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# London Review of Books

## Fat Man

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*Churchill's Bomb: A Hidden History of Science, War and Politics* by [Graham Farmelo](#)  
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Winston Churchill's decision to drop the world's first atomic bomb on Berlin on 1 July 1947 wasn't a difficult one. The war hadn't been going well since the landings in the Pas de Calais in May 1946 were thrown back with terrible losses – a failure that had much to do with the amount of treasure and materiel that had been diverted to Britain's nuclear weapons programme. The Americans remained preoccupied in the Pacific, still wary of the slaughter that would surely attend an invasion of the Japanese home islands, and it wasn't likely that another landing on the Atlantic coast of Europe could be mounted for several years. British and Canadian carpet-bombing of German cities continued, but ever since the Russians had been dealt an almost fatal blow by the capture of Moscow in September 1941, the Nazis had been able to shift military production out of range of Allied bombers and harden the Atlantic defences. The alternative to using the Bomb on Berlin would be more V-3 rockets falling on London and stalemate in the west, a thought too dreadful to contemplate. As Churchill foresaw, the Bomb instantly decapitated the Nazi leadership, and General von Kleist, the commander of the remaining German forces in the west, offered unconditional surrender. Britain's Bomb won the war.

Producing the Bomb had cost Britain dear, ever since Churchill decided early in 1942 to go ahead with the massive project on the basis of the reports of the MAUD Committee and secured the vital collaboration of the Canadians in uranium isotope separation using the gaseous diffusion method. He had directed British scientists not to tell the Americans about calculations done in Birmingham early in 1940 by the émigré physicists Otto Frisch and Rudolf Peierls, which established that no more than a kilogram of fissionable U-235 was required for a bomb. American scientists, like the Germans, who also believed that tons might be needed, had not gone ahead with their proposed Cambridge Project, named after the Harvard and MIT affiliations of its leading figures. The Americans had concluded that it would be impossible to produce so much U-235 in time for a weapon to be used in this war, so in June 1947 Britain emerged as the world's only nuclear power, and the gun-method

uranium Bomb – nicknamed Fat Man (after the prime minister) – was successfully tested in Newfoundland. The British Bomb had seriously strained the alliance with the Americans, but there was no more a 'special relationship' with the US than there was with France. Britain had entered the war as a great imperial power, and Churchill was determined that it should emerge from it at least as great, a benign world policeman.

As it turned out, however, Britain's use of the Bomb on Germany had the opposite effect. Like Aesop's fable of the frog trying to become an ox, Britain puffed itself up until it burst. It could neither preserve its empire nor command the resources to sustain a superpower role, and historians now write fanciful 'what if?' stories envisaging a world in which the Americans were the first to develop the Bomb. They imagine what might have happened had Britain not implemented an open-arms policy towards émigré Jewish scientists and had Enrico Fermi gone to the US instead of Britain, where he so effectively joined his theoretical and experimental talents to those of Frisch, Peierls and dozens of other escapees in the massive and spectacularly successful Edgbaston Project. If all those things really had happened, the fantasists suggest, the Americans might have built the Bomb even sooner than the British did, given their vast industrial capabilities. They might have pursued a wide range of ways of producing U-235 and plutonium, even the electromagnetic separation techniques that the British-Canadian project had set aside because of their enormous expense. What if the US had become the world's first nuclear power as early as the summer of 1946, then used its first two bombs on Kobe and Nagasaki, and its next two on Vladivostok and Moscow, since the Soviets had repulsed the Germans at Moscow and were threatening to dominate half of Europe? What, then, would Britain's fate have been in the following decades? What if, unencumbered by the impossible demands of remaining a great power, Britain had not so disastrously attempted to retain its empire and had instead enthusiastically embraced a resurgent federal Europe? What if Britain had devoted huge resources to help reconstruct a still radioactive Soviet Union and formed a peaceful Atlantic-to-the-Urals 'Eurovision' partnership ranged against the rampant and dangerous American superpower? What if America, as the world's sole nuclear state, was itself about to be destroyed by its own vaulting ambition?

Things didn't happen that way, but they could have. Counterfactual history seems so implausible because our minds tend to drift from knowing the way things turned out to the assumption that that's the way they had to turn out, but it prompts us nevertheless to think about the fragile interconnections of events, structures and personalities. Imagining a world in which Britain produced its own nuclear weapons during the war makes you consider the opportunity costs of things that didn't happen because certain other things did: for example, the resources unavailable for assembling a Continental invasion force because they were devoted to a nuclear programme, and the political implications of things that might have

happened if Britain had made its own Bomb, not least the effect on postwar relations with the United States.

Graham Farmelo's dense but compelling *Churchill's Bomb* isn't counterfactual history, but it bears a family resemblance to the genre. It is a study of four related British 'failures' in the Second World War and the years immediately after: a failure to transform British theoretical leads during the war into a national and imperial programme to develop atomic weapons; a failure in 1941-42 to secure favourable terms for a full and equal collaboration with the American Manhattan Project; a failure, after the war, to press effectively for international control of the Bomb; and a failure to have an open political debate about whether Britain should develop nuclear weapons at all, a debate which could easily have resulted in a Britain without the Bomb. Farmelo's book is about why things turned out as they did, and the answers are massively contingent. The course of wartime atomic history was dependent on the texture of personal relations between particular individuals, especially between Churchill and his scientific advisers, and between Churchill and Roosevelt.

The wartime relationship between nuclear expertise and political power was a special case of a general predicament in modern governance. Even today, when politicians are required to take more and more decisions involving scientific and technological matters about which they know very little, scientists can do little more than inform and advise them. That's normal, and the way through the predicament is usually negotiated with the assistance of a network of trusted technical advisers who can assess the likely effects of the different courses of action available. But the distinction between the domains of science and politics is put under pressure when there is a prospect that the nature of politics, diplomacy and the use of military force will be transformed by the existence of new science and new technologies.

When Churchill became First Lord of the Admiralty in September 1939 and then prime minister in May 1940, he knew as little about science and technology as most other world leaders. But two things marked him out. He was an early nuclear visionary and he was mad keen on high-tech military gadgetry. He owed the nuclear vision to H.G. Wells, whom he had known and admired for years. In 1914 Wells's *The World Set Free* described what it would be to harness the energies of radioactivity, envisaging an incomparably powerful new explosive device called an 'atomic bomb'. In the book a few black spheres two feet in diameter destroy the dykes of Holland and lay waste to Paris, Berlin, Tokyo, Moscow, Chicago and much of London. In 1924, Churchill wrote a gloomy essay in *Pall Mall* speculating whether a new kind of bomb 'no bigger than an orange' would be able to 'concentrate the force of a thousand tons of cordite' and blast whole towns into oblivion. In 'Fifty Years Hence', published in *Strand Magazine* in December 1931, Churchill fleshed out his vision of the coming nuclear age: 'There is no question among scientists that this gigantic source of energy exists. What is lacking is the match to set the bonfire alight.' When that match – a way of unlocking the power of the atom – was found, humanity would have access to 'tremendous and awful ...

explosive forces'. (This was the same essay in which Churchill predicted something like the only just realised synthetic hamburger: a future biotechnology that would 'escape the absurdity of growing a whole chicken in order to eat the breast or wing, by growing these parts separately under a suitable medium'.)

As Lloyd George's minister of munitions in the later stages of the First World War, Churchill was a forceful advocate of all kinds of new military technologies: submarines, zeppelins and especially tanks, originally known as 'land ironclads' (another idea Churchill owed to Wells). During the next war, the small government research department MD1, set up to work on unorthodox technologies, was known as 'Churchill's toyshop'. 'He could not resist the pleasure of seeing an ingenious new gadget demonstrated in front of him,' Farmelo writes, 'and was known to make bulk orders for such devices on the spot.' Infatuated with MD1's development of a 'sticky bomb', designed to adhere to a tank before exploding, in 1940 Churchill fired off one of his shortest ever memos: 'Make one million. WSC.'

Scientific ignorance is the normal state of the political mind, and that needn't surprise or even matter very much. What counts is not what science political leaders know but who they know and who they trust to channel, sort and evaluate technical expertise. Wells was Churchill's visionary prophet but, from the 1920s to the end of his political career, the Oxford physicist Frederick Lindemann was his scientific adviser. Lindemann – sarcastic, authoritarian and widely disliked – wasn't in the intellectual league of Cambridge's Ernest Rutherford or Manchester's Patrick Blackett or London's J.D. Bernal, but he had certain virtues that made him ideal for the position of Churchill's personal scientist. He was posh, rich, well mannered, well connected and Tory – and that wasn't typical of the British scientific elite in the first part of the 20th century.

Lindemann was born in Germany, and perhaps because he was sometimes, wrongly, thought to be Jewish, he developed something more than the usual genteel line in anti-semitism: meeting Einstein, he was pleased to observe that he 'has not got a Jewish nose'. But then he was an all-round bigot and nasty piece of work; Isaiah Berlin described him as 'a genuinely horrible figure ... the only person ... whom I have ardently wished to murder.' However, Churchill had an enormous appetite for flattery and Lindemann was skilled at the art: against others' opinion that Churchill hadn't got a scientific bone in his body, Lindemann said that he was an innate scientist who had 'missed his vocation'. This wasn't a judgment easy to square with Churchill's own self-assessment that he 'adopted quite early in life a system of believing whatever I wanted to believe', leaving reason and evidence to mop up whatever was left over.

If sycophancy was one of Lindemann's skills, another was summary. He knew how to condense arcane scientific stuff into concise and cogent half-page executive summaries. 'The Prof', as Churchill invariably called Lindemann, gave him a book on the new quantum physics in 1926, and Churchill was gripped enough by it to take time out from preparing the Budget

to dictate a summary of the book and have it checked over by the Prof, who also later drafted several of Churchill's techno-prophecies. He was good with the children and, despite being a vegetarian and teetotaler, a regular dinner guest at Chartwell. On one occasion, Churchill put his watch on the table and told Lindemann that he had five minutes, without hesitation, and in words of one syllable, to explain the new physics to the assembled company. The Prof performed splendidly.

Churchill understood very well what scientists could contribute to warfare, but he suspected that they had a pernicious wish to parlay technical expertise into political influence. Scientists should be on tap, not on top. Writing in the *News of the World* in 1937, he warned against the prospect of 'Life in a World Controlled by the Scientists' and declared that they should have no more influence on government policy than dentists. He reckoned that he knew quite enough to make decisions about military science and technology and that there was no reason to open up the decision-making process, still less to listen to voices critical of Lindemann's judgment. If there was to be a scientist at the top table, it would be his trusted friend and no one else. (When Churchill was criticised in 1941 for his total reliance on the newly ennobled Lord Cherwell, he responded: 'Love me, love my dog, and if you don't love my dog you damn well can't love me.') In *Britain's War Machine*, David Edgerton makes the plausible judgment that 'no scientist ever had more influence in British history; and probably no academic either.'<sup>\*</sup> The Churchill who decided these matters was almost always a Churchill-Lindemann hybrid.

Decision-making with respect to the British Bomb was closely held. The key players were Churchill, Lindemann and John Anderson, a senior minister in the war cabinet. They were in turn dependent on the experts' constantly changing, often conflicting views as to whether an atomic bomb was possible and, if so, what it would do and how it might be used, how much it would cost, how long it would take to make, whether the Germans were at work on such a thing, and whether the development of a nuclear weapon was a better use of resources than alternative military technologies – radar, rockets, proximity fuses, bouncing bombs, poison gas, anthrax cakes to infect German livestock – and logistics, where the management of the food supply and nutrition was vitally important. (Edgerton reckons that, for the cost of designing and making the Bomb, the US could have built about three thousand B-29 bombers, whose destructive force would have been at least comparable to the nuclear weapons used on Japan.) That is, there is no way in which Bomb-making could have been anything other than a political decision, since politicians were making the decisions, and part of that process was to validate some views, and not others, of what was scientifically possible and economically practical.

Farmelo puts the atomic bomb in tactical perspective by noting that only a few dozen of the several thousand memos that Lindemann wrote Churchill on technical subjects during the war concerned nuclear matters. 'For almost a year after the Battle of Britain,' he writes,

'Churchill appears to have given no thought to nuclear weapons – he was much too busy to spend time on what seemed to be a minor matter.' Lindemann would be trusted to look after it. From the discovery of uranium fission in December 1938 until, perhaps, the circulation of the work of Frisch and Peierls in mid-1940, the dominant view among scientists was that, even if theoretical problems of ignition could be solved, the difficulty of producing sufficient fissionable material meant that an atomic weapon couldn't be made in time to affect the course of the war. The Frisch-Peierls memo that found its way to Henry Tizard at the Air Ministry in March 1940 changed things in two respects: first, it suggested that a weapon might after all be a practical possibility; second, it was, at the time, something the British knew that the Americans did not, giving Britain yet another lead, along with radar, over their American not-yet-allies. At this point, and for some months after, it was a live issue whether the British should go it alone in pursuing nuclear weapons, and what, if anything, to tell the Americans about what they knew.

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The first organised effort to consider the practicality of a British atomic bomb was the setting up of the MAUD Committee and, following its positive report in the summer of 1941, the Tube Alloys research and development project. Given the way things turned out, it's important to bear in mind Edgerton's observation that Britain entered the war as 'the greatest military-scientific power on earth' and that until 1942 Britain's atomic bomb project was bigger than that of any other nation. So the problems presented by a decision to proceed were both practical and political, and in both areas the British vacillated. Churchill and his close associates were uncertain what nuclear weapons development would involve, but also about whether collaboration with the United States would be to Britain's advantage. The calculus changed month by month. Key advisers reckoned that US military technology had 'damned little to offer' and that the flow of crucial information and skill was bound to be from east to west. Even after regular contact between British and American nuclear scientists started in the autumn of 1940, Churchill was, Farmelo says, 'unimpressed – in his opinion, there was no need to help the Americans develop military technology.' The British believed they were years ahead in all sorts of things, and they reported that the Americans agreed and were grateful for what they could learn from their British colleagues.

Until Pearl Harbor brought the US into the war, Churchill had aggressively courted American support, but the president learned that the prime minister was blowing hot and cold about scientific collaboration. If the US was going to be, as Roosevelt promised in December 1940, 'the arsenal of democracy', then some hard decisions had to be made about the terms on which America could perform that role. Churchill wasn't sure he wanted to relinquish control over the use of British technology. He overcame his hesitation enough to commission the Tizard Mission to the US in September 1940, and instruct it, Farmelo says, to give away some of Britain's 'most valuable secrets, asking nothing in return except American good will'. But

while the Americans were delighted to be let in on such secrets as the cavity magnetron, key to the development of radar, the Tizard Mission's consultations scarcely touched on the Bomb. The general terms of the Frisch-Peierls findings seem to have been disclosed, but according to David Zimmerman's *Top Secret Exchange* (1996), a history of the Tizard Mission, a copy of their findings wasn't received in the US until April 1941. British scientists told Enrico Fermi, then at Columbia, about this work, but Fermi remained sceptical about the weapon and concentrated instead on research towards a nuclear reactor.

By the summer of 1941, the MAUD reports had convinced many British scientists that an atomic bomb was not only possible but inevitable. Emigré theoreticians in Britain – those who had not already been successfully encouraged by the government to move to the States – were brought onto the project and, now that the most serious British anxieties about 'aliens' had been overcome, a talented physicist called Klaus Fuchs was cleared for secret Bomb work by MI5. It was estimated that all this would be hugely expensive, but not impossibly so – especially if the Canadians could be brought on board. Where should the fissionable material be produced and where should the Bomb be assembled? The worst of the Blitz was over, but it might be wise nevertheless to do the work elsewhere. After the war, Churchill claimed in his memoirs that if the Americans hadn't proceeded with the project, Britain would have 'gone forward on our own power in Canada' or 'in some other part of the Empire'.

How long would it take? James Chadwick, a physicist on the MAUD Committee, took advice from ICI and Metropolitan-Vickers and in July 1941 estimated it could be done in two and a half years; others thought this optimistic. The Americans, meanwhile, were unaware how far the British project had advanced. In September 1941, Lindemann, now confident that the job could and should be done, cautioned against working too closely with the US: 'However much I may trust my neighbour and depend on him, I am very much averse to putting myself completely at his mercy.' American scientists were probably competent enough, he added, but in general they were 'slow starters'. Part of Churchill's reluctance was based on security: could the Americans keep secrets? Would they tell the Soviet 'allies'? Were there spies about, especially among the 'enemy alien' scientists whose role in the project – and, indeed, whose continuing presence in the country – the British security services had so discouraged? As it turned out, the Americans had the same sort of worries about British secret-keeping – and both sides were right. When Churchill bounced up to the Soviet leader at Potsdam, just after the prime minister had received the good news about the Trinity test, he was taken aback by Stalin's apparent indifference, but that was almost certainly because, through Fuchs and America's own atomic spies, Stalin had been kept well informed about the Manhattan Project and its progress.

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On 30 August 1941, Churchill gave his approval for the making of nuclear weapons – ‘I feel we must not stand in the path of improvement’ – and Britain, not the US, became the first country to make such an official commitment. The chiefs of staff agreed that the Bomb should be made in Britain, with the final tests ‘carried out, if necessary on some lonely, uninhabited island’. The goal was decided, but not yet the means. Scarcely a month later, the head of America’s military research and development office in London personally delivered a message to Churchill from Roosevelt, dated 11 October 1941, containing a clear suggestion that American and British nuclear development should be ‘co-ordinated or even jointly conducted’.

Given that the US had enormous industrial resources, and that it was still officially neutral, this was what Farmelo calls ‘an exceptional diplomatic opportunity’. Yet Churchill, whose responses to Roosevelt’s communications were usually instantaneous, sat on this one for two months before replying, and even then did so ambiguously, presumably still unsure whether he wanted to assist the Americans or go ahead with a British Bomb. (In November 1941 Chadwick wrote confidently to a colleague: ‘We are some way ahead [of the Americans] and we shall remain ahead’; Lindemann, according to Farmelo, believed the British ‘were holding all the aces’.) This is one of the more obvious turning points in Farmelo’s historical reconstruction. Churchill had ‘missed the great opportunity given to him by his nuclear scientists’. If he had responded quickly and positively to Roosevelt’s overture, Britain could probably have had a full partnership with the US in making the Bomb and emerged from the war as one of two nuclear powers. But he did not, and when Japan bombed Pearl Harbor on 7 December, everything changed.

America now jumped into Bomb-making with both feet, ultimately spending \$2 billion on design and on trying out every method of producing fissionable material its scientists could think of – not just gaseous diffusion but also electromagnetic and centrifuge techniques for separating U-235, and huge reactors and separation plants for transforming useless U-238 into fissionable plutonium-239. British observers who, months earlier, had been unimpressed with American efforts in the area, now saw that they had been left well behind and that the only remaining option was to join the Americans on whatever terms could be secured. Those terms were not favourable to the British. Even in June 1942, by which time the resources for Tube Alloys had been folded into the Manhattan Project, Lindemann was ‘in denial’ about American will and industrial capacity, continuing to resist a full merger. Some face was saved by the (justified) hope that British scientists could use the knowledge they would acquire in the US for the building of a British Bomb after the war, but for now Britain was far less than a junior partner in an American nuclear programme. In early 1945, the leading Australian physicist Mark Oliphant wrote that the story of US-British nuclear relations since late 1941 was one ‘of a most undignified servility, dictated by Anderson and [Lindemann] under orders from Churchill ... I believe we have been sold down the river as a nation.’

There was one more consequential moment in the history of US-British wartime nuclear relations. This was an agreement personally negotiated between Roosevelt and Churchill at Quebec in August 1943, by which time both sides were thinking hard about the military and commercial shape of a postwar nuclear world. The terms of the agreement were remarkable: it specified (one hopes, innocuously) that neither side would use nuclear weapons against the other; that neither would communicate nuclear secrets to another nation except with the other's consent; that the signatories would not use an atomic weapon against any third party except by mutual consent; and that the right of Britain after the war to develop a nuclear power industry would be subject to the veto of the US president. (This was important to the Americans because the heavy involvement of such British companies as ICI led them to believe that British interest was focused on commercial exploitation.) Exactly what nuclear information the US would allow Britain to have was left unclear, but Farmelo says that Churchill was content to trust the Americans. That's to say, both Roosevelt and Churchill were making a symmetrical commitment to forego national sovereignty in these matters and, in the case of nuclear power, Churchill agreed to hand over to the United States the right to say whether or not Britain would be allowed to have such an industry. After the war, Patrick Blackett called the Quebec Agreement 'a degrading document'.

The Quebec Agreement wasn't published during the war, wasn't presented as a treaty to Parliament or the Senate, and had no legal force. After Roosevelt's death in April 1945, Truman – who as vice-president had known nothing of the Manhattan Project – said he'd never heard of the agreement and doubted whether it existed. A search for the document was mounted, but for a while it couldn't be found and US officials had to get a copy from London. More people in Britain were in the know, but it was only in October 1945, when the nonconformist Labour MP Raymond Blackburn defied the Official Secrets Act, that the Commons came to know about it. After Hiroshima, when the US began its long debate over what to do with its atomic secrets, Congress passed the McMahon Act, defining a category of 'restricted data' (basically everything you might need to know in order to design and build your own Bomb), and prohibiting sharing these secrets with its former allies. The new prime minister, Clement Attlee, wrote to Truman complaining about the McMahon Act but, Farmelo notes, Truman didn't bother to reply. British diplomats in Washington ran around town brandishing copies of the Quebec Agreement, but some US lawmakers were unmoved while others were appalled at the violation of American sovereignty contained in the idea that the British could veto US use of its own Bomb.

By January 1948, Farmelo writes, American nuclear scientists with government ties secretly agreed to rescind both the British veto and the American authority to prevent the development of a British nuclear power industry. In 1950, Attlee informed Churchill, still out of office, that the Quebec Agreement was a dead letter. The Korean War broke out that year, and the British were acutely anxious that the US intended to use nuclear weapons in that

conflict, and that it might have the right to launch a nuclear attack from its East Anglian airbases without consulting Britain. Churchill, livid, first pressed Attlee to make the text of the agreement public, then bypassed him altogether, writing to Truman and urging him to release the agreement. Truman begged Churchill to drop his request, as it could 'ruin my whole defence programme' and 'cause unfortunate repercussions' in both countries. In January 1952, Churchill put a copy of the agreement in front of Senator McMahon, who seemed unfamiliar with it, and was reported to have told the senator that Britain 'has been grossly deceived'. Well into his second prime ministerial term, Churchill was still holding on to the idea that the Quebec Agreement might one day be published, at which time 'we shall get very decent treatment' from the US: he even believed he could induce Truman to hand over 'a reasonable share' of the burgeoning American stockpile of atomic and thermo-nuclear weapons.

Churchill's appreciation of the Bomb's strategic meaning developed together with his notion of the 'special relationship' between Britain and America. This was in one respect a special personal relationship between Churchill and Roosevelt. Churchill's fawning on the American president had its cringe-making moments. 'I love that man,' he wrote. 'No lover ever studied every whim of his mistress as I did those of President Roosevelt.' When Churchill visited the White House a month after Pearl Harbor, Roosevelt barged into his bedroom and found the prime minister dictating memos in the nude. 'You see, Mr President,' Churchill cracked, 'I have nothing to conceal from you.' On his return to London, Churchill told the king of his success with Roosevelt: we are 'now married'. (Marriage notwithstanding, Farmelo says that days after Churchill left Washington, Roosevelt decided to go ahead with the Manhattan Project without telling him.) In his second term, Churchill tried this sort of flattery on Truman, but the bluff new president and his officials brushed it aside: 'We do not want to reconstruct the Roosevelt-Churchill relationship.' That Churchill reckoned the Quebec Agreement was still worth something had a lot to do with his belief in his special relationship with Roosevelt.

Its personal dimension aside, the special relationship between Britain and the US concerned the place of 'the English-speaking peoples' in a new, technologically shaped global order. Churchill's thinking about the Bomb merged with his thinking about geopolitics. The atomic bomb was initially all about beating the Germans to the new weapon, or matching them if they got it first, but it was soon seen, both in America and in Britain, in the context of hostile postwar relations with the Soviets. In a speech at Harvard just after the Quebec summit, Churchill urged the Americans to embrace joint 'world responsibility' with their British cousins: 'You will find in the British Commonwealth and Empire good comrades to whom you are united by other ties besides those of state policy and public need. To a large extent, they are the ties of blood and history.' He looked forward to a postwar order in which this temporary alliance would be made permanent – 'Nothing will work soundly or for long

without the united effort of the British and American peoples' – and held out the hope that one day there would be 'common citizenship'. But as he made clear in his 'iron curtain' speech in 1946, the 'special relationship between the British Commonwealth and Empire and the United States' should mean shared weapons, military bases and strategic analyses. The relationship was meant to coalesce around the power of the atom, the secrets of which would be closely held, not to be shared with any other nation – Churchill had already given the French the coldest of shoulders – or with any world organisation until such time as it came securely to embody 'the essential brotherhood of man'.

After the war, Churchill's conviction that Britain must possess its own nuclear weapons was shaped both by his continuing disappointment in America's reluctance to acknowledge the special relationship and by his continuing hope that a nuclear Britain could maintain that relationship. Farmelo shows that Churchill, like Truman, turned aside a series of concrete proposals for the internationalisation of the atom, while intermittently rehearsing what, if anything, could be done when the Russians got the Bomb. Churchill had Attlee's ear, though no very vigorous persuasion was needed to get the Labour government to proceed with Britain's Bomb, or to keep the project as secret from the public and Parliament as Churchill had kept it from Attlee, or to think that a nuclear Britain could secure its influence with the Americans. But the idea that the condition of influencing American policy was to sign up to American policy held no water then and hasn't since. The value of Farmelo's book is in its meticulous attention to the contingencies, accidents, uncertainties, inconsistencies and idiosyncratic personalities in the story of how Britain didn't get the Bomb during the war and how it did get it afterwards. It could all have turned out differently – but it didn't.

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