The failure of the liberal promise towards British scientists during the Cold War

On 20 September 1944 Winston Churchill wrote a letter to Lord Cherwell, his scientific advisor, discussing the physicist Niels Bohr. Churchill wrote that “Bohr ought to be confined”.¹ His crime: the belief in scientific freedom and desire to share their nuclear secrets with their allies. Despite having committed no crimes, the head of the British state wished to imprison Bohr for holding an opinion that differed from the government. Such actions violently contradict the promise inherent within British liberalism. Yet throughout the Second World War and the Cold War, scientists such as Bohr found themselves confronted with a state that ignored its own liberal promise.

During this period Britain fought to protect its state and the liberal values it encompassed. Such a journey produced a drive towards warfare and a defencist outlook. Science became essential to such a movement, and Britain’s scientists worked towards defending their nation and pushing the boundaries of scientific exploration. Yet despite their major role in securing the safety of British liberalism, the scientists as a group often found themselves outside such a system, being forced to disregard their belief in the free exchange of ideas and their desire for peace.

When it comes to Britain in the post-war years, recent scholarship has challenged the concept of declinism, and set out to examine its military and technological drive. One prevailing opinion is that drastic state reforms took place by drawing on scientific knowledge.²

David Edgerton’s argument in his book The Warfare State suggests that within British historiography “there is hardly even an allusion to the ‘military-industrial complex’ or the ‘military-scientific complex’, ideas which are central to the discussion of militarism in the United States.”³ As a result the significance of science and industry on Britain in the post-war period has never been understood correctly. He argues that the government committed to developing Britain as a liberal warfare state, with a strong arms industry and large scale R&D. This can be seen not only through

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the high levels of spending on science in relation to warfare but in the high levels of administrators with expert and practical knowledge of science who contributed to policy making. This included those within the civil service and within the military.⁴

Such scholarship has examined the changing nature of the British state as a result of a technocratic drive towards warfare. Many of Britain’s most influential and distinguished scientists perceived problems within the state as a result of such work. Solly Zuckerman, the former chief scientific advisor for the British government, highlighted the immense drive towards military-scientific spending in the post-war years. He argued that 40% of all R&D spending went towards military purposes and 20% of all scientists and engineers worked on such projects.⁵ In terms of percentage of GNP, British spending was not far behind that of the US.⁶ This paper will examine these ideas and the issues faced by these scientists, to argue that the state did not honour its liberal promise to their scientists.

The paper will focus on two aspects of liberalism that influenced and guided the British scientists’ beliefs and decision making. It will examine the liberal view of war as an instrument of international politics, supposing that the primary goal of liberalism is to bring about peace. It will also examine warfare from the viewpoint of a liberal ethical system composed of the fundamental beliefs in liberty, equality and an open, democratic society. The paper will then show that this free system of beliefs was not open to those scientists that worked on projects of warfare.

Over the first half of the 20th century British liberalism built up through the work of Liberal theorists and statesmen such as Campbell-Bannerman and Lloyd George and their work on social welfare before the First World War. Such reforms paved the way for the emergence of the welfare reforms in the 1950s. They included the introduction of free school meals, school health clinics, and old age pensions. A survey of liberal policy by the National Liberal Federation, published in 1934, argued:

[Liberalism’s] aim is to create a nation, not of humble though kindly treated workers dependent on a rich class who alone can enjoy the full benefits of a civilised life; and not of proletarians regimented, controlled, and provided with standardised comforts by a

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⁶ Zuckerman, Scientists and War: The Impact of Science on Military and Civil Affairs, pp. 27-28. Zuckerman argued that in the last 10 years, 85-90% of all US federal spending went on defence.
group of dictators or bureaucrats acting in the name of the State; but a nation of free, responsible, law-abiding, and self-reliant man and women.\textsuperscript{7}

Major liberal thinkers of this period include William Beveridge, whose work helped pave the way for the creation of a welfare state after the war. Beveridge argued in his book, \textit{Why I am a Liberal}, that the people of Britain needed three types of freedom. These were “freedom from Want and fear of Want; freedom from Idleness and fear of Idleness enforced by unemployment; freedom from War and fear of War.”\textsuperscript{8} Liberal ideas on unemployment, social structures, and on war could all bring about such a society if they could be implemented.

Such traditions and outlooks took Britain into the Cold War, bolstered by their fight against Fascism and ready to tackle the remaining problems of totalitarian governments that threatened such a way of life.

Such ideas made up the foundations of cultural liberalism. This represented not only a political and social ideology but a vision of government and hope for the future. With the end of the war and the beginnings of the welfare reforms, such a vision looked possible. For the state and its people, the desire to safeguard such a dream became central to questions surrounding national security. The desire to escape accusations of appeasement meant that warfare needed to be a priority. But the question how far they were willing to go to protect themselves played a key role in such thinking. The Korean War brought these issues to the forefront and shifted defence and economic priorities towards rearmament. The decision to develop nuclear weapons highlighted the defencist strand of thought within their military and scientific policies.

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During this period, the image of the scientist underwent a rapid transformation. Their role in the creation of atomic weapons and the arms race lead many within the public to see scientists as uncaring and lacking in moral considerations. Many felt that the development and supremacy of science meant more to them than the consequences of their discoveries. The state, however, took a radically different approach. Many within the government were suspicious of the academic


backgrounds of their scientists, taking the view that such institutions promoted a left wing mentality and left their loyalties to the state and Britain in question.

In reality neither opinion holds true for the majority of British scientists. Not only did they show strong patriotic enthusiasm towards the future of Britain and maintaining its ideological foundations, but the creation of a nuclear era pushed many scientists to confront the issues of warfare, and towards the belief in unilateralism to prevent nuclear catastrophes. Many of Britain’s top scientists supported anti-nuclear campaigns and spoke out on the dangers of nuclear weapons. Such actions took several forms. Some scientists published their views in the press and a few went further and wrote books on the subject. Many participated in organisations desired to promote international co-operation or unilateralism. Scientists contributed papers and participated in debates within such public forums. The most notable example were the Pugwash Conferences. Pugwash is an international annual conference set up by British scientists and intellectuals Bertrand Russell and Joseph Rotblat in the wake of the Russell-Einstein Manifesto. Such a manifesto comprised the signatures of a group of world-renown intellectuals – the majority scientists – and gained wide media and political attention. The first line of the Manifesto set out its primary aim:

In the tragic situation which confronts humanity, we feel that scientists should assemble in conference to appraise the perils that have arisen as a result of the development of weapons of mass destruction, and to discuss a resolution in the spirit of the appended draft.9

Russell later joined with Rotblat to establish such a conference. Their first attempt received a contingent of 22 scientists. The organisation grew throughout the following decades and continues on into the present day. By 1962 the conference generated around 200 scientists, comprising of some of the world’s most distinguished and influential scientists from 38 different countries.10

Rotblat had famously walked out of the Manhattan Project when he learned of the US’s intentions of building the bomb to fight the Soviet Union rather than the Nazis.11 He spent the rest of his life campaigning against nuclear weapons. Such institutions attracted scientists from all over the world.

10 ‘200 in Pugwash Talks’, The Times, 3 September 1962, p. 5.
and many from Britain helped such endeavours during this period.\textsuperscript{12} Such events gained international media coverage and attention from world statesmen. Some of the organisation’s major successes include helping to mediate the Cuban Missile Crisis, and support for the Treaty on the Non-Proliferation of Nuclear Weapons and the Comprehensive Test Ban Treaty.

David Krieger has described Rotblat as “a guiding spirit to scientists working for a nuclear-weapons free world and an end to war.”\textsuperscript{13} He and Pugwash shared a Noble Peace Prize and he received a Lifetime Achievement Award from the Nuclear Age Peace Foundation.\textsuperscript{14} Yet in spite of this, many including Russell, felt that such events made only a limited contribution to ending the nuclear threat.\textsuperscript{15}

While many scientists had strong views in support of the peace process and freedom of speech and information, the attitude of the government gave them limited options in expressing such beliefs and taking any actions to support them. Such an attitude strongly emerged after the war. With the passing of the McMahon Act, many within the British government were not willing to trust the United States to safeguard Britain in the event of an atomic war. They became convinced that Britain needed her own atomic weapons and remain in charge of her own security. Such attitudes developed into the strong desire to maintain their own military and technological secrets. When in office, both Churchill and Macmillan spearheaded the Britain nuclear drive. They understood the necessity of maintaining a distance from the United States and building up their own defences to counter the Soviet nuclear threat.\textsuperscript{16} While the paranoia of Communist spies did not achieve anywhere near the levels of the United States, the British secret services and government did monitor its employees and such actions did result in firing and arrests. Peter Hennessy’s book, \textit{The Secret State}, examines the frequency of such events, highlighting the extensive nature of such operations that remained undisclosed from the public.\textsuperscript{17}

\textsuperscript{12} These include: J. D. Bernal; John Cockcroft; Dorothy Hodgkin; Kathleen Lonsdale; Nevill Francis Mott; Rudolf Peierls and C. P. Snow.
\textsuperscript{14} Krieger, "Joseph Rotblat and Peace", pp. 45-46.
\textsuperscript{17} Hennessy, \textit{The Secret State: Preparing for the Worst, 1945-2010}, pp. 81-152.
Such arguments highlight the illiberal nature of government actions. In relation to their scientists, the government did their best to prevent open discussion and debate on issues that were unique to this new era and to which scientists brought an important viewpoint and expertise.

Yet their paranoia played a major role in how the government interacted with the scientific community as they held some of the most important of their secrets. Cases such as Klaus Fuchs, the British scientist that sold atomic secrets to the Soviets, only increased such fears and pushed through greater preventative measures. As a result the state took measures to impose limits on their scientists.

In the case of Niels Bohr, the scientific community today consider him one of the most eminent scientists of the 20th century and one of the most important contributors to the field of nuclear physics. Yet while working for the government, such eminence did not afford him or other scientists any appreciation or protection. Some of Britain’s top scientists fell victim to this suspicion, and to the assumption that scientists should not have political opinions.

As a result scientists were strongly discouraged from speaking out. This did not only cover any work that the government deemed classified but also covered their political opinions on the state’s role in science and warfare.

P. M. S. Blackett proves an excellent case study to elucidate the dangers they faced. From the 1940s onwards, Blackett came under a number of problems for speaking out against the prevailing opinion within the government. Blackett had served his country, originally in the Royal Navy during the First World War, and later in his capacity as a scientist. Throughout the 1930s he worked on the radar project, headed up by Henry Tizard. Such work played an instrumental role in the upcoming war. During the war he worked closely with the military, firstly on the MAUD Committee and then on developing Operational Research.

Both Blackett and Tizard spoke out in 1942 against the government’s bombing campaign against German cities. Both men, independently, criticised the calculations put forth by Lord Cherwell, the government’s head scientific advisor. They both estimated that his figures were far too high and such a campaign could not achieve the results required. In hindsight even their calculations did not predict just how wrong Cherwell’s were. There was plenty of evidence to back up their claims. Not only their own calculations but similar arguments came from other government departments, as well as previous studies undertaken by J. D. Bernal and Zuckerman on the effect of the German bombardment of British cities. Yet at the time they were both criticised and ostracised for their views.
and for going against government policy. Neither Blackett’s lifelong service nor Tizard’s former role as the unofficial chief scientific advisor to the government spared them such treatment. In 1960 Blackett wrote that:

a certain allergy to arithmetic was spreading in Whitehall, and our numerical forebodings went unheeded...it was said of anyone who added two and two together to make four, ‘He is not to be trusted; he has been talking to Tizard and Blackett’. Less agreeable stories circulated: that anyone who made such calculations must be a defeatist.18

Blackett’s problems with the government did not stop at this. Despite working on the MAUD Committee that preceded the Manhattan Project, Blackett was strongly opposed to nuclear weapons and not afraid to say so. His former treatment did not deter Blackett from expressing his opinions. In fact his experiences during this time created the reverse effect. In 1941 Michael Polanyi told Blackett he had an obligation to speak out but Blackett argued that such actions would lead to his imprisonment.19

By 1948 he had refined his thinking on this issue and published a treatise entitled: Military and Political Consequences of Atomic Energy.20 Blackett started off by stating that the atomic bomb should not be considered all powerful and a guarantee of victory. He compared the equivalency of the ordinary chemical bombs used in the war with the atomic bombs: 2000 ordinary bombs had the equivalency of one atomic.21 The underlining assumption of such figures, that the two types of bombs were in essentials the same type of weapon, backs up his idea that the bomb did not present its holder with an absolute weapon. This suggested that the atomic weapons differed only in their yield from ordinary bombs and it implied that they could be defeated with enough conventional weapons.

Once all this had been established, the obvious conclusion suggested using the past to help predict the future. Blackett highlighted the debate and application of strategic versus tactical bombing seen in the last war, and made it completely clear that tactical bombing won the war and not the strategic bombing campaign. The key to victory had been the cutting off of supplies and stopping

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production. In the post-war debate the idea that bombing could affect morale presented itself in military discussions, and Blackett felt that they were repeating previous mistakes. Such an assumption had backed up Lord Cherwell’s faulty reasoning during the war.

Blackett also put forth a highly critical view of America’s position on atomic energy and the relations between the East and the West. The standard view when it came to the negotiations and Russia’s veto power, posited that Russia forestalled diplomatic relations and such actions highlighted their unreasonable attitude and desire for conquest. Blackett suggested that the American proposals would stop the Soviets from exploiting this new type of energy, leaving them disadvantaged as they had a far greater need for this new energy. He also implied that America was in the wrong when it came to the Baruch Plan and its failure. The Soviets did not refuse because they wanted conflict but because the terms set by America were unreasonable and would have put them in a position of subservience. He argued they refused to negotiate acceptable compromises in order to make the Soviets appear as the aggressors. He tore through the accepted belief that the Soviets wanted war and only their military inferiority in regards to the atomic bomb forestalled them. This derailed the Western argument in favour of a preventative war.

Lastly in relation to Britain, Blackett dismissed their fears of invasion. These concerns dominated British defence thinking and justified the need for an independent nuclear deterrent. Blackett argued that Britain did not rate high enough for direct Soviet interest, and as he did not believe they wanted a war, these fears were irrational.

Unsurprisingly it garnered great interest and much criticism. It directly contradicted both the British and US military doctrines and policies, as well as painting the Soviets in a favourable light. Blackett clearly wished to make a point and highlight that these governments were repeating previous mistakes. Perhaps the validation of his previous conclusions on the bombing policy against government criticism helped his decision to speak out with such candour.

Even some who agreed with his ideas felt he went too far with his arguments, and many felt his socialist views destroyed his credibility. One example in The Economist showed a reviewer

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22 Blackett, Military and Political Consequences of Atomic Energy, Chs. 2-3.
23 Blackett, Military and Political Consequences of Atomic Energy, p. 56.
26 Blackett, Military and Political Consequences of Atomic Energy, p. 77.
suggesting he did a good job at questioning the assumptions society had made concerning the power of the bomb, but also felt his ideas reminiscent of articles in *The Daily Worker*.\(^{(27)}\)

Despite his fears in 1941, such action did not warrant a prison sentence but as a result of his outspoken criticism and the belief that he was soft on Communism, the government refused to allow him to participate in their research for the next 16 years.\(^{(28)}\) By this point his views on nuclear warfare had come into mainstream political thinking in the West. At the time critics argued that Blackett, as a scientist, had no right to speak out on issues that should not concern him and were not related to his field. In spite of this Blackett continued to promote his political views and faced the suspicions of both the British and American governments. When in the United States he was tracked by the FBI and detained and searched while on his way to Canada.\(^{(29)}\) It should also be noted, that in 1948, the same year the British government condemned his ideas, the world’s scientific community awarded him their highest honour, a Nobel Prize in physics.

Other scientists were not so forthcoming with their opinions in response to their fears on the consequences. After leaving the Manhattan Project, Rotblat later criticised his colleagues for continuing to work on the project after the war despite their negative feelings that mirrored his own.\(^{(30)}\) These scientists knew that if they walked out in protest they would be labelled as anti-patriotic at best and more likely as Communist sympathisers, severely damaging their careers.

Rotblat also found himself in danger of being considered a threat through publishing his own scientific discoveries. In 1954 the head of UK Atomic Energy Authority convinced him not to publish his latest radiobiology research. This explored how the thermonuclear device that contaminated the Japanese ship, the Lucky Dragon, worked. Such research highlighted how relatively inexpensive and easy it was to make these devices and the large amounts of radiation they created once detonated. Sir John Cockcroft, the head of the Authority, felt that the US would believe such research had used classified material and make relations between Britain and America more difficult.\(^{(31)}\)

While these case studies highlight some specific examples such incidents were not isolated. The topic of freedom within the scientific community played a large role in scientific public debate during the height of the Cold War. In the years preceding the Second World War the situation had

never progressed to the levels in did in later years. Looking back, many nuclear scientists saw the years under Rutherford as a golden era of science, when information flowed freely and science did not have to deal with the suspicions and fear that the heightened international tensions and nuclear weapons had created.

In 1960 British scientist C. P. Snow gave a series of lectures at Harvard and published them in the following year. Snow’s arguments directly related to his liberal convictions of open government. Inspired by the issues surrounding Tizard and Cherwell in the 1930 and 1940s, Snow gave a vivid, if slightly historically inaccurate, tale of scientific power run amuck. His story highlighted decisions made by Lord Cherwell as a result of his friendship with Churchill that resulted in the ill-fated bombing campaign against German cities. The position of power bestowed on him by Churchill gave him licence to push through such decisions without anyone to gainsay him, despite attempts by Tizard and Blackett. Such a tale highlighted his premise on the dangers of closed decision making on the British state and democracy in general. Snow argued science in particular was quite susceptible to such a process and a lack of openness did not hinder the development of military technology. It did, however, hinder the ability to contain dangerous or unethical research and the ability to force scientists to allow their work to be scrutinized by all their peers. At the beginning of the 1960s, and the height of the Cold War, Snow argued the lessons learned during the Second World War had not been adhered to. The Western governments were continuing to make these same mistakes within their scientific fields and ignore the need for open scientific decision making. When it came to analysing the Western liberal states in contrast to the Soviets, Snow was “struck, not by the differences, but by the similarities.”

Such arguments had also been taken up by Nobel Laureate, A. V. Hill. During the war Hill became one of the main British spokesmen for the preservation of scientific freedom and the need to maintain some independence between science and government. His role as an eminent scientist and an MP helped bring his views into public discourse. In 1941 he summed up his position as follows:

In many countries to-day science is wholly subservient to the State; its soul is not its own. I do not deny for a moment the importance, indeed the necessity, of scientific organizations within the framework of Government...There are several things, however, which one may fear. First, the condition of stagnation and complacency which tends to

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33 Snow, Science and Government, pp. 75-76.
35 Hill was elected as a Member of Parliament for Cambridge University between 1940 and 1945.
develop in any scientific department or establishment which is cut off from outside criticism or ideas...Secondly, the danger that science will be planned by administrators in offices instead of by young men with their sleeves rolled up in laboratories or workshops. Thirdly, the disadvantage of separating teaching from research...Fifthly, the danger that he who pays the piper may call the tune, and that research may be required to be devoted primarily to objects which the politician, or the Civil Servant, regard for the moment as of national importance.36

In the years after the war Hill also took the lead in the drive to disseminate the research that had had to remain secret during the war. He became the chairman of the Post-War Publication of the Results of War-time Scientific Research Committee. This Committee was set up to help co-ordinate the broad policy for publishing such materials between the Commonwealth and the United States.

Hill also devoted considerable time to the understanding of science and ethics. Inspired by the speed of scientific developments within the period leading up to and including the Second World War, he set out to argue for the necessity of freedom and stability within society. Hill feared the power of modern science and those that worked on it and argued that secrecy within science allowed some scientists to commit immoral acts or permit politicians to use their scientific discoveries for their own purposes.37 As an MP, Hill had the opportunity to see many of the effects of the integration of science within the government. One of his concerns focussed on the treatment of scientists by the government and the military. He argued that these organisations sidelined their scientists, ignoring their contribution to anything beyond their scientific work and refusing to allow their participation in other matters of state. Hill felt forcing science down the military path was a major factor in the public’s mistrust of scientists.38 Such ideas on the treatment of scientists have also been promoted by historian Ronald Clark.39

The idea behind government controlled research alarmed many scientists as such directed research would only produce a limited type of result, and focus mostly on warfare. The general feeling was that Britain, as a liberal state, should devote its scientific resources to other research beyond the military. Yet even as early as 1949 reports emerged that 60% of all science in Britain was devoted to

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38 W. M., ‘Scientific War’, *The Daily Mirror*, 8 July 1942, p. 3; Hill, *The Ethical Dilemma of Science and Other Writings*, p. 70.
war in comparison to between 15%-20% of all British production.\textsuperscript{40} In the 1960s these arguments became the focal point of Zuckerman’s commentary on the role of science in society. He attempted to challenge the public’s preconceived notions of scientists as the instigators and promoters of warfare, laying the blame on society instead. Such arguments also challenged the idea that warfare stimulated scientific knowledge, and thus acted to legitimize warfare and encourage scientists to advocate warfare as a means to enhance their field.\textsuperscript{41} He argued that during the war scientists had to leave their research and focus on military development, limiting the output of science.\textsuperscript{42} His reader can infer that the same problems occurred at the present time as a result of the exodus of scientists into military fields. Such limits also threaten the future of science and the freedom of those that work within the field.

Such freedom occupies one of the fundamental tenants of science within a liberal state, and the need for scientific freedom dominated the scientific community as one, if not the biggest, of their concerns regarding science within the state and society.

Many scientists across the West actively promoted the idea that science should be free and shared within the world’s scientific community. In the years before the war they had achieved greater success. Most notably, this occurred when arguments arose in favour of curtailing the distribution of atomic science in the late 1930s in order to prevent the Nazis from using such information. Many within the international scientific community objected to such arguments. At this time they managed to gainsay these attempts.\textsuperscript{43} In later years when presented to the British and US governments, such arguments fell on death ears. Shortly after examples emerged of conflicts as a result of mistrust and the lack of freedom. This became especially apparent in relation to the most dangerous and classified research. Former allies turned on each other. Between the middle of 1942 and the middle of 1943 almost all co-operation between British and American atomic scientists ceased as a result of the lack of trust between the two states.\textsuperscript{44} In his autobiography, Solly Zuckerman highlighted the treatment of their French colleagues during the war “as suspicious aliens” rather than welcome guests and distinguished scientists.\textsuperscript{45} When it came to sharing atomic secrets with the press and public, Margaret

\textsuperscript{40}‘Scientists Recruited For War’, \textit{The Times}, 24 October 1949, p. 2.
\textsuperscript{41}Zuckerman, \textit{Scientists and War: The Impact of Science on Military and Civil Affairs}.
\textsuperscript{43}S. R. Weart, “Scientists with a Secret”, \textit{Physics Today} 29, no. 2 (1976).
Gowing argues that the British government showed little inclination for such action and were even more secretive and less liberal than their American counterparts.46

In relation to the Soviet Union, the British government ignored individual freedom and used its authority to curtail any relationships between their scientists and its own. In June 1945, the British government banned eight scientists from undertaking an invited trip to Moscow. A. V. Hill argued that:

Not only were they [the British scientists] put to gross inconvenience and annoyance by the refusal, without warning and at the last moment, of permission to travel, but also the explanation given was as incredible as the real reason was insulting. In this prohibited group were those whose talents and devotion have rendered priceless service to the nation during the War...The offensive treatment of our scientific colleagues, inconceivable towards members of most other professions, is a sufficient comment on the patronizing Ministerial praise with which science and scientific men are occasionally favoured.47

While Hill does not elaborate on “the real reason”, it clearly alludes to the growing international tension between the two states and the mistrust of the Soviet government. The perceived insult to his colleagues, and consequently the entire scientific community, undoubtedly came from the government’s mistrust of their scientists, cancelling the trip to ensure they could not give away any secrets, either accidentally or on purpose.

Such actions became even more lamentable when the British and American governments promoted the ideals contained in works such as Vannevar Bush’s, Modern Arms and Free Men. During the war and into the Cold War, Bush worked as a scientific administrator and policy maker. He is considered the first US scientific presidential advisor. His work argued that science within liberal democracies would produce better results as consequence of the openness within this field.48 His work suggests that controls and protections found within liberal democratic states make science safe. We can infer from his ideas that global democracy is the best way to protect mankind from the ever increasing dangers represented by the military-industrial-scientific complex. His work explores the typical pro-

46 Gowing, Reflections on Atomic Energy History, p. 16. Gowing does, however, point out that in sharing their secrets with other nations, the US was more secretive than Britain.
An American angle that posits totalitarian states wished to conquer the world and deny every liberty cherished in the United States. Here both the Soviet Union and Fascism are placed into this single category. Liberal states, in contrast, encompassed the values of peace and non-violence, and would only ever use weapons of mass destruction in a defensive capacity.

His account of the atomic programme differed considerably from the accounts of British scientists and historians that have previously been examined. When looking at the international aspect of the project, Bush highlights the co-operation and camaraderie between scientists in the United States, Britain and Canada.49 While ignoring the French contribution, he also fails to mention the tensions and problems that occurred. Bush used this example to demonstrate the difference between science in the totalitarian Nazi Germany and the liberal West. The complete failure of the Nazis to build their bomb was accredited to the lack of freedom found within a liberal system, where scientists had the authority to work without constant supervision and could freely communicate with their colleagues within the project. Such an environment created one of change whereas totalitarianism created one of rigidness and stagnation.

While the argument in this paper does not wish to dispute Bush’s actual thesis, that democracy and freedom within science helps stimulate knowledge and scientific development, Bush’s interpretation of such events glosses over the treatment of the scientists and paints a picture that is far from accurate. He also ignored the fact that many scientists working on the Manhattan Project were not told the true nature of their work until after the fact, which suggests severe limits on the factual amount of freedom given to these scientists. Such freedom also only existed between those already involved in government projects and any ideas that could benefit the scientific community as a whole were withheld.

In Britain Bush’s work amounted to much more than an intellectual exercise. His ideas were officially discussed within some of the highest levels of government and the military. This included Tizard’s Committee set up by the government to research the future developments of weapons and methods of warfare; key officials within the Ministry of Defence; and members of the Admiralty Board.50 The liberal message within the book was pushed forth, yet at the same time scientists were looked on with suspicion and excluded from government projects because of their nationality or political beliefs.

49 Bush, Modern Arms and Free Men : A Discussion of the Role of Science in Preserving Democracy, p. 205.
50 Future Developments in Methods and Weapons of War. Taken from the National Archives, DEFE 9/19.
Conclusion

The role of scientists during this period underwent quite radical changes. The Second World War had demonstrated to the government and the military that science and technological development was necessary for present and future warfare. Building on this came the premise that science was necessary for the continued safety of the State and the principles it upheld. Defence through science became a major priority for the British government in the mid-20th century. Yet when it came to dealing with scientists, many of the old stigmas remained. The government and military still perceived scientists as intellectuals who had no true understanding of practical warfare. They often questioned their allegiances and were quick to assume the worst when it came to scientists’ associations with undesirable elements, such as friendly relations with their Soviet colleagues.

Their problems with the Communist world came not only through the fear that they were aggressive and wanted to conquer the West, but through the fear of their pervasive ideology and their desire to spread such beliefs and practices to the West. As a result defence during the Cold War had two main elements – defending the State and its people, and defending the liberal values inherent within Britain. Such goals led to the transformation of the British state in relation to warfare.

As a group within the British community, scientists devoted a considerable amount of time helping to fulfil these objectives during the Cold War. On the whole scientists not only played a key role in the transformation of the British state but also dedicated a significant amount of time and energy to actively trying to protect Western civilization through public forums. The changing nature of scientific warfare as a result of the success of the Manhattan Project pushed the scientific community into this arena when many in previous years had shied away from the public spotlight. The danger of their work to the future of civilization and the need to ensure public awareness on these problems became a central issue for these men and women.

Yet despite these actions, the liberal state and the promises this encapsulated were denied to this group in many ways. Measures were taken to deny the scientists that worked for the government the right to freedom of association and freedom of speech beyond the strict boundaries of their fields. While scientists had more freedom to argue against warfare in general, the state was far less sympathetic to any arguments against specific government policies or any hint that scientists held sympathies to Soviet ideologies. The right to freedom of information, one of the founding principles of science in a liberal state, was greatly reduced during this time, to the alarm of many scientists.
This caused great debate within the scientific community over the free exchange of ideas and how far the State could curtail such activities.

Such arguments demonstrate one aspect of a larger debate on the illiberal policies that amounted from the need to protect military and technological secrets during this period of international fear and unrest. The state did their utmost to not only restrict their scientists’ actions but to stop them from engaging in open and sensible discussion on a serious and potentially deadly subject. Scientists’ unique understanding of the implications for this new technological era in international warfare meant that their insights should have been at the forefront of debate on these issues. Instead they became stifled under adherence to the government’s beliefs and policies.

As a result of their fears the message of British liberalism became submerged in the arms race and the need to protect the state meant that one of the main groups responsible for such actions found themselves defending an ideology they were often unable to work within.

**Bibliography**

**Primary Sources**

**Archival Material**

Royal Society:  
*GB 0117 Blackett Papers*

Churchill Archives Centre, Churchill College Cambridge:  
*GBR/0014/AVHL, The Papers of A. V. Hill*

The National Archives:  
*DEFE 9, 1945-49: papers relating to Defence Research Policy Committee*

**Published Material**


Books:


Journal Articles:

Websites:


**Secondary Sources**

Books:


Gowing, Margaret. *How Nuclear Power Began*, (Southampton, University of Southampton, 1987).


Shusterman, David. *C. P. Snow*, (Boston, Twayne, 1975).


Journal Articles:


