without complications. E.W. Bateman, one of two Porton scientists who had been sent to Malaya to oversee Operation Crusoe, was killed in the tragic 783 Comet jetliner crash on 2 May 1953, while travelling back to the UK following the trials. Bateman had been carrying in his luggage the original draft report on the trials, a Secret Porton file containing all the correspondence and details of arrangements of the trials, and a day-to-day record of his itinerary and the matters discussed.<sup>757</sup> While the Army Council made arrangements with India to “search the wreckage in the hope of finding the suitcase and missing documents,” Colonel Pennyquick of the Operational Research Unit of the Far East (who also directed the trials) prepared a paper based on draft report notes Bateman had left with him. The paper was “based on Mr. Bateman’s draft, on the writers own notes, and on a re-interrogation of some of the volunteers who took part in the trials.”<sup>758</sup>

---

<sup>757</sup> TNA, WO 188/2584, Security documents carried by the late Mr. E.W. Bateman, 7 May 1953.

<sup>758</sup> TNA, WO 188/2585, Operational Research Unit Far East. Memorandum No Q5/53. Operation Crusoe.

## Appendix 8: CS as a teargas in the Empire; problems in the field

Once CS had been established as the agent of choice for riot control, Nancekuke began production to meet both international export demands and colonial demands.<sup>759</sup> However, the CDEE and CDRD foresaw a need to find an alternative source of production should it “only be the beginning of more and larger orders.”<sup>760</sup> As such, they considered transferring CS production to a Royal Ordnance Facility.<sup>761</sup> In January 1963, the WO responded to a priority request from Singapore for T.792 cartridges by saying that they were “unable” to meet such an order, and that the present delay in obtaining the cartridges was “ten months.”<sup>762</sup> They recommended the Singapore Police “place further demand for essential requirements on the American Federal Laboratories through Crown Agents. Shells, long range and/or short range, filled C.S. are now understood to be available from that source and delivery should not exceed six weeks.” The supply of CS, which had originally been envisioned as a way of meeting demand from the British market, in some cases had to once again be acquired from abroad. At the same time, reports had come from Aden to the CO of the “failure” of CS grenades in tropical climates. This failure was due to the failure of the grenades’ ignition mechanisms, the mercury fulminate composition of which was deteriorating due to “vapour exhalation from the irritant smoke pellets.”<sup>763</sup> This was exacerbated by a packaging system that increased the amount of this exhalation. In fact, the WO had come to believe “shelf life in the tropics to be two years.”<sup>764</sup> This left officials in the CO “rather shaken.”<sup>765</sup>

While the CO informed colonial police commissioners in a circular of “precautions they should take with grenades whilst in store”, they decided to “obscure the fact that the

---

<sup>759</sup> From 1962 to 1965, Nancekuke exported a total of 1544 lbs of CS to Netherlands, South Africa, Antwerp, Australia and Switzerland. See TNA, WO 188/2754, Export of CS, from G.N. Gadsby, 22 July 1968. Similarly, Feigenbaum, *Tear Gas*, 67, notes that between 1962 and 1964, the UK made more than £10,000 (£200,000 in real terms) from export sales to Indonesia, Kenya, Malaysia, Hong Kong, Nigeria, Portugal, Singapore and Rhodesia.

<sup>760</sup> TNA, WO 188/2754, CS Production, from E.E. Haddon, 13 March 1963.

<sup>761</sup> *Ibid*, “Production of CS, from DCDRD, 11 April 1963.

<sup>762</sup> TNA, CO 1037/201, Secretary of State for the Colonies to Singapore, 31 January 1963.

<sup>763</sup> *Ibid*, Grenades, Anti-Riot L1A1, from J.W. Deegan, 6 February 1963.

<sup>764</sup> *Ibid*, S.D. Cornelius to N.G. Morris, 13 February 1963.

<sup>765</sup> *Ibid*, S.D. Cornelius to Captain Bush, 13 February 1963.

actual shelf life” of the grenades was believed by the WO to be no more than two years.<sup>766</sup> The WO did indicate, however, that if the recommendations were carried out, police could expect a storage life of more than two years, and that a new cap for the firing mechanism was in production, which “should also prolong the life of the grenades.”<sup>767</sup> Some officials also suggested adopting the American Federal Laboratories approach to packing the grenades.<sup>768</sup>

The circular highlighted the issue of supply for colonial police. The Chief of Police in St. Lucia, for example, not only found his police force’s stock of CS gas and tear smoke to be in short supply, but that much had expired.<sup>769</sup> As a result, he requested supplies from the Barbados police force. Many of these supplies too, however, were found to be predominantly unreliable or unserviceable. He therefore required “approximately \$5,000.00 for a completely new supply of C.S. Grenades.”<sup>770</sup> As a result, the Crown Agents arranged for a priority of shipment of grenades and cartridge to be supplied by the Admiralty, in order to bring the “holdings of the Force...up to a safe level to meet any possible internal security contingency.”<sup>771</sup>

Perhaps more so than officials had intended, through Porton’s search and the CO’s implementation of its recommendation, CS had ‘become’ teargas to the extent that it even posed a strikingly similar set of issues to colonial police forces as those posed by its predecessor CN. These were, after all, not solely technical issues, but problems with social, institutional, and cultural components.

---

<sup>766</sup> *Ibid*, from S.D. Cornelius, 13 February 1963.

<sup>767</sup> *Ibid*, from H.T. Buckley, 3 April 1963.

<sup>768</sup> *Ibid*, from H.T. Buckley, 5 April 1963.

<sup>769</sup> *Ibid*, C.S. Gas and Tear Smoke, to His Honour The Acting Administrator from F. Cannon, Chief of Police, 29 March 1963.

<sup>770</sup> *Ibid*.

<sup>771</sup> *Ibid*, from S.D. Cornelius, 28 May 1963.