

Manuscript version: Author's Accepted Manuscript

The version presented in WRAP is the author's accepted manuscript and may differ from the published version or Version of Record.

Persistent WRAP URL:

<http://wrap.warwick.ac.uk/150607>

How to cite:

Please refer to published version for the most recent bibliographic citation information. If a published version is known of, the repository item page linked to above, will contain details on accessing it.

Copyright and reuse:

The Warwick Research Archive Portal (WRAP) makes this work by researchers of the University of Warwick available open access under the following conditions.

Copyright © and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable the material made available in WRAP has been checked for eligibility before being made available.

Copies of full items can be used for personal research or study, educational, or not-for-profit purposes without prior permission or charge. Provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.

Publisher's statement:

Please refer to the repository item page, publisher's statement section, for further information.

For more information, please contact the WRAP Team at: wrap@warwick.ac.uk.

‘From Sigint to Cyber: A Hundred Years of Britain’s Biggest Intelligence Agency’

Behind the Enigma: The Authorised History of GCHQ, Britain’s Secret Cyber Intelligence Agency, by John Ferris, London, Bloomsbury, 848 pages, £30.00 ISBN 1526605465

Richard J Aldrich

In 2020, GCHQ published an authorised history, joining MI5 and MI6 in commemorating its centenary.¹ This book is arguably more important than its predecessors, since it charts the rise of “The Big Beast”. John Ferris reports that in 2018, most of the Single Intelligence Vote, over £2 billion, was spent on GCHQ and this amounts to almost 8 per cent of what is spent on the Ministry of Defence. Through its history, GCHQ was better funded than even elite units like the Royal Marines or the best armoured regiments. Until the early 1990s it survived most economy drives and defence reviews relatively unscathed. Moreover, in the twenty-first century its remit has continued to expand rapidly to embrace ‘cyber’, the hottest thing in Whitehall.² As Michael Herman once put it, GCHQ is the whale and the other two services are just ‘tiddlers’.³

Fortunately, for its authorised history GCHQ chose a historian who is adept at dealing with big subjects. Ferris is an international historian with an interest in grand strategy, bringing with it a deep understanding of the main currents of military and diplomatic events of the twentieth century. Like Michael Handel, one of his mentors and a founding editor of *Intelligence and National Security*, Ferris is interested in the confluence of international history, politics and ideas. This allows him to paint the broader picture, integrating the work of GCHQ into the widest tapestry, something that not every official history has done. He comes up with some surprising judgments that he articulates without hesitation and great skill.⁴

He is also perhaps the first to conjure up a meta-narrative arc for sigint as a general activity, offering us the five ages of sigint. The first was time honoured hand cryptography, stretching into the first decades of the twentieth century. The second was the age of Enigma and mechanised cryptanalysis from the late 1930s to the early Cold War. The third was computerised cryptanalysis, expanding rapidly from the mid-1950s. The fourth was the satellite revolution from the late 1960s, together with collection from terrestrial microwave towers which began a shift towards higher volumes of *en clair* material. This was accompanied by the ‘elint’ revolution and latterly nuclear targets such as telemetry. Fifth, of course is the internet which began to dominate GCHQ’s work in the mid-1990s. This final period has transformed GCHQ’s role, diminishing the role of states and replacing it with an electronic Hobbesian ‘war of all against all’. The shift between these modes, often over-

lapping, has repeatedly provided GCHQ with its biggest challenges - never more so than now.

Chronological analysis provides the organising structure for the first half of the book, but then Ferris begins to follow themes. Trade publishers are notoriously resistant to thematic books and prefer a narrative timeline. One can just hear the editors at Bloomsbury gnashing their teeth at such intellectual indulgence. But actually, it works really well. It not only allows Ferris to explore fascinating subjects including UKUSA, social history, computing and colonial wars, it also allows him to capture the sheer range and complexity of an organisation that was more like an industrial combine than a secret service. Andrew adopted a semi-thematic approach to good effect in his magisterial history of MI5, but Ferris takes this further.

Although this book marks GCHQ's centenary with the founding of GC&CS in 1919, Ferris locates the 'birth of sigint' squarely with the First World War. So many of the processes that we associate with Bletchley Park, including direction finding, traffic analysis and advanced hand cryptanalysis have their origins in this conflict and their consequences were often no less important than they were in the Second World War. Famously, the interception and breaking of the Zimmerman telegram, Germany's suggestion of a military alliance with Mexico, offering to restore lost territories like Texas, pushed American opinion towards war in a way that the sinking of the Lusitania did not. By 1918, British sigint employed broadly the same number of people as Bletchley Park and was a global activity.

In the Great War, sigint was most important for its impact on land warfare. From the outset sigint offered forewarning of German operations, but commanders were initially not well trained to respond to this. Sigint was also vital to tactical operations, allowing the British to shoot down German artillery observation flights and offering warning of major bombardments. Ferris offers a fascinating account of an early form of 'tempest' exploitation. It seems eavesdroppers on both sides of the line hammered copper plates into the ground that allowed them to capture leaking communications from trench telephones over a mile away. Here Ferris begins to warm to one of his most important themes, poor British comsec, and explains that such unguarded chats compromised many attacks during the Battle of the Somme.⁵

It is often stated that GC&CS was created in 1919 by the merger of the Navy's Room 40 and the Army's MI1(b), two successful service codebreaking outfits, but what was no less important was that GC&CS also encompassed diplomatic and economic codebreaking. It would take the United States another thirty years to create a similar centralised body for sigint and this organisational achievement was much envied in Washington. GC&CS enjoyed a 'Roaring Twenties' and achieved 'near mastery of the diplomatic code systems of Japan, the United States, and Italy, and strong access to those of France and, despite the myth, of the USSR.'⁶ Sadly, in the following decade, hand cryptanalysis was increasingly flummoxed by machines like Enigma. During this period of diminishing returns, it was intercepted Japanese messages that often shed important light on the activities of German and Italy.

What of Bletchley Park? This is not only well-trodden ground it is also hallowed ground. The fact that you can even buy Bletchley Park chutney in the gift shop underlines the power of the brand. Ferris offers us a fresh analysis that is, at times, pleasingly iconoclastic. Commenting on the rise of the cult of Bletchley Park, he observed that it has become indelibly associated with Britain's salvation, 'absorbing parts of the older myth of Fighter Command'. It is a story of gentle eccentrics and cross-word puzzlers in hand-knitted jumpers overcoming the Nazi enemy with pads and pencils. Ferris is clear that Bletchley did not save Britain, although it did help to defeat Germany and saved many lives.⁷

In an uncharacteristic moment of exuberance, Sir F. H. Hinsley, author of the British official history of Intelligence the Second World War, once stated that breaking Enigma shortened the war by years. This has long been the subject of comment, not least by Ralph Bennett, a fellow BP veteran and his counterfactual nemesis.⁸ Ferris joins the fray and takes a different line, concluding that: 'Intelligence, especially Ultra, shaved several months from the war in Europe and saved the lives of tens or hundreds of thousands of Western Allied soldiers.' He also differentiates between theatres, emphasising Bletchley's extreme importance for success against U-boats in the Atlantic or Rommel in Libya, but adding that it had little effect on the Eastern Front, or upon the Asia-Pacific War. Returning to his comsec theme, he echoes and extends the conclusions of Rebecca Ratcliff, showing that Axis sigint scored great success against Allied forces, typically prior to the disastrous Dieppe raid in August 1942.⁹

Bletchley Park throws the Cold War into stark relief. Ferris is frank about GCHQ's failed efforts to replicate its extensive success against Enigma by attacking high-grade Soviet systems.¹⁰ Peter Marychurch spent a frustrating time attacking Soviet naval traffic in the 1950s to no avail. Even when rare success was gained, this was often short-lived due to Soviet humint penetration. Yet despite this, British intelligence during the Cold War was still dominated by sigint, often widely distributed in a sanitised form. This was garnered from traffic analysis, direction finding, elint and unencrypted traffic often on routine administrative matters. A further source that Ferris only gently alludes to is high-level Soviet encrypted speech gathered through an operation at RAF Gatow. GCHQ did not allow the West to peer into the mind of Khrushchev or Brezhnev, in the way that Ultra had opened the mind of Hitler. Nevertheless, GCHQ fought an impressive Cold War, supporting arms control, offering war warning and making a major contribution to what Arne Westad has called the Global Cold War in the southern hemisphere.¹¹

What of the themes? Social history is a great strength of the book, often well-supported by numbers and statistical appendices.¹² Indeed, unsurprisingly perhaps for a book about a maths savvy service, numbers are used well throughout, typically we learn that between 1951 and 1963 the numbers of customers cleared to see comint rose from 1,683 to 15,859, including the Ministry of Agriculture and Fisheries.¹³ The important role of women in the service is emphasised but he notes that the increasing ratio of women was largely accounted for by the abolition of the all-male radio grades, and women made their way towards more senior grades only slowly. He analyses its new liberal social attitudes, such as its support of LGBTQI mathematicians, whilst observing that the service was effectively

closed to ethnic minorities in the Cold War years. His detailed analysis of vetting is commendable, reflecting expanding historical interest in these matters.¹⁴

But the jewel in the crown is his coverage of Empire, a subject already probed successfully by David Easter.¹⁵ There are three detailed and forensic case studies of sigint in the Palestine campaign, (Borneo) Konfrontasi and the Falklands War. His nuanced analysis of the Falklands is doubly welcome, since the official history of the Falklands offered only limited space to intelligence and special operations.¹⁶ Ferris judges the main problem to have been one of policy - a decision not to garrison the islands, rather than an intelligence failure.¹⁷ Once the Task Force was despatched, security of the naval vessels was a close-run thing and GCHQs work against Argentine signals and radar really made the difference for perilous naval activities conducted 8,000 miles from home. Sigint was less valuable once the Task Force arrived on the islands, partly because GCHQ had taken a decision not to flood it with tactical sigint.¹⁸ In any case, the Argentine army preferred crypto provided by the Israelis, unlike the Argentine navy who depended upon a certain Swiss company.

This points to one of the hidden themes of the book, support for forward operations. One of the greatest challenges for sigint organisations around the world since the Second World War has been the growing demand to push intelligence forward from national assets, including sigint and imagery, to frontline forces, not least in Iraq and Afghanistan. Ferris illuminates the way in which GCHQ, after the Second World War, turned its back on the old SLU tradition and focused on serving Whitehall, Westminster and Washington - sometimes with 'loss leaders' for the Americans, in other words targets pursued to placate Washington. GCHQ liaison officers, or GCOs, appeared in Germany, but in practice Brigade commanders saw little sigint in peacetime and would not have known what to do when the tap was turned on in wartime. This problem surfaced in the Falklands War, posed challenges during the Gulf War that were partly addressed by work-arounds, and was only fully addressed during the lengthy conflicts of the 21st century.¹⁹

Access has been an issue. Some of the press began to complain about this long before the book even appeared. They focused on the fact that unlike Andrew, GCHQ had curtailed the subjects that could be covered and also that Ferris had not been allowed to roam around the GCHQ archive at will. In fact, the difference is not so stark. Some of the MI5 history dealing with Northern Ireland was removed at the request of lawyers and the RUC Special Branch. Keith Jeffery's MI6 stopped abruptly in 1949 while GCHQ took a late decision to extend its account up to the present day, albeit in outline. Meanwhile, although not encouraged to address diplomatic codebreaking and the exotic work of K Division (non-Soviet targets) for the discerning reader there is still much to learn. (Perhaps somewhere, in the archives at Cheltenham, there is the text of an interview with Peter Little, denizen of K - and one day I hope we will be able to read it). Ferris confirms what other historians have suggested, namely that GCHQ did very well indeed against non-Soviet block targets and diplomatic traffic in the Global South, delivering some remarkable achievements. Some of the comments on the supply of cypher machines to NATO partners and 'equities' are surprising frank and most enjoyable. He notes that GCHQ followed the path of least resistance and during the 1960s transferred resources from Soviet to non-Soviet targets

(from J to K). Of course, he stays away from delicate subjects such as forward collection by embassies, submarines and a subterranean army of brief case men.²⁰

Some serious newspapers - who really should know better - have moaned about 'too much dense technical detail' in the book.²¹ Having binged on breathless books about 'ZigZag' for years, a few pages without a wistful hero waving a tommy gun is now just too much for a journalist to bear. The sections dealing with computing and maths are arguably some of the best parts of the book and tell us much about the convergence of science, technology and international relations, something that historians have mostly neglected.²² Ferris also begs a further question for us all. If the history of GCHQ before 1989 feels uncomfortably dense and technical, what lies ahead of us? This is not just a narrow matter of intelligence but extends to the history of recent world affairs generally which is littered with drones, chemical toxins, cyber-worms and election meddling. In short, international history is going to have to embrace 'tech' and this will present challenges soon – we need to be training the right graduate students now.

What was missing? It would have been good to know more about spooks and nukes. Britain's Nimrod R1 sigint programme was, for a while, largely rationalised and budgeted for as an extension of the strategic deterrent. Both streams of activity prompted pioneering work in space and problems with Chevaline prompted the sceptics to worry about GCHQ's Zircon project – there is little on Zircon.²³ The related matter of C3I also required more attention and this would have given the GCHQ-MoD relationship a more nuanced aspect.²⁴ Ferris intersects well with many official histories, including the D-Notice history, but might have done more to close the gap between his work and the excellent two-volume history of the nuclear programme by Matthew Jones.²⁵

It would also be good to know more about intelligence at the top. The rumbustious relationship between some MI5 directors general and Downing Street is one of the most enjoyable parts of the Andrew history, but it is largely absent in Ferris and Jeffery. It surfaces in GCHQ only amid the fascinating narrative about the impact of sigint on Prime Minister Margaret Thatcher and Defence Secretary John Nott during the Falklands War. What did Foreign Secretaries and Defence Secretaries make of their daily diet of sigint? The recent work on Anthony Eden and sigint by Dan Lomas has shown us that there are further rich seams for others to follow up.²⁶ The game of comparing authorised histories is fun and often presents puzzles: Jeffery made the lamentable decision not to go to Kew despite the self-confessed patchy nature of the MI6 archives, whereas Andrew and Ferris have done much spade-work there, complementing already well-curated sets of in-house papers.²⁷

The history of official and authorised histories has now coalesced as a mini-industry of its own.²⁸ *Behind the Enigma* has little to say about its own genesis. But elsewhere Ferris has spoken frankly about the pressures producing the history relatively quickly. The Snowden revelations in June 2013 clearly contributed to a speedy change of direction at Cheltenham and over the next few years we saw real innovation and fresh thinking: not only the best-selling *GCHQ Puzzle Book*, but also a GCHQ exhibition at the Science Museum, a GCHQ Instagram account and latterly an authorised history. Ferris felt the accelerating wind of change and explains that 'it was dumped on me all at once', revealing that at times it was a

bit 'frightening'. 'I had a relatively short timeframe to write it' adding 'I had to learn all of these things which are absolutely new' especially relating to technology. He summarises the experience as 'really emotionally quite stressful' but also 'a great deal of fun'. In short Ferris, had about half the time to cover more ground than Andrew and Jeffery. Given the extraordinary speed of research and production, the result is remarkably good, with important lessons for everyone - historians, spies, policy-makers and even the everyday citizen.²⁹

What is there for the citizen? In this respect the decision to extend the history beyond the Cold War was important. The account of the 1990s restructure is detailed and confirms the central importance of David Omand in rethinking GCHQ for the future. Beyond that, Ferris argues that what is going on with sigint now is markedly different from the Cold War and touches the lives of normal people. Just like warfare, sigint is no longer a matter of states but has spread out into society. This is partly about the kinds of platforms that have been attacked but also about a proliferation of malignant actors. Once upon a time it was mostly governments that had sigint organisations but now, he argues, cyber criminals might also be considered as hostile sigint collectors.³⁰ One of the most memorable phrases in the book is that: 'Phishing is a kind of very primitive Sigint'. Tracing the history of the defensive side of GCHQ, and the creation of new NCSC building in Victoria, he emphasises that it is now GCHQ's job to protect the public from direct attacks by aggressors, 'whether they are government or private'. This extends not only to communications but also to every device. GCHQ now has to defend our fridges as we connect them to the 'Internet of Things' - with little regard to security, a sort of malware heaven. Looking to the future, GCHQ's expanding cyber remit is truly breath-taking.³¹

Surveying the Edward Snowden affair, Ferris confirms that the success of GCHQ during the internet age 'had reached the highest levels in history, providing much first-rate material on first rate issues.'³² He also advances the familiar 'haystack defence', contrasting the boundless fields of haystacks surveyed with the small numbers of needles examined. He explains the distinction between what is scooped up by robots and what is actually analysed by humans. He thus rejects the charge that the agency collects intelligence on everybody and resists charges of illegality. 'GCHQ did not openly address the operational and legal elements of bulk collection' he adds 'because it did not know how to do so, rather than having anything to hide.' GCHQ's critics would respond that Cheltenham has craftily redefined (only) analysis as collection. They might also observe that it is unwilling ask whether the action-reaction communications contest with terrorists is not always leading us further down the surveillance rabbit hole? Under operational pressure, GCHQ often tends to think about tomorrow, not the day after tomorrow.

This is confirmed by the most remarkable revelation in the whole book - that GCHQ never anticipated its secrets being blown. Discussing the Snowden crisis of June 2013 directly, Ferris tells us: 'GCHQ assumed that such an event could not happen, because it could control any movement away from secrecy'.³³ One has to wonder what planet the board of directors had been living on for the previous decade. Given that the transatlantic intelligence relationship had already been damaged in November 2005 by the *Washington*

Post revelations about secret prisons and rendition, and that thereafter UK prime ministers and foreign secretaries were regularly discomfited by revelations about torture, this was rather strange.³⁴ Ferris accuses GCHQ's critics of being 'naïve', but GCHQ was probably no less naïve. In an age when every intelligence agency was complaining about declining secrecy, GCHQ was still living in the 1970s, not only in terms of the impoverished account of its activities it was offering to the public, but also in its child-like faith in secrecy, and especially the secrecy of its American friends.

Indeed, one of the odd things about the narrative of the period after 9/11 is the relative absence of the USA. Despite the all-consuming nature of the American-led "War on Terror", and the enthusiasm with which Britain surged towards it, NSA is barely visible. Ever since the advent of collection from satellites and microwave towers in the 1970s, GCHQ has become more integrated with its American partner. By 2005 this had gone even further and NSA was grateful for GCHQ's astonishing technical achievements. But this also meant that the conversations about law, accountability and indeed 'values' were converging. Michael Hayden hints at this in his recollections of discussions at Chevening with David Pepper.³⁵ Government national security lawyers in America like Jack Goldsmith were worried about some NSA activities as early as 2003.³⁶

The forward to Ferris' book, by Jeremy Fleming (Director of GCHQ since 2017), is predictably corporate - but it makes some important observations about history. He connects history closely with openness, arguing that this what makes the Ferris study 'so essential'.³⁷ At a moment when GCHQ's multiple roles involve a delicate combination of secrecy and openness, touching on the lives of every citizen, the history could not have come at a better time. Issues of bulk collection are still being debated and we now need to address the role of AI. Often AI is framed as futurology, but it is already upon us, albeit sometimes politely referred to as 'data-washing'.³⁸

Melina Dobson has argued persuasively that intelligence history, perhaps more than other types of history, serves as an additional form of accountability and oversight, albeit working in a more leisurely academic time-frame. She quotes the German poet Schiller, who observed that history is the world's last court of judgement.³⁹ Happily, Britain now has three detailed authorised accounts of its main intelligence and security agencies, together with an official study of central machinery, that have all demonstrated significant independence.⁴⁰ Sailing alongside these flagships, there is also a welcome flotilla of unofficial history from substantial declassified archives.⁴¹

For now, the UK is far in front of any other country in providing open accounts, either through official history, or via the declassification of documents to unofficial historians.⁴² But there are problems ahead, not least with the failure to resource the departmental document release programmes properly. And just as official history has scored a remarkable run of success, the Cabinet Office seems to be winding the programme down. Security officials often complain that the public only notice their failures and not their successes. Let us hope that government notices this one - and does more of it in the future.

About the contributor

Richard J. Aldrich is Professor of International Security at the Department of Politics and International Studies, University of Warwick, and is the author of several books including *The Hidden Hand* and *GCHQ*. His most recent books are *The Black Door* (2016) and *The Secret Royals* (2021) co-authored with Rory Cormac. Between 2016 and 2020 was a Leverhulme Major Research fellow working on the future of secrecy. He is now assisting with the ERC 'Demoserries' and H2020 'DigiGen' projects, together with the English Heritage 'Blue Plaques' programme.

References

- Aldrich, R. and Jules Gaspard. "Secrecy, Spooks and Ghosts: Memoirs and Contested Memory at the CIA." *Journal of American Studies* (2020): 1-25.
- Anderson, D. *Attacks in London and Manchester March-June 2017 Independent Assessment of MI5 and Police Internal Reviews*, December 2017.
- Andrew, C.M. *The Defence of the Realm: The Authorized History of MI5*. London: Penguin 2010.
- Bennett, Ralph Francis. *Intelligence Investigations: How Ultra Changed History: Collected Papers of Ralph Bennett*. London: Psychology Press, 1996.
- Corera, Gordon. *The Art of Betrayal: Life and Death in the British Secret Service*. London: Weidenfeld & Nicolson, 2011.
- Cormac, Rory. *Disrupt and deny: spies, special forces, and the secret pursuit of British foreign policy*. Oxford: Oxford University Press, 2018.
- Davies, Philip HJ. *Intelligence and Government in Britain and the United States: A Comparative Perspective, 2 volumes: A Comparative Perspective*. Oxford: ABC-CLIO, 2012.
- Dobson, Melina J. "The last forum of accountability? State secrecy, intelligence and freedom of information in the United Kingdom." *The British Journal of Politics and International Relations* 21.2 (2019): 312-329.
- Dymydiuk, Jason. "RUBICON and revelation: the curious robustness of the 'secret' CIA-BND operation with Crypto AG." *Intelligence and National Security* 35, no.5 (2020): 641-658.
- Easter, David. "Spying on Nasser: British signals intelligence in Middle East crises and conflicts, 1956–67." *Intelligence and National Security* 28 no.6 (2013): 824-844.
- Ferris, John. "Ralph Bennett and the study of Ultra." *Intelligence and National Security* 6, no.2 (1991): 473-486.

- Ferris, John. "'Indulged in all Too Little'? Vansittart, Intelligence and Appeasement." *Diplomacy and Statecraft*, 6, no.1 (1995): 62-93.
- Ferris, John. *Intelligence and strategy: selected essays*. London: Routledge, 2007.
- Freedman, Lawrence. *The Official History of the Falklands Campaign, Volume 1: The Origins of the Falklands War*. London: Routledge, 2004.
- Freedman, Lawrence. *The official history of the Falklands Campaign, Volume 2: War and diplomacy*. London: Routledge, 2004.
- Goldsmith, Jack. *Power and constraint: the accountable presidency after 9/11*. New York: WW Norton, 2012.
- Goodman, Michael S. *The Official History of the Joint Intelligence Committee: volume I: from the approach of the Second World War to the Suez crisis*. London: Routledge, 2014.
- Goodman, Michael. "Writing the official history of the Joint Intelligence Committee." *Secrecy and Society* 2, no.1 (2018): 9-12.
- Grey, Christopher, *Decoding Organization: Bletchley Park, Codebreaking and Organization Studies*. Cambridge: Cambridge University Press, 2012.
- Hayden, Michael V. *Playing to the Edge: American intelligence in the age of terror*. New York: Penguin, 2017.
- Headrick, Daniel R. *the Invisible Weapon: Telecommunications and International Politics 1851-1945*. New York: Oxford University Press, 1991.
- Hughes, R.G., Murphy, P. and Davies, P.H.J. "The British Secret Intelligence Service, 1909–1949". *Intelligence and National Security*, 26, no.5 (2011): 701-729.
- Jeffery, K. *MI6: The History of the Secret Intelligence Service, 1909–1949*. London: Bloomsbury, 2010.
- Jones, Matthew, *The Official History of the UK Strategic Nuclear Deterrent, by Matthew Jones. Vol. 1, From the V-Bomber Era to the Arrival of Polaris, 1945–1964*. London: Routledge, 2017.
- Jones, Mathew, *The Official History of the UK Strategic Nuclear Deterrent, by Matthew Jones. Vol. 2, The Labour Government and the Polaris Programme, 1964– 1970*. London: Routledge, 2017.
- Lomas, Daniel WB. "Facing the Dictators: Anthony Eden, the Foreign Office and British Intelligence, 1935–1945." *The International History Review* 42.4 (2020): 794-812.
- Mainwaring, Sarah. "Division D: Operation Rubicon and the CIA's secret SIGINT empire." *Intelligence and National Security* 35, no.5 (2020): 623-640.
- McKay, Sinclair, *The Spies of Winter: The GCHQ Codebreakers who fought the Cold War*. London: Aurum, 2016.
- Moran, Christopher. *Classified: secrecy and the state in modern Britain*. Cambridge: Cambridge University Press, 2012.
- Murphy, Christopher J. "The origins of SOE in France." *Historical Journal* 46, no.4 (2003): 935-952.

Newbery, Samantha. *Interrogation, intelligence and security: Controversial British techniques*. Manchester: Manchester University Press, 2016.

Nickles, D.P. *Under the Wire: How the Telegraph Changed Diplomacy*. Cambridge: Harvard University Press, 2003.

Phythian, Mark, "Profiles in intelligence: an interview with Professor Richard J. Aldrich." *Intelligence and National Security*, 33, no.7 (2018) 939-953.

Priest, D. "CIA Holds Terror Suspects in Secret Prisons", *Washington Post*, 2 November 2005.

Ratcliff, Rebecca Ann. *Delusions of intelligence: Enigma, Ultra, and the end of secure ciphers*. Cambridge: Cambridge University Press, 2006.

Smith, C., *The Hidden History of Bletchley Park: A Social and Organisational History, 1939–1945*. London: Palgrave, 2015.

Smith, M., *Six: A History of Britain's Secret Intelligence Service, Part 1: Murder and Mayhem 1909-1939*. London: Biteback, 2010.

Stephens, Philip, "Out of the shadows: Britain's spy agencies in the modern world." *Financial Times*, 11 November 2020.

Twigge, S. and Scott, Len. *Planning Armageddon: Britain, the United States and the Command of Western Nuclear Forces, 1945-1964*. London: Routledge, 2013.

Volmers, Eric, "U of C professor takes a look Behind the Enigma with first authorized history of Britain's secret cyber-intelligence agency." 4 December 2020, *The Guardian*.

Westad, Odd Arne. *The Global Cold War: Third World interventions and the making of our times*. Cambridge: Cambridge University Press, 2005.

Wilkinson, Nicholas John. *Secrecy and the Media: The Official History of the United Kingdom's D-Notice System*. London: Routledge, 2009.

Notes

¹ Andrew, *The Defence of the Realm*; Jeffery, *MI6*.

² Ferris, *Behind the Enigma*, 304, 321, 714-5.

³ Phythian, "Profiles in Intelligence".

⁴ Ferris, *Intelligence and Strategy*.

⁵ Ferris, *Behind the Enigma*, 29-66.

⁶ *Ibid.*, 117.

⁷ *Ibid.* 163, 220-1.

⁸ Ferris, "Ralph Bennett and the study of Ultra." Bennett, *Intelligence Investigations*.

⁹ Ratcliff, *Delusions of Intelligence*, 12-24.

¹⁰ Ferris, *Behind the Enigma*, 486.

¹¹ Westad, *The Global Cold War*. On sigint and the Global South see also Mainwaring, "Division D" and Dymidiuk, "Rubicon and revelation".

¹² On social and organizational issues see also Grey, *Decoding Organization*, and Smith, *The Hidden History of Bletchley Park*.

¹³ Ferris, *Behind the Enigma*, 308.

-
- ¹⁴ For a good account of codebreakers and the early cold war see McKay, *The Spies of Winter*.
- ¹⁵ Easter, "Spying on Nasser".
- ¹⁶ Freedman, *The Official History of the Falklands Campaign*, Vol. 1 & 2.
- ¹⁷ Ferris, *Behind the Enigma*, 620-2.
- ¹⁸ Ibid. 656-7.
- ¹⁹ Ibid., 502-549.
- ²⁰ Ibid., 539-43.
- ²¹ Stephens, "Out of the Shadows".
- ²² But see Nickles, *Under the Wire*; Headrick, *the Invisible Weapon*.
- ²³ Ferris, *Behind the Enigma*, 322, 674, 676.
- ²⁴ See the pioneering account offered by Twigge and Scott, *Planning Armageddon*.
- ²⁵ Wilkinson, *Secrecy and the Media*; Jones, *The Official History of the UK Strategic Nuclear Deterrent*, Vols. 1 & 2.
- ²⁶ Lomas, "Facing the Dictators". Ferris has pursued this theme successfully elsewhere, see "Indulged in all Too Little"?
- ²⁷ Jeffery, *MI6*, 9-14.
- ²⁸ Hughes, Murphy, and Davies, 'The British Secret Intelligence Service, Goodman, "Writing the Official History"; Murphy, "The origins of SOE in France"; Moran, *Classified*.
- ²⁹ Volmers, "U of C professor takes a look".
- ³⁰ Ferris, *Behind the Enigma*, 680-1.
- ³¹ Volmers, "U of C professor takes a look".
- ³² Ferris, *Behind the Enigma*, 499.
- ³³ Ibid. 700.
- ³⁴ Priest, 'CIA Holds Terror Suspects in Secret Prisons'.
- ³⁵ Hayden, *Playing to the Edge*, 36.
- ³⁶ Goldsmith, *Power and Constraint*.
- ³⁷ Preface to Ferris, *Behind the Enigma*, xii.
- ³⁸ Anderson, *Attacks in London and Manchester*, 15.
- ³⁹ Dobson, "The last forum of accountability?"
- ⁴⁰ Goodman, *The Official History of the Joint Intelligence Committee*.
- ⁴¹ Many works could be cited, but see for example Cormac, *Disrupt and Deny*; Corera, *Art of Betrayal*; Davies, *Intelligence and Government*, Newbery, *Interrogation*; Smith, *Six*.
- ⁴² The USA, by contrast, has tended travel more down the director memoir route in search of public understanding, see Aldrich and Gaspard "Secrecy, Spooks and Ghosts".