

**National prestige and in(ter)dependence:
British space research policy 1959-73**

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Abbreviations

CETS	European Conference on Satellite Communications
CNES	Centre National d'études Spatiales (France)
DEA	Department of Economic Affairs
DTI	Department of Trade and Industry
EEC	European Economic Community
ELDO	European Launcher Development Organisation
ESA	European Space Agency
ESRO	European Space Research Organisation
ESC	European Space Conference
Euratom	European Atomic Energy Community
FO	Foreign Office
LRWE	Long Range Weapons Establishment
MCC	Missile Conversion Committee
MinTech	Ministry of Technology
MoA	Ministry of Aviation
NASA	National Aeronautics and Space Administration (US)
OPD	Defence and Oversea Policy Committee
PESC	Public Expenditure Survey Committee
RAE	Royal Aircraft Establishment
RSP	Space Policy Review Committee
SAB	Space Administration Branch
SRD	Scientific Relations Department

Abstract

From 1960-4 the British government embarked on two large-scale space research programmes to develop satellite launchers. After first being cancelled as a military project in 1960, the Blue Streak missile was converted into the first stage of a British-led European collaborative project to build a three stage satellite launcher (through the European Launcher Development Organisation – ELDO). Born out of the Black Knight warhead re-entry testing vehicle, the independent Black Arrow project aimed to launch small satellites for scientific experimentation. With European collaborations, American scientific knowledge, and an Australian testing site, decisions affecting British space research had wide reaching diplomatic as well as domestic consequences. However, by 1973, both of these programmes had been cancelled.

By examining the complex formation of British policy on these two space research projects, I will identify the alliances of actors involved focusing on understanding the role of civil servants, and the domestic, economic, and foreign policy priorities which directed their policy-making.

This thesis seeks to address two contradictions raised by British policy on space research, and historical analysis of this period. Firstly, if we accept that Britain was not in decline in this period, the how can the history of two projects which is dominated by their cancellation be explained? Secondly, how British governments could reconcile their policy towards ELDO (threatening to withdraw almost yearly from 1966-73) with their stated aim to accede to the European Communities and their repeated rhetoric that the increased potential for scientific and technological collaboration was a key benefit of British accession?

In order to address these contradictions I focus on decisions and decision-makers within government. By tracking policy arguments and options to their very beginnings I show throughout this thesis the way in which individuals frame, shape and direct policy. This thesis provides new insights into the foreign and domestic policy priorities of the four governments in this period by tracking the balance of priorities in policy making in two major space research projects. Close examination of ELDO and Black Arrow highlights that their cancellation is not a symbol of British decline, but instead represent active choices by decision-makers to engage in new areas of research. This supports the work of historians challenging the idea that Britain was in decline in this period, and suggests that cancelled projects should be re-examined.

Declaration

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SHOULD BRITAIN JOIN THE SPACE RACE?

**Britain to launch own
space programme**

**Britain to leave Eldo and
abandon rocket work**

**Britain to Resign
from Space Race**

Figure 1: Britain's space policy - charted in headlines.¹

¹ Anon., 'Should Britain Join the Space Race?', *Daily Mirror*, 12 July 1960; Anon., 'Britain to Launch Own Space Programme', *The Guardian*, 10 September 1964; Anon., 'Britain to leave Eldo and abandon rocket work', *The Times*, 17 December 1971; J. Ceruti, 'Britain to Resign from Space Race', *Chicago Tribune*, 31 July 1971.

Introduction

On 9th May 1961, the Minister for Aviation Peter Thorneycroft assured a BBC News presenter that ‘We shall be making these rockets for a long time ahead... We’re in this for eternity, all of us.’² Newspapers celebrated Britain ‘entering the Space Age’, first through its collaboration with European nations in the European Launcher Development Organisation (ELDO: proposed in 1962), and then through the independent Black Arrow programme in 1964. However, Thorneycroft’s ‘eternity’ turned out to be a large overestimation. As little as ten years after such triumphal declarations the same newspapers reported that Britain had ‘withdrawn from the space race’; by 1973 Britain was no longer involved in the design, construction or funding of any satellite launchers.³

ELDO was officially founded in 1964 by Belgium, the Netherlands, France, Italy, West Germany and the UK, with Australia as an associate member. ELDO represented the largest scale collaboration between Britain and ‘the Six’ member states of the three European Communities (except Luxembourg). Dividing the work between them, members worked individually towards the creation of discrete elements of a complete launcher system capable of launching large satellites. With three stages the launcher was capable of launching large communications and scientific satellites to various orbits and would provide facilities for other European collaborations such as the European Space Research Organisation (ESRO: which focused on the creation of experimental satellites for the scientific research of

² National Archives of Australia (Canberra), A1838 692/4/2 Part 2, ‘Transcript of Minister’s Broadcast by the B.B.C. on Tuesday 9th May’, 09 May 1961.

³ Anon, ‘Black arrow space programme to be dropped’, *The Guardian*, 30 July 1971.

space) and the European Conference on Satellite Communications (CETS: which aimed to build a satellite for European television broadcasts).

Like ELDO, ESRO was established in the early 1960s. Discussions on its formation began in 1960, and the organisation was formally established in 1964. Unlike ELDO, which was directed and managed by government ministries and proposed by the British Minister of Aviation, ESRO was formed by discussions amongst European scientists (notably Sir Harrie Massey - see pp. 16-17). The majority of ESRO's scientists and engineers were based in universities across Europe, and their research aimed to further understand the upper atmosphere, using very small satellites and single stage rockets. Due to the fact that expenditure in Britain was mainly focused on universities, funding and policy coordination were directed by the Department of Education and Science. The smaller size of ESRO projects meant that the funds expended were correspondingly lower (roughly half of the British contribution to ELDO – and throughout 1964-73 usually around £5 million per annum).⁴

In ELDO, Britain provided the first stage of the launcher (based on the Blue Streak ballistic missile project), France, the second stage (based on the Veronique missile), and West Germany the third stage. Italy designed and constructed the test satellite vehicle (which would test various technologies in the space environment); the Netherlands and Belgium provided the various ground-based tracking and communications systems, and Australia the launch site at Woomera in the South Australian outback. Although nations worked on the launcher until 1973, no launch

⁴ J. Krige, A. Russo, with L. Sebesta, *Europe in Space 1960-1973*, (Noordwijk, 1994); Sir H. Massey, and M.O. Robbins, *History of British Space Science*, (2nd edition, Cambridge, 2009).

of all three stages was successful, and a number of members (including Italy and Britain) raised serious concerns about the functionality of the organisation and the direction of European space research as a whole. Debates sparked by British threats to withdraw from 1966-1973 and Italy's non-payment of fees from 1964-68 led to the reorganisation of European space research into a single organisation, the European Space Agency, in 1974 which successfully launched its first satellite in 1979.⁵

ELDO was the first of two large launcher projects in which the UK engaged in this period. The Black Arrow programme was announced in 1964 by the Minister of Aviation, Julian Amery. Heavily utilising existing technology, the programme was designed to provide a cheap launcher enabling companies and research establishments to test technologies such as solar cells and communications antennae in the space environment, enabling the construction of large scale commercial satellites on the basis of the knowledge acquired. Four launch attempts from 1969-1971 resulted in two failures and one satellite launch (the first successful launcher did not carry a satellite). The cancellation of the programme in July 1971 was lambasted in the press as the end of Britain's involvement in space research. However, the end of the Black Arrow programme did not mean that satellite research was discontinued (it was indeed expanded), and UK national research used American (and later, European) rockets to achieve orbit.⁶

⁵ J. Krige, et al, *Europe in Space 1960-1973*.

⁶ D. Millard, *The Black Arrow Rocket: A history of a satellite launch vehicle and its engine*, (London, 2001); D. Millard, *An Overview of United Kingdom Space Activity 1957-1987*, (Noordwijk, 2005).

The development of British space policy did not occur in a vacuum. Between 1960 and 1973, British space policy was shaped and influenced by external events. The balance of British foreign relations between the Anglo-American special relationship, Anglo-Commonwealth, and Anglo-European relations changed drastically as Britain applied to enter the European Communities in 1960-3 and 1967, finally achieving membership in 1973. The period is noted by historians such as Tomlinson for its economic difficulties, such as the balance of payments crises of 1964 and 1970, a reserves crisis in 1965 and the devaluation of Sterling in 1967. Harold Wilson's White Heat speech of 1963 focused attention on the potential of science to reform the nation, and the creation of the Ministry of Technology (MinTech) in 1964 directly affected the way in which science was directed. The supposed failure of economic and scientific efforts to improve economic growth and stability led commentators and historians to assess the period as one of a decline which 'set the limits of the politically possible and dictated the imperatives of the politically inevitable.'⁷

However, recent histories have emphasised the various ways in which the growing British state was 'becoming more powerful rather than declining'.⁸ Governments in this period undertook an increasingly varied (and increasingly expensive) number of research projects, requiring a careful balancing of commitments. By examining the complex politics of British involvement in ELDO and Black Arrow, new insights into British priorities in its foreign, scientific and domestic policies in this period can be gained.

⁷ C. Barnett, *The Lost Victory: British Dreams, British Realities 1945-1950*, (London, 1995), p. xiii.

⁸ D. Edgerton, *Warfare State: Britain, 1920-1970*, (Cambridge, 2006), p. 7.

This thesis focuses on the decisions made to engage in, modify, and end British involvement in satellite launcher production and research. In order to do so I focus on decision-making at all levels of government, from civil servants to Ministers and Prime Ministers. Taking British policy towards ELDO and the Black Arrow programme as two case studies, I seek to address three research questions. Firstly: who makes decisions about these projects, and how and why are these decisions made? Secondly, do decision-makers form alliances to ensure favourable outcomes, and if so, how do those alliances operate and how do they influence the decision-making process? Finally, what priorities shape the decisions made about these projects, and what do they tell us about the broader priorities of governments? Of particular interest throughout are the balancing of priorities in decisions which affected (and were affected by) domestic political concerns, economic factors, and foreign and science policy priorities.

This thesis provides new insight into priorities in British foreign, domestic, economic and science policies in this period by focusing on the role of individual decision-makers, the alliances they form, and the priorities directing their involvement in the decision-making process. Rather than providing assessments about the priorities of governments based on the outcome of the decision-making process, this approach highlights the priorities of individuals who make those decisions. In doing so I show how conflicting ideas of prestige, and Britain's place as an actor on the world stage influenced decisions on two large scientific and technological projects.

Although there is a small amount of literature concerning British space research this is often focused on single projects and proves challenging to assess. Beginning with

an examination of British space research I will then turn to examine the literature on British foreign policy, concepts of decline, changing structures of government, and theories of decision-making before outlining the way in which I approach policy-making in this thesis. I examine the extent to which foreign policy, domestic priorities, and concepts of national prestige through independence and interdependence directed and shaped the management of British space research. By analysing who makes decisions, how these are made, and the alliances constructed to shape them, this approach highlights the ability of individuals to shape the policy-making process. In doing so, the shifting balance of priorities in formulating British space policy at a time of changing commitments and concerns can be identified, contributing to our understanding of the priorities of key decision-makers.

Literature Review

British space research and space policy

A variety of literature has developed to account for the development of space research and space science in Britain from 1950 onwards. The variety of projects and programmes developed represented the fact that, until 1985 there was no single department or agency for coordinating the development of space technologies in the UK. Throughout this period space science was used to denote the development of satellites for experimental and commercial purposes while space research was used to denote the development of the launchers which carried them into orbit. Although this thesis focuses on space research, the consistent development of space science was vital in ensuring 'customers' for the launchers constructed.

The earliest work on space science in Britain was undertaken by a partnership between University scientists, the Royal Society and the government. In their work, Massey and Robbins, who shaped and directed a sizeable portion of this collaboration, account for the development of early experiments. Such experiments were conducted utilising 'free rides'¹ on NASA launchers and, from 1957, the British Skylark rocket.² As Pound notes, the Royal Society's British National Committee on Space Research, which focused solely on space science, was the central point

¹ In 1959, the United States offered Western nations the opportunity to launch small scale satellites free of charge using NASA facilities. The offer was subject to conditions which many nations found unacceptable. See, J. Krige and A. Russo (eds.), *A History of the European Space Agency 1958-1987: Volume 1*, (Noordwijk, 2000), p. 75.

² Sir H. Massey, and M.O. Robbins, *History of British Space Science*, (2nd edition, Cambridge, 2009).

coordinating the development of scientific satellites in the UK.³ Massey played an important part in directing the development of British space science in Universities and industry through his membership of the Royal Society's British National Committee.

Although the British National Committee directed civil space science research, it also advised the service departments and Ministry of Defence on the development of military communications and remote sensing satellites. Whyte and Gummett note how the development of military space satellites occurred in parallel to that of civil space science.⁴ They argue that the funding and expertise which was drawn upon for military space science was separate, in spite of advice from the British National Committee, and the use of American 'free rides' which was common to both programmes.⁵

As Godwin shows in his work on the Skylark rocket research programme the development of space science was not solely national, military or civil.⁶ Skylark, a small rocket which launched scientific experiments from 1957 to 2014 was designed and constructed in the UK, but also launched a variety of small satellites and experiments for the European Space Research Organisation (ESRO). Massey was heavily involved in founding the Organisation and ensuring British contributions were consistent in spite of domestic economic crises. Godwin notes that British

³ K. Pounds, 'The Royal Society's formal role in UK Space Research', *Notes and Records of the Royal Society of London*, 64, (2010).

⁴ N. Whyte, and P. Gummett, 'Far Beyond the Bounds of Science: The Making of the UK's First Space Policy', in *Minerva*, 35 (2), 1997.

⁵ Whyte and Gummett, 'Bounds of Science', p.141.

⁶ M.T. Godwin, *The Skylark Rocket, British Space Science and the European Space Research Organisation*, (Unpublished PhD Thesis, University of London, 2005); M. Godwin, *The Skylark Rocket: British Space Science and the European Space Research Organisation 1957-1972*, (Paris, 2007).

policy towards ESRO was initially directed by the Foreign Office with close attention paid to the potential for close space research collaboration to benefit wider Anglo-European relations.⁷

ESRO was not the only European collaboration of which the UK was a member. Various works produced for the European Space Agency (ESA) by Krige, Russo and Sebesta highlight the growth of both ELDO and ESRO from their beginnings as separate space research, and space science projects before their amalgamation into ESA.⁸ ELDO was a large scale project to develop a three-stage satellite launcher, Europa, which would launch European-designed communications (and later, television) satellites. The organisation was not free from controversy, as budgets spiralled beyond initial estimates, and various nations criticised the way in which it operated. The focus of Krige, Russo and Sebesta's work is, understandably, the organisation, and Britain's approaches to ELDO from 1960-74 are viewed from its perspective. They see Britain's role in ELDO's formation and attempts to withdraw at various points between 1966 and 1973 as part of various interwoven national interests which all played a part in the eventual establishment of ESA.⁹ In this thesis I focus on understanding the motives and imperatives which directed British policy towards ELDO, and affected Britain's wider foreign relations.

The establishment of ELDO created the only large-scale collaborative project involving the UK and the nations of the European Communities (except

⁷ Godwin, *The Skylark Rocket*, p. 88.

⁸ J. Krige, A. Russo, with L. Sebesta, *Europe in Space 1960-1973*, (Noordwijk, 1994); J. Krige and A. Russo (eds.), *A History of the European Space Agency 1958-1987*, (Noordwijk, 2000).

⁹ J. Krige, 'The Launch of ELDO', in J. Krige and A. Russo (eds.), *A History of the European Space Agency 1958-1987: Volume 1 The story of ESRO and ELDO 1958-1973*, (Noordwijk, 2000), p. 109.

Luxembourg). However, the project also involved a sizeable Australian contribution. Although all the elements of the satellite launcher and range radio and tracking equipment were provided by European nations, the testing of the launcher was done in Australia. After the Second World War, the UK and Australia had established a Joint Project to test long-range weapons over land in the Australian outback. Testing of the launcher at the Long Range Weapons Establishment (LRWE) at Woomera was carried out between 1960 and 1971, when facilities moved to French Guiana. Morton's official history of the Woomera site provides an extensive social, technical and policy history from the Australian perspective, highlighting Australian experiences of this European project.¹⁰

Britain's approaches to ELDO are considered by Baker in a short work in the *Journal of the British Interplanetary Society*.¹¹ Baker's work highlights the difficulty of understanding British approaches to ELDO in the 1960s in the context of changing foreign policy priorities. However, whilst he assures us that Wilson's approaches to ELDO clashed with wider foreign policy goals, there is little explanation of how and why Cabinet chose an approach which would 'would have serious political consequences not commensurate with the benefits of continued adherence.'¹² In seeking to understand and explain the development of policy, I show how Cabinet made decisions which would damage their broader aims.

¹⁰ P. Morton, *Fire Across the Desert: Woomera and the Anglo-Australian Joint Project 1946-1980*, (Canberra, 1989), p.38.

¹¹ This small article is part of a large MPhil thesis by Baker on Wilson's approaches to ELDO. However, in spite of extensive searches by members of the University of Manchester Library Document Supply team, staff at Queen Mary, University of London Library and in the Queen Mary History Department, no copy of the work could be found.

¹² R. Baker, 'The Wilson Government's Policy Towards ELDO', *Journal of British Interplanetary Science*, 53 (2000), p. 373.

Although ELDO accounted for the largest share of the UK's space expenditure, it was not the only programme of large-scale space research in which the UK was engaged. The Black Arrow programme from 1964-71 was a small 3 stage satellite launcher. Initially aimed at testing technologies such as solar cells in a space environment, the miniaturisation of parts throughout the late 1960's made the launcher suitable for launching small communications satellites. In his work, Millard charts the development of engines for Black Arrow, and notes that the programme was a 'minimalist project' with a 'minimalist level of funding'.¹³

Criticism of underfunding is a feature in Hill's work, *A Vertical Empire*, which is the broadest examination of British space research and space science.¹⁴ Concentrating on the launchers, and then the satellites which they launched, Hill's work provides a detailed technical history of the programmes undertaken, the scientific analysis which they generated and highlights the battle for government funds which occupied much civil service time and effort. In his discussion of ELDO, Hill concentrates on the foreign policy context of many of the decisions made concerning British rocketry, noting the close links between membership of ELDO and British applications to the European Communities. Hill's work highlights the close ties between British applications to the Communities in 1960-3 and 1967 and British foundation of ELDO between 1960-3 and its attempts to withdraw between 1966-8. However, analysis of these links and their impact on policy is not the focus of Hill's work, and this thesis will focus much more strongly on the impact of foreign

¹³ D. Millard, *The Black Arrow Rocket: A history of a satellite launch vehicle and its engine*, (London, 2001), pp. 53-4.

¹⁴ C.N. Hill, *A Vertical Empire: The History of the UK Rocket and Space Programme, 1950-1971*, (London, 2001).

policy imperatives on policy making. Hill concludes that Black Arrow was cancelled due to British decline, and implies that this was the main reason for the cancellation of all space research in this period: 'The projects were cancelled one by one as Britain's attempts to keep up militarily with the two superpowers weakened...'¹⁵ Hill presents us with a story of what might have been, had British projects not been cancelled, suggesting that political will (and Treasury action) foiled the possibility of continued British space research.¹⁶

Overall, this field of literature focuses in on either too large, or too small a scale to provide detailed insights into the motivations behind decisions by civil servants and Ministers on ELDO and Black Arrow. The majority of the works published focus in either on singular projects, or take an organisational approach. No academic study of the relations between these projects and European and domestic policy priorities has been undertaken, but work that has already been done provides a solid basis to work from. The aim of this study is not to provide a technical history (which is already well provided for). Instead, the focus on broader political, economic and diplomatic concerns highlights the complexity of policy-making. Decisions on Black Arrow and ELDO had large implications economically, politically and for a broad section of foreign relations.

¹⁵ Hill, *Vertical Empire*, p. 254.

¹⁶ Hill, *Vertical Empire*, p. 232.

Anglo American, Australian and European relations

In the period covered by this thesis, Britain's foreign relations underwent great change. In 1960, the UK was a nation with imperial commitments on the outskirts of Europe. By 1973, Britain was a European nation, and member of the European Communities. Speaking in 1948, Winston Churchill outlined his now famous interpretation of Britain's foreign policy priorities, namely to balance between 'three overlapping circles of 'free nations': the United States, the Commonwealth and Western Europe.'¹⁷ British foreign relations are viewed through this lens with successive governments characterised as throwing their weight behind one circle or sphere of relations above another, or presiding over a period where relations in one circle were neglected.¹⁸ As decisions on Black Arrow and ELDO interacted with all three of these circles, it will be vital to establish not only Britain's relations with Europe, but also how changing foreign policy priorities altered relations with the United States and Australia.

¹⁷ G.C. Peden, *Arms, Economics and British Strategy: From Dreadnoughts to Hydrogen Bombs*, (Cambridge, 2007), p. 229.

¹⁸ S. Ward, 'Sir Alexander Downer and the embers of British Australia', in C. Bridge, F. Bongiorno and D. Lee (eds.), *The High Commissioners: Australia's Representatives in the United Kingdom, 1910-2010*, (Barton, 2010); Peden, *Arms, Economics and British Strategy*; H. Parr, *Britain's Policy Towards the European Community: Harold Wilson and Britain's World Role, 1964-1967*, (Abingdon, 2006); W. Kaiser, *Using Europe, Abusing the Europeans: Britain and European Integration 1945-63*, (Basingstoke, 1999); R. Hibbert, 'Britain in search of a role 1957-73; A role in Europe, European integration and Britain: A witness account', in B. Brivati, and H. Jones, *From Reconstruction to Integration: Britain and Europe Since 1945*, (London, 1993); N.J. Crowson, *The Conservative party and European Integration since 1945: At the heart of Europe?*, (Abingdon, 2007); C.A. Pagedas, 'The Afterlife of Blue Streak: Britain's American Answer to Europe', *Journal of Strategic Studies*, 18(2), (1995); W. Wallace, 'The Collapse of British Foreign Policy', *International Affairs*, 81(1) (January, 2005); S. Dockrill, 'Britain's power and influence: Dealing with three roles and the Wilson government's defence debate at Chequers in November 1964', *Diplomacy & Statecraft*, 11(1), (2000).

As Daddow notes, historical approaches to British European integration can be roughly divided into three schools of orthodox, revisionist and post-revisionist thought. He suggests that orthodox interpretations have ‘repeatedly berated British governments for ‘missed chances’’, whilst the opposing revisionist interpretations of policy have attempted ‘not to explain failure, but to understand what impelled policy-makers to make particular decisions.’¹⁹ Meanwhile post-revisionist discourse has tended to emphasize a, ‘post-war foreign policy decision-making in Britain that is at the same time more internationally oriented and less cohesive... [thus creating] a *messier* picture of British European policy.’²⁰ I take the post-revisionist view that there is little to be gained from castigating or praising decision-makers for ‘correct’ decisions – judging decisions already made does not provide new insight into the priorities or reasoning behind them. Instead I seek to understand the decisions that have been made, who has made them and why. In doing so I show in detail in chapters 2, 3 and 4 that British policy towards ELDO was certainly ‘at the same time more internationally oriented and less cohesive’ and part of a ‘messy picture’ of policy.

In discussing British attempts to integrate with Europe May notes that this was ‘...the only alternative both to economic decline and to political isolation.’²¹ As we will see, although theories of decline have been challenged by economic historians and historians of science and technology, other fields of historical inquiry accept

¹⁹ O.J. Daddow (ed.), *Harold Wilson and European Integration: Britain’s second application to join the EEC*, (London, 2003), p. 2; 7 (emphasis in original).

²⁰ O.J. Daddow, *Britain and Europe since 1945: Historiographical perspectives on integration*, (Manchester, 2004), p. 183.

²¹ A. May, ‘“Commonwealth or Europe?”: Macmillan’s Dilemma, 1961-63’, in A. May, (ed.), *Britain, the Commonwealth and Europe: The Commonwealth and Britain’s applications to join the European Communities*, (Basingstoke, 2001), p. 88.

that Britain was a power in decline *prima facie*.²² As Barker and Seawright note, 'Britain has often been portrayed as the reluctant European partner in which the decisions to apply for membership were largely due to growing elite perceptions of Britain's relative economic weakness, the end of Empire, and the manifest failure of the special economic relations with America to compensate for this.'²³ Wilson's 1967 application was, argues Parr, a result of "'collapsing alternatives" due to the 'contraction of Britain's economic power.'²⁴

Announcing Britain's intention to seek membership of the three European Communities in July 1961, Harold Macmillan is alternately characterised as drastically reshaping British foreign policy priorities, or merely attempting to achieve existing ends through new means. Young and Bell state in their works that the decision to apply for European Community membership was a result of Britain's 'reduced capabilities as a diplomatic actor on the world stage', and Macmillan's increasing awareness 'of the *political* significance of the Six [nations in the European Communities] and Britain's declining position.'²⁵ Others, such as Deighton suggest that the opposite was true. In her review of British foreign Policy, Deighton concludes that, in fact, 'British foreign policy priorities had not genuinely shifted since the end of the war...'²⁶ This idea is supported by Pagedas, who highlights that

²² J.W. Young, *Britain and European Unity 1945-1999*, 2nd Edition, (Basingstoke, 2000), p. 64; L. Bell, *The Throw that Failed: Britain's original application to join the Common Market*, (London, 1995), p. ii; D. Porter, 'Downhill all the way: thirteen Tory years 1951-64', in R. Coopey, S. Fielding, and N. Tiratsoo (eds.), *The Wilson Governments 1964-1970*, (London, 1995), p. 19; Parr, *Britain's Policy Towards the European Community*.

²³ D. Baker and D. Seawright (eds.), *Britain For and Against Europe: British Politics and the Question of European Integration*, (Oxford, 1998), p. 1.

²⁴ Parr, *Wilson and Britain's World Role*, p.5.

²⁵ Young, *Britain and European Unity*, p. 64; Bell, *The Throw that Failed*, p. ii.

²⁶ A. Deighton, 'British-West German relations, 1945-1972', in K. Larres, and E. Meehan, (eds), *Uneasy Allies: British-German relations and European integration since 1945*, (Oxford, 2006), p. 41.

in the application to Europe, 'Macmillan was attempting to have the best of both worlds: membership of the EEC *and* maintenance of close Anglo-American relations.'²⁷ In spite of their opposing nature, both of these views of Macmillan's British European policy seem well-evidenced. Although none of these authors focus specifically on Anglo-European technological collaborations, the announcement of the government's intent to join the Communities seems to represent a similar dichotomy. After negotiations began, Britain began to take an active role in European collaboration in a variety of fields; cooperating in the establishment of ESRO, and battling to form ELDO. However, historians such as Krige and Ludwig suggest that Macmillan was using ELDO formation as a bargaining counter in European Community negotiations; this is something which will be challenged in Chapter 1.²⁸ I show how the potential benefit to Anglo-European relations was subsidiary to political efforts to save face by examining the priorities of decision-makers at all levels – whereas Krige and Ludwig focus on Ministerial and Prime Ministerial levels only.

Although, by 1967, the importance of Community membership was agreed by the two major political parties, this does not mean that Wilson's decision to apply for European Communities memberships is historiographically uncontroversial. Early assessments of Wilson's application saw it as a manifestation of criticisms by his Ministerial colleagues that Wilson sacrificed Labour principles for short-term

²⁷ C. Pagedas, *Anglo-American Strategic Relations and the French Problem, 1960-63*, (London, 2000), p. xi.

²⁸ Krige, Russo, with Sebesta, *Europe in Space 1960-1973*; A. Ludwig, 'The origins of European Space Policy and the European Integration Process', in K. Rüker and L. Warloutzet (eds.), *Quelle(s)Europe(s)? Nouvelles approches en histoire de l'intégration Européenne/Which Europe(s)? New approaches in European integration history*, (Brussels, 2006), p. 316.

political gain.²⁹ His decision to apply for membership is not seen in these accounts as part of a shift of British foreign relations from one circle to another, but is instead portrayed as ‘a response to a series of domestic and international crises besieging the Labour governments in the mid-1960s, or to steal an electoral march on the Conservatives, or to quell threats to his position within the Labour Cabinet.’³⁰ Later assessments by historians such as Daddow, Young and Parr seek to revise this view, suggesting that Wilson was committed to re-shaping British foreign relations and reducing British overseas commitments, an approach which was based on a ‘serious strategic consideration’ rather than solely a political ploy.³¹ There is certainly much primary evidence to suggest that the 1967 application was undertaken thoughtfully and with a view to the long-term, rather than as an unconsidered response to short-term political problems. However, Britain’s second application for European Communities membership coincided with British announcements of their withdrawal from ELDO (notably in 1966 and 1967); this thesis examines how this contradiction at the heart of British foreign policy co-existed with Wilson’s ‘serious’ consideration of Anglo-European relations.

By contrast, the historiography of Heath’s re-assumption of the 1967 application is much less contested. Heath’s commitment to UK membership of the European Communities was well known, and Young notes that ‘There was never any doubt

²⁹ R. Crossman, *The Diaries of a Cabinet Minister, Vol 1: Minister of Housing, 1964-66*, (London, 1975); K. Theakston, ‘Richard Crossman: The Diaries of a Cabinet Minister’ in, K. Theakston (ed.), *Volumes of Influence*, (Manchester, 2011); H. Parr, ‘Gone Native: The Foreign Office and H Wilson’s Policy Towards the EEC, 1947-67’, in Daddow (ed.), *Harold Wilson and European Integration*, p. 87; J.W. Young, *The Labour Governments 1964-70: Volume 2: International Policy*, (Manchester, 2003), p.4; C. Wrigley, ‘Now you see it, now you don’t: Harold Wilson and Labour’s foreign policy 1964-70’, in in Coopey, Fielding, and Tiratsoo (eds.), *The Wilson Governments*, p. 123.

³⁰ Daddow (ed.), *Harold Wilson and European Integration*, p. 2; H. Parr, ‘A Question of Leadership: July 1966 and Harold Wilson’s European Decision’, *Contemporary British History*, 19 (4), 2005.

³¹ H. Parr, *Wilson and Britain’s World Role*, p.36.

that... Heath, who had handled the first application, would press for EEC membership with greater vigour than Wilson.³² For Heath and his government, achieving membership of the European Communities is described by historians such as Jones as the 'crowning achievement' of a government beset by economic and political instability.³³ It was well-known by Ministers and officials that Britain's approach to ELDO would be considered by European nations to be representative of Britain's commitment to improving Anglo-European relations. However, although improving Anglo-European relations was a primary commitment of Heath and his Ministers, it was not one which they would pursue at any cost. This thesis examines how this active approach to Anglo-European relations affected British policy towards ELDO, and how an equivocal stance on ELDO affected attempts to portray the Heath government as 'pro-European'.

For the Commonwealth, British accession to the European Communities represented a major shift in British foreign policy, and one which could particularly damage Commonwealth relations. The imposition of the European Communities' Common External Tariff (which would apply to all Commonwealth goods entering Britain at 25%) would damage extensive (although declining) Anglo-Commonwealth

³² J.W. Young, 'Britain and the EEC, 1956-73: An overview', in B. Brivati, and H. Jones, (eds.), *From Reconstruction to Integration: Britain and Europe since 1945*, (London, 1993), p. 110; D. Gowland, and A. Turner, *Reluctant Europeans Britain and European Integration, 1945-1998*, (London, 2000), p. 168; Crowson, *The Conservative party and European Integration since 1945*; C. Lord, *Absent at the Creation: Britain and the formation of the European Community, 1950-2*, (Aldershot, 1996).

³³ M. Jones, 'A Man in a Hurry: Henry Kissinger, Transatlantic Relations and the British Origins of the Year of Europe Dispute', *Diplomacy and Statecraft*, 24 (1), (2013), p. 79; Gowland and Turner, *Reluctant Europeans*, p.168; Young, 'Britain and the EEC', p.109; M. Holmes, *The failure of the Heath Government*, (Basingstoke, 1997); S. Ball and A. Seldon (eds.), *The Heath Government 1970-1974: A reappraisal*, (London, 1996).

trade, and plunge Commonwealth economies into chaos.³⁴ O'Brien notes that the decision to apply caused a sense of near-panic in the Australian government, with the Australian Prime Minister remarking that it was 'the greatest challenge of his political career, even dwarfing the Second World War.'³⁵ Australia, whose economy was dependent on British demand for wool and timber, felt that 'Britain's turn towards Europe necessarily involved a reassessment of its Commonwealth connection, and eventually involved the downgrading of that connection.'³⁶ The certainty in Commonwealth countries (and particularly the former Dominions) that the application signified a marked change of policy is reflected in these histories. It is noticeable that Commonwealth historians view the application as the abandonment of the 'Commonwealth' circle of interests in favour of Europe, and even as evidence that, 'the government 'sold out' on the interests of the Commonwealth.'³⁷ In these histories, a passive Australia is abandoned by a Britain which has turned to Europe forcing Australia to seek allies elsewhere. However, as will be shown in Chapter 1 Australian politicians were active in the defence of Australian interests, and the idea of Australia as a passive actor will be challenged.

³⁴ Examples of this include the New Zealand dairy industry (which sent 90% of its butter to the UK) and the Australian sheep farming industry sent 60% of its wool to the UK, J.B. O'Brien, 'The Australian Department for Trade and the EEC: 1956-1961', in A. May, (ed.), *Britain, the Commonwealth and Europe: The Commonwealth and Britain's applications to join the European Communities*, (Basingstoke, 2001).

³⁵ O'Brien, 'The Australian Department for Trade and the EEC: 1956-1961', p. 50.

³⁶ May, 'Macmillan's Dilemma', p.104.

³⁷ G. Wilkes, 'The Commonwealth in British European Policy: Politics and Sentiment 1956-63', in May (ed.), *Britain, the Commonwealth and Europe*, p. 53; O'Brien, 'The Australian Department for Trade and the EEC: 1956-1961'; R.T. Griffiths, 'A slow one hundred and eighty degree turn: British policy towards the Common Market, 1955-60', in G. Wilkes (ed.), *Britain's Failure to Enter the European Community: The Enlargement Negotiations and Crises in European, Atlantic and Commonwealth Relations*, (London, 1997); S. Ward, 'Anglo-Commonwealth relations and the EEC membership: the problem of the old Dominions.' in Wilkes (ed.), *Britain's Failure to Enter the European Community*; S. Ward, 'Sir Alexander Downer and the embers of British Australia'; S. Ward, *Australia and the British Embrace: The Demise of the Imperial Ideal*, (Melbourne, 2001); A. Benvenuti, *Anglo-Australian Relations and the 'Turn to Europe', 1961-1972*, (London, 2008).

The 'abandonment' of Australia during Britain's 'turn to Europe' was not the only aspect of British policy which shook the Anglo-Australian relationship in this period. Wilson's attempts to reduce British overseas defence commitments resulted in the 1967 announcement of the withdrawal of British troops 'East of Suez' from 1971.³⁸ The declaration of this withdrawal was soon followed by the devaluation of Sterling in 1967, which devalued Australian reserves based in the Bank of England (a move which Britain took without prior consultation). Within weeks of devaluation, came the announcement that the Wilson government would seek membership of the European Communities for a second time. The withdrawal East of Suez, devaluation and second application to the European Communities were events which, Ward notes, 'came together in 1967 to underline that Australia and Britain were drifting apart, both economically and strategically.'³⁹ As Ward and Kristensen note, the second application was less controversial in Australian politics than the first.⁴⁰ However, British announcements on defence commitments, economic commitments and increasing Anglo-European commitments combined to challenge the conception of close Anglo-Australian relations which had been dominant in the early 1960s.

³⁸ E. Longinotti, 'Britain's Withdrawal from East of Suez: From Economic Determinism to Political Choice', *Contemporary British History*, 29(3), (July, 2015); A. Benvenuti, 'Shifting Priorities: Australia's Defence Ties to Britain in the Aftermath of Empire', *History Compass*, 2(1), (2004); S. Dockrill, 'Britain's power and influence'; S.R. Ashton, W. Roger Louis (eds), *East of Suez and the Commonwealth 1964-1971*, (London, 2004); A. Benvenuti, 'The British are "Taking to the Boat": Australian Attempts to Forestall Britain's Military Disengagement from Southeast Asia, 1965-1966', *Diplomacy & Statecraft*, 20(1), (2009); J. Kristensen, "'In Essence still a British Country": Britain's withdrawal from East of Suez', *The Australian journal of politics and history*, 51(1), 2005; D. McDougall, 'Australia and the British Military Withdrawal from East of Suez', *Australian journal of international affairs*, 51 (2), (1997); S. Dockrill, *Britain's Retreat from East of Suez: The Choice Between Europe and the World?*, (Basingstoke, 2002); J. Pickering, *Britain's Withdrawal from East of Suez*, (Basingstoke, 1998).

³⁹ Ward, 'Sir Alexander Downer', p.145.

⁴⁰ Ward, 'Sir Alexander Downer'; Kristensen, 'In Essence still a British Country'.

Anglo-Australian scientific and technological relations in this period were also shaped by Britain's 'turn to Europe'. Arnold notes that from the mid-1960s there was a shift from close Anglo-Australian to close Anglo-American relations as British nuclear testing moved from the outback of South Australia to American facilities in Nevada, whilst Morton notes that over the course of the 1980s, the UK government sought to reduce its financial commitments to maintaining the LRWE at Woomera.⁴¹

Declining Anglo-Australian relations, and particularly the withdrawal of British forces East of Suez, led to increasing Australian reliance on and cooperation with the United States (reflected by Australian involvement in Vietnam in the mid-1960s).⁴² British membership of the European Communities in 1973, the imposition of the Common External Tariff on Commonwealth goods, and the end of Australian involvement in European space research all reflect the changing importance of Anglo-Australian, American-Australian and Anglo-American relations in this period.

For Dobson and Marsh, the impact of the Anglo-American special relationship cannot be overestimated.⁴³ However, the concept of the special relationship (usually focusing on the factors which make it unique compared with other bilateral relations) is hotly debated. Authors such as Ingram, Beloff and Ferguson have called its existence into doubt, whilst others such as Watt, Owendale and Reynolds have noted that the large power asymmetry between the US and UK has led to an over-

⁴¹ L. Arnold, *A Very Special Relationship: British Atomic Weapon Trials in Australia*, (London, 1987).

⁴² P. Edwards, *Australia and the Vietnam War*, (Sydney, 2014); L. Cox and B. O'Connor, 'Australia, the US, and the Vietnam and Iraq Wars: 'Hound Dog, not Lapdog'', *Australian Journal of Political Science*, 47 (2), (2012).

⁴³ A.P. Dobson and S. Marsh (eds), *Anglo-American Relations: Contemporary Perspectives*, (London, 2013), p. 3.

bearing, directive, special relationship.⁴⁴ Meanwhile a core of historical analysis suggests that asymmetry or not 'hard-headed calculations in both Washington and London in response to the grim realities of power politics do not wholly explain the remarkable Anglo-American relationship which developed...'⁴⁵ Indeed the first British application to the European Communities was welcomed by an American government keen to see Britain take an active role in reform of the European communities.⁴⁶ The complexity of the connection between the two nations has led to a series of accounts focusing on specific aspects of Anglo-American relations.

Close scientific ties with America had their origins in wartime collaboration during the Manhattan Project, but the end of the project meant the abrupt end of shared information – further compounded by the US Atomic Energy Act of 1946.⁴⁷ This act

⁴⁴ Those who doubt the existence of the special relationship include: E. Ingram, 'The Wonderland of the Political Scientist', *International Security*, 22, (Summer, 1997); M. Beloff, 'The Special Relationship: An Anglo-American Myth', in M. Gilbert, *A Century of Conflict: Essays for A.J.P. Taylor*, (London, 1966); J. Dickie, 'Special No More' *Anglo-American Relations: Rhetoric and Reality*, (London, 1994); D. Reynolds, 'Roosevelt, Churchill, and the Wartime Anglo-American Alliance, 1939-1945: Towards a new synthesis', in W.R. Louis and H. Bull (eds), *The Special Relationship: Anglo-American Relations since 1945*, (Oxford, 1986); N. Ferguson, 'Nothing Special', *American Interest*, 1, (Summer, 2006).

Those who highlight the power asymmetry in the relationship include: D.C. Watt, *Succeeding John Bull, America in Britain's Place 1900-1997*, (Cambridge, 1984); R. Ovendale, *Anglo-American Relations in the Twentieth Century*, (Basingstoke, 1998); D. Reynolds, *Britannia Overruled*, (London, 1991).

⁴⁵ C.J. Barnett, *The Special Relationship: A History of Anglo-American Relations since 1945*, (London, 1992), p. 2. See also: C. Thorne, *Allies of a Kind: The United States, Britain and the War Against Japan*, (London, 1979); J.W. Dumbrell, *A Special Relationship: Anglo-American Relations in the Cold War and After*, (London, 2001); J. Baylis, *Anglo-American Defence Relations 1939-1984*, (London, 1984); N. Ashton, *Kennedy, Macmillan and the Cold War: The Irony of Interdependence*, (Basingstoke, 2002); J. Ellison, *The United States, Britain and the Transatlantic Crisis: Rising to the Gaullist Challenge*, (Basingstoke, 2007); J. Colman, *A 'Special Relationship'? Harold Wilson, Lyndon B. Johnson and Anglo-American Relations 'at the Summit'*, (Manchester, 2004).

⁴⁶ O. Bange, *The EEC Crisis of 1963: Kennedy, Macmillan, De Gaulle and Adenauer in conflict*, (Basingstoke, 1999); Reynolds, *Britannia Overruled*; Dumbrell, *A Special Relationship*; W.R. Louis and H. Bull (eds.), *The 'Special Relationship' Anglo-American Relations since 1945*, (Oxford, 1986).

⁴⁷ L. Arnold, *Britain and the H-Bomb*, (London, 2001); L. Arnold and M. Smith, *Britain, Australia and the Bomb*, (London, 2006); I. Clark, *Nuclear Diplomacy and the Special Relationship: Britain's Deterrent and America, 1957-1962*, (Oxford, 1994); L. Arnold and M. Gowing, *Independence and Deterrence, Volume 1: Policy Making*, (Basingstoke, 1974); M. Jones, 'Great Britain, the United

(sometimes referred to as the McMahon Act), prevented the sharing of any atomic or related information with other powers (including the UK). British belief that earlier agreements (such as the Hyde Park memorandum) would allow information to be shared was not shared by the Truman government who cut all nuclear ties with the British. Cathcart and Arnold assert that the end of this information sharing led directly to the decision by Attlee's government to construct British nuclear weapons, and this thesis will show that the end of close Anglo-American relations in this regard had longer-term impacts on British choices.⁴⁸ Arnold notes that the sudden end of information sharing made the return of close nuclear relations 'one of the main objectives of successive British governments.'⁴⁹ However, a desire for the re-establishment of relations does not mean that American actions were accepted passively. The decision to cut all ties with the UK led to distrust, and the development of rivalry between the two nations in the development of civil and military nuclear power.⁵⁰

Such rivalry was, to an extent, ended with the signing of various nuclear information sharing and defence agreements between 1954 and 1958, which supported the development of the British nuclear deterrent. Vitally important were the 1954 Wilson-Sandys Agreement, which allowed the sharing of ballistic missile information, and the 1958 Mutual Defence Agreement, which relaxed rules restricting various scientific fields, perceived to relate to the US's nuclear

States, and Consultation over use of the Atomic Bomb', *The Historical Journal*, (54), (2011); S.H. Paul, *Nuclear Rivals: Anglo-American atomic relations, 1941-1952*, (Columbus, 2000).

⁴⁸ L. Arnold, *A Very Special Relationship*, p. 6; B. Cathcart, *Test of Greatness: Britain's Struggle for the Atomic Bomb*, (London, 1994); Paul, *Nuclear Rivals*.

⁴⁹ Arnold, *A Very Special Relationship*, p.8.

⁵⁰ Paul, *Nuclear Rivals*.

programme.⁵¹ As such the British contribution to ELDO, Blue Streak was based (in vital respects) on American technology and licensed designs.⁵² As such British governments had to seek American permission to use and share technology with European partners in ELDO. The choice of whether to proceed with independent projects, or to cancel them (and to buy American launchers) was certainly shaped by perceptions of Anglo-American relations. Choices on space research could have represented a shift towards closer Anglo-American relations which would have reflected closer collaboration in defence procurement in the early 1960's. However, increased collaboration on European concerns limited the extent to which American priorities influenced British decisions.

Modernity and decline

Britain in the 1960's presents us with something of a dichotomy. Governments of both parties engaged in large-scale space research projects in this period; something which was definitely modern, involving the use of new technologies to study a 'new' environment. However, throughout this period a number of commentators suggested that Britain was out of date, and in decline.⁵³ British governments in the post-war period were accused of 'wasting hundreds of millions

⁵¹ I. Clark, *Nuclear Diplomacy*, p. 7; G.J. DeGroot, *The Bomb: A Life*, p. 227.

⁵² J. Baylis, *British Defence Policy in a Changing World*, (London, 1977), p. 80; DeGroot, *The Bomb*, p. 227.

⁵³ W.D. Rubenstein, *Capitalism, Culture, and Decline in Britain, 1750-1990*, (London, 2015); C. Barnett, *The Audit of War: The Illusion and Reality of Britain as a Great Nation*, (London, 1987); C. Barnett, *The Lost Victory: British Dreams, British Realities 1945-1950*, (London, 1995); M. J. Weiner, *English Culture and the Decline of the Industrial Spirit, 1850-1980*, (Cambridge, 2004); S. Haseler, *The Grand Delusion: Britain After Sixty Years of Elizabeth II*, (London, 2012); R. Sidelsky, *Britain Since 1900 – A Success Story?*, (London, 2014); A. Koestler (ed.), *Suicide of A Nation?: An Enquiry into the State of Britain Today*, (London, 1963); A. Sampson, *Anatomy of Britain*, (London, 1962); M. Shanks, *The Stagnant Society: a warning*, (Baltimore, 1961).

of pounds' in an effort to 'keep up with the Joneses', duplicating the work of other major powers independently to maintain Britain's image as a great power, and, in doing so squandering scarce resources on vain, unnecessary projects.⁵⁴ Maintaining too many commitments across the globe, governments were forced into embarrassing cancellations due to a lack of funds.⁵⁵

This dichotomy, in the pursuit of modern science and technology by an out of date nation are reflected in the representation of the Macmillan and Douglas-Home governments. Porter characterises the period 1959-64 by the upper-class, tweed-wearing, and grouse-shooting background of the two Prime Ministers.⁵⁶ Yet this was an image which Macmillan carefully crafted himself. After the instability of the Suez crisis, Macmillan sought to portray himself as an Edwardian gentleman (unflappable, experienced and above all cautious to maintain and improve Britain's standing in the world) and Alec Douglas-Home's image was largely constructed by his lineage as the fourteenth Earl Home of the Hirsel.⁵⁷ Harold Wilson's White Heat speech in 1963 captured the agenda by suggesting that a revolution in the use of science, technology and planning was needed in order to attack the problem.⁵⁸

However, as Kynaston notes, the idea that Britain needed to 'dump the past, get up

⁵⁴ H. Rose and S. Rose, *Science and Society*, (London, 1969), p.77.

⁵⁵ 'Keeping up with the Joneses' was a term often used in Parliament for example, House of Commons Debates, 'Long-Range Ballistic Missile (Blue Streak)', 27 April 1960, Vol 622, col. 278. However, the idea that post-war governments 'over-stretched' British resources in order to maintain a façade of great power capabilities is common in a wide range of sources, such as: A. Adamthwaite, 'The Foreign Office and policy-making', in J.W. Young, (ed.), *The Foreign Policy of Churchill's Peacetime Administration 1951-1955*, (Leicester, 1988); F. Heinlein, *British Government Policy and Decolonisation 1945-1963: Scrutinising the Official Mind*, (London, 2002); May, 'Commonwealth or Europe?'; Peden, *Arms, Economics and British Strategy*; T. Wilkie, *British Science Policy Since 1945*, (Oxford, 1991).

⁵⁶ Porter, 'Downhill all the way'.

⁵⁷ P. Caterall, *The Macmillan Diaries: Volume II*, (Basingstoke, 2011); A. Holt, *The Foreign Policy of the Douglas-Home Government: Britain, the United States and the End of Empire*, (Basingstoke, 2014); A. Horne, *Macmillan, 1957-1986: Volume II of the Official Biography*, (Basingstoke, 1989).

⁵⁸ H. Wilson, *Purpose in Power: Selected Speeches*, (London, 1966), pp. 133-156

to date and embrace a gleaming, functional, progressive future' was not an idea unique to Wilson.⁵⁹

Macmillan and Douglas-Home encouraged new, large scale projects of scientific and technological modernity. Recent analyses of the period identify it as one of technocracy, and increasing governmental involvement and direction of science and technology. Edgerton highlights the work of the Ministries of Supply and Aviation in creating a large number of high-level scientific and technological projects, and tracks the growth of government scientific advice in the age of technocracy.⁶⁰

Mitchell and Sharr and Thornton highlight various aspects of policy under the Conservative governments of 1959-64 that reflect the desire for a 'Conservative modernism'. They argue, successfully, that plans for the drastic changes to Retail Price Maintenance and the demolition of most of Whitehall fit more closely with descriptions of Wilson's 'technocratic' regime, in much the same way as the Post Office Tower, Concorde, and the modernisation of British Rail are identified with the Wilson governments, yet were begun under Macmillan and Douglas Home.⁶¹

Governments of both colours are accused of pursuing projects which were beyond the national capacity. May suggests that this belief in Britain as a great power came from 'a sort of post-imperial hangover, its judgement clouded by memories of its

⁵⁹ D. Kynaston, *Modernity Britain: Opening the Box, 1957-1959*, (London, 2013), p. 46.

⁶⁰ D. Edgerton, 'C.P. Snow as anti-historian of British Science: Revisiting the Technocratic Moment, 1959-1964', *History of Science*, (43), (2005), pp. 187-208; D. Edgerton, *Warfare State: Britain, 1920-1970*, (Cambridge, 2006); Edgerton, 'Whatever happened to the Warfare State?' in H. Mercer, N. Rollings and J.D. Tomlinson, *Labour Governments and Private Industry: The Experience of 1945-51*, (Edinburgh, 1992).

⁶¹ A. Sharr and S. Thornton, *Demolishing Whitehall: Leslie Martin and the Architecture of White Heat*, (Farnham, 2013); S. Mitchell, *The Brief and Turbulent life of Modernising Conservatism*, (Newcastle, 2006).

imperial past...⁶² Britain engaged independently in a large number of high-level (and high-cost) research fields in the post-war era such as nuclear energy, increased commitments to aircraft and jet engine production, and space research. Such independent endeavours are evidence of Britain 'colouring up [its] fading image as a world power of the first rank.'⁶³ Barnett, whose works on British decline received a wide audience, believed that governments focused on 'prestige' projects in aviation in order to keep up appearances 'like a businessman in financial trouble hanging on to his Rolls-Royce.'⁶⁴ He suggests that this focus on projects which were prestigious (but unaffordable) led to 'unrealistic decisions... costly disappointments and disasters...', and ultimately the end of projects (such as the Brabazon aircraft).⁶⁵ Similarly, Wood suggests that the cancellation of the TSR2 (tactical strike reconnaissance aircraft) under the Wilson government highlighted a lack of funds.⁶⁶ The over-commitment of British resources 'set the limits of the politically possible' and naturally led to the embarrassing cancellation of projects after expenditure become too burdensome.⁶⁷ For Barnett, then, Britain was not only a power in decline, but one which – by setting its sights too high – ensured it was unable to meet its own commitments.

⁶² May, "Commonwealth or Europe?", p.82; A. Deighton, *Britain and the First Cold War*, (Basingstoke, 1990); Kaiser, *Using Europe, Abusing the Europeans*, p.3.

⁶³ Morton, *Fire Across the Desert*, p.436.

⁶⁴ Barnett, *The Lost Victory*, p. 235.

⁶⁵ Barnett, *The Lost Victory*, p. 230.

⁶⁶ D. Wood, *Project Cancelled: A searching criticism of the abandonment of Britain's advanced aircraft projects*, (London, 1976).

⁶⁷ Barnett, *The Lost Victory*, p. xiii.

More recent work by authors such as Gamble, Kenny, Tomlinson, Edgerton and Ortolano has sought to redress these negative assessments of post-war Britain.⁶⁸ As Gamble notes, 'Future historians may find it puzzling that so much elite discourse was obsessed with the idea of economic decline at a time when the country was more prosperous than it had ever been.'⁶⁹ Edgerton's detailed critiques focus on science and technology, and argue primarily along economic lines that Britain spent an increasing amount during the cold war on the welfare state, defence and industrial research and development.⁷⁰ Edgerton shows that Britain was doing more things with more money than ever before, providing a detailed assessment of British priorities in scientific and technological research. He asserts that the fact that 'millions [could be] spent on unsuccessful aircraft' is proof enough that funds were not severely limited. For Edgerton, it is enough to show that more money was being spent and prove that more staff were being employed to challenge the idea that Britain was in decline. However, whilst Edgerton criticises histories which focus on the cancellation of projects, his assertions do not explain how a Britain which is 'becoming more powerful rather than declining' is also a Britain in which projects are cancelled.⁷¹ If we accept the work of historians who challenged conceptions of British decline, and showed that governments had more money to spend, then we

⁶⁸ A. Gamble, *Britain in Decline: Economic Policy, Political Strategy, and the British State*, (Basingstoke, 1994); A. Gamble, 'Theories and Explanations of British Decline', in R. English, and M. Kenny, *Rethinking British Decline*, (Basingstoke, 2000); Edgerton, *Warfare State*; D. Edgerton, 'The Decline of Declinism', *The Business History Review*, 71(2), (Summer, 1997); J. Tomlinson, *The Politics of Decline: Understanding Post-war Britain*, (Harlow, 2000); J. Tomlinson, 'Thrice declined: 'Declinism' as a Recurrent Theme in British History in the Long Twentieth Century', *Twentieth Century British History*, 20(2), (2009); G. Ortolano, *The Two Cultures Controversy: Science, Literature and Cultural Politics in Postwar Britain*, (Cambridge, 2009); G.C. Peden. 'Recognising and Responding to Relative Decline: The Case of Post-War Britain', *Diplomacy and Statecraft*, 24 (1), (2013).

⁶⁹ Gamble, 'Theories and Explanations of British Decline', p. 3.

⁷⁰ Edgerton, *Warfare State*; Edgerton, 'The Decline of Declinism',

⁷¹ Edgerton, *Warfare State*, p. 7.

must also accept that when projects were cancelled this was not due to lack of funds and instead must seek an alternative answer. In doing so cancellations can be understood not as an example of failure or decline, but as active choices made in response to changing political, economic and technological contexts.

In his work on Nazi atomic science during the Second World War, Walker makes a similar argument. Although contemporaries such as Goudsmit argued that the project had failed as Nazi scientists had failed to understand fission, Walker shows that political and military decision-makers' attention was instead focused on guided weapons and jet-propulsion projects which could make a more rapid impact on the course of the war. Walker argues that the government made an active choice to redirect the focus of its efforts and, therefore, the funds allocated.⁷² I show that Britain was not a nation in decline, forced to cancel projects because of over-stretched resources. Instead, this thesis follows Walker's example, identifying the options which decision-makers were choosing from and concluding that decision-makers made active choices to redirect research efforts to other fields. While this did include the end of certain avenues of research it did not reduce the amount of research being undertaken and certainly did not reduce the level of expenditure on research and development as a whole. In the case of Black Arrow I show how expenditure was merely diverted from launcher to satellite development. Rather than cancelling a project to save money, additional money was spent on an expanded programme of research elsewhere.

⁷² M. Walker, *Nazi science: Myth, Truth and the German Atomic Bomb*, (London, 1995).

Decision-making theories

In order to understand the active choices being made, this thesis will adapt various theories of decision-making to provide an analytical framework. Bureaucratic politics as a theory was first suggested in detail by Allison in the seminal work *Essence of Decision*. Marking a different path from earlier 'game theory' or 'rational actor' decision-making models, bureaucratic politics offered new ways of examining the ways in which government decisions had been made, focusing on the deliberations and compromises which occur before many government decisions.⁷³ Criticised for its lack of suitability as a 'predictive' tool of future policy and decision making, the theory of bureaucratic politics has nevertheless stimulated wide-ranging debate amongst political scientists.⁷⁴

Allison's work highlighted three 'lenses' through which policy could be viewed, each focusing on different aspects of a complex decision-making system. Firstly, focusing

⁷³ Prior to the publication of *Essence of Decision* 'game theory' or 'rational actor' models dominated decision-making and policy-making theories. Characterising governments as actors, and assuming a level of rational behaviour, these models were developed primarily to predict future policy in crisis situations (being applied to historical events to prove their accuracy). Resulting 'decision trees' where choices are shown as stark yes/no decisions leading to set outcomes are the major focus of these models, and were popular in the early Cold War amongst historians and political scientists alike. See: G.T. Allison, *Essence of Decision: Explaining the Cuban missile crisis*, (New York, 1971); J. Garry Clifford, 'Bureaucratic Politics', *The Journal of American History*, 77(1), (1990); G.T. Allison and M.H. Halperin, 'Bureaucratic Politics: A Paradigm and Some Policy Implications', *World Politics*, 24 (Spring 1972); J. Bendor, T.M. Moe, 'An Adaptive model of bureaucratic politics', *The American Political Science Review*, 79(3), (September, 1985); M. H. Halperin, *Bureaucratic Politics and Foreign Policy* (Washington, DC., 1974).

⁷⁴ E.J. Christensen, and S.B. Redd, 'Bureaucrats versus the Ballot Box in Foreign Policy Decision-Making: An experimental analysis of the Bureaucratic Politics model and the poliheuristic theory', *The Journal of Conflict Resolution*, 48(1), (February, 2004); S.D. Krasner, 'Are Bureaucracies Important? (OR Allison Wonderland)', *Foreign Policy*, 7, (Summer 1972); L. Freedman, 'Logic, Politics, and foreign Policy Processes: A critique of the bureaucratic politics model', *International Affairs*, 52 (3), (July, 1976); R.J. Art, 'Bureaucratic Politics and American Foreign policy: A critique', *Policy Sciences*, 4(4), (December, 1973); D.A. Welch, 'The Organizational Process and Bureaucratic Politics Paradigms: Retrospect and Prospect', *International Security*, 17(2), (Autumn, 1992); B. Jenkins and A. Gray, 'Bureaucratic Politics and Power: Developments in the study of bureaucracy', *Political Studies*, 31 (2), (1983).

on the 'rational actor' model, Allison highlighted weaknesses in the theoretical assumption that individuals in a crisis situation were able to pick a series of goals, and successfully identify, and enact the policy which had the 'highest pay off'.⁷⁵ The second lens, of 'Organisational Process', highlighted the limitations placed on governments to act freely due to the standard operating procedures of military and civil service bureaucracies. Allison shows that throughout the Cuban Missile crisis, the President and his advisors focused in on a choice between a blockade of Cuba and an air strike, yet partly chose a blockade because a plan for one already existed, and could be executed quickly.⁷⁶ The third lens, initially titled 'Governmental Politics', has been the most developed of the three approaches, and is more widely known as bureaucratic politics

Rosati identifies key themes of the bureaucratic politics approach: that different individuals and organisations within government will have different (and occasionally clashing) aims and objectives, that no singular individual or department fully controls the decision-making process, that the final decision made is a compromise between a group of actors, and that between the final declaration of policy and its implementation there is usually a gap during which changes affecting the implementation can be made.⁷⁷ Bureaucratic politics 'questions the idea of unitary actors having uniquely identifiable goals, the existence of an overriding organizational rationality in government and the necessity of assuming

⁷⁵ Allison, *Essence*, pp. 10-67.

⁷⁶ Allison, *Essence*, pp. 78-96.

⁷⁷ J.A. Rosati, 'Developing a Systematic Decision-Making Framework: Bureaucratic Politics in Perspective', *World Politics*, 33(2), (January, 1981), p. 236-8.

organizational consensus'.⁷⁸ Indeed identifying that decisions can be made by government 'actors' in a state of internal turmoil themselves is an essential feature of the model's attempt to break-down 'monolithic' treatments of government and ensure that accounts focus on the multiplicity of motives, aims and conceptions which affect the 'bargaining' which presages decisions.⁷⁹

Criticisms of this theory tend to focus on the original edition of *Essence of Decision*. The most criticised element of the first edition was the assertion that actors 'stood where they sat' – that a decision-maker's role is the determinant in the decisions they make.⁸⁰ Krasner argues that the picture painted by the first edition spreads responsibility for errors over a much wider area. He suggests that in the American case the chaotic picture painted is, 'misleading because it obscures the power of the President; dangerous because it undermines the assumptions of democratic politics by relieving high officials of responsibility; and compelling because it offers leaders an excuse for their failures.'⁸¹

The second edition, written with Zelikow, relies far less on the idea that decision-makers 'stand where they sit', and has been far less controversial. The publication of the second edition sparked work by authors such as Kaarbo, developing and refining the model. Kaarbo shows the way in which 'minority actors' can become

⁷⁸ Jenkins and Gray, 'Bureaucratic Politics and Power', p. 188.

⁷⁹ K.R. Nossal 'Allison through the (Ottawa) Looking Glass: Bureaucratic Politics and Foreign Policy in a Parliamentary System', *Canadian Journal of Public Administration*, 22, (1979).

⁸⁰ Jenkins and Gray, 'Bureaucratic Politics and Power'; M.K. Cusimano, 'Review', in *Political Psychology*, 21(3), (September, 2000); B.J. Bernstein, 'Understanding Decisionmaking, U.S. Foreign Policy, and the Cuban Missile Crisis. A review essay', in *International Security*, 25(1), (Summer, 2000), A.A. Fursenko and T. Naftali, *'One Hell of a Gamble': Khrushchev, Castro, Kennedy, and the Cuban Missile Crisis 1958-1964*, (London, 1999).

⁸¹ Krasner, 'Are Bureaucracies Important?', p. 160; E. Rhodes, 'Do Bureaucratic Politics Matter? Some Disconfirming Findings from the Case of the US Navy', *World Politics*, 47(2), (1994).

dominant in the policy or decision-making process. As 'minority' actors, individuals and small departments (whether in terms of total staff, budget, or even representation on important committees) can take a surprisingly dominant role. As Kaarbo convincingly asserts, 'different players can present themselves as experts on different positions. If the issue under consideration lies in the jurisdiction of a minority actor, it can legitimate its arguments by asserting its expertise on the matter.'⁸² For example, briefs presented to Ministers from their department can 'carry more weight' in ministerial deliberations (as long as that department is seen to be the 'expert'). The theory of bureaucratic politics provides an outline for assessing how civil servants and other 'minority actors' have had an impact on policy formulation. One of the key issues with much literature on bureaucratic politics is its focus on the American system, and a focus on the role of Presidents.

Although little work on bureaucratic politics has focused on studies of British policy, Jenkins and Gray highlight that bureaucratic politics is well-suited to studying British government and that through its use 'one may obtain a better account of, for example, the problems of administrative reform and of the development of policy in particular areas.'⁸³ Work by Barber, Holt, and Wallace, highlights the importance of including civil servants in their adaptations of bureaucratic political models for the British system; something which Barber terms the 'departmental negotiated order perspective'.⁸⁴ Barber's work emphasises the important role of civil servants in

⁸² J. Kaarbo, 'Power Politics in Foreign Policy: The Influence of Bureaucratic Minorities', *European Journal of International Relations*, 4(67), (1998), p. 84.

⁸³ Jenkins and Gray, 'Bureaucratic Politics and Power', p. 190.

⁸⁴ J. Barber, *Who makes British Foreign Policy*, (Milton Keynes, 1976), pp. 34-5; A. Holt, 'No more Hoares to Paris': British foreign policymaking and the Abyssinian Crisis, 1935', *Review of*

framing and shaping decisions by deciding the information which is presented to Ministers (and the context in which it is presented). Holt notes that this interpretation shows that an official can 'impose his view on a department... with some officials carrying more weight than Ministers.'⁸⁵ This suggestion is something which has been accounted for in work on American decision-making systems, but not something which is a regular feature of works focusing on the UK.

Although bureaucratic politics provides a way of looking at decision-making in the British government its model of a series of set-piece conflicts, which are then resolved through compromise between parties is rather static. This creates a 'stop-go' system in which decisions can only be made when meetings occur and compromise is reached. However, in the British system at least, decisions do not always need consensus. In order to capture the fluid and ad-hoc way in which policy was made throughout this period it has been necessary to draw on other approaches from the field of science and technology studies.

In his discussion of the uses of the Social Construction of Technology (SCOT) Flank highlights that the major difficulty in utilising bureaucratic politics to discuss science and technology is that it views them as 'exogenous and unproblematic' in the decision-making process.⁸⁶ As we will see science and technology are not either of those things as far as the decision-making process is concerned. It is important to

International Studies, 37(3), (July 2011); W. Wallace, *The Foreign Policy Process in Britain*, (London, 1977).

⁸⁵ Holt, 'No more Hoares to Paris', p. 1389.

⁸⁶ S. Flank, 'Exploding the Black Box: The Historic Sociology of Nuclear Proliferation', *Security Studies*, 1(3), (1993), pp. 259-294; W.E. Bijker, T. P. Hughes, and T.J. Pinch, *The Social Construction of Technological systems: New directions in the sociology and history of technology*, (Cambridge, Massachusetts, 1987); W.E. Bijker and J. Law, *Shaping Technology/Building Society: Studies in sociotechnical change*, (Cambridge, Massachusetts, 1992).

note that bureaucratic politics and Actor Network Theory (ANT) espouse similar aims – of understanding the actors, alliances, and networks involved in decision-making processes – even if they differ in their assessment of the importance of science, technology and individual actors in the policy making process. Flank encourages historians to orient their analysis around a set of ‘guideposts’, particularly:

Avoid money or other resources as an explanation. Instead, look for why or why not a system has access to those resources. The analyst should translate any claim that a technology would have succeeded but “the money dried up” into an admission that the technology lacks the support of some crucial constituency.

Avoid truth or reality as an explanation. Instead, look for why actors are willing to accept something as the truth.⁸⁷

If we are to address the contradiction between cancellation and anti-declivist approaches we must, as Flank suggests look for why ‘the money dried up’ and find out if it went elsewhere. Much as Walker notes for the Nazi atomic programme, funds may in fact have been diverted elsewhere, and in this thesis I seek to identify how funds are reallocated, rather than assuming they are returned to the Treasury. By focusing on how decisions are made, who makes them, and the priorities behind them I seek to address Flank’s guideposts. As we will see throughout, differing alliances of individuals guided the decisions made about British space policy based on information shaped and framed by actors with vested interests aimed at ensuring continued access to monetary (or manpower) resources.

⁸⁷ Flank, ‘Exploding the Black Box’, pp. 266-9.

In much the same way as in bureaucratic politics, actors in ANT rely on their expertise to gain credibility in the bargaining process in which decisions are made.⁸⁸

In his work on ANT Latour argues that the development of sciences and technologies are shaped by networks of actors who form alliances to try and ensure the success of their aims.⁸⁹ Latour urges us to ‘follow the actors’ as they debate the future progress of technological or scientific systems and to treat social, political and other events as part of a ‘seamless’ web which surrounds the decisions made.⁹⁰ Following this changing network of actors – each with their own motives, ability to direct policy, knowledge and expertise – will provide us with a way to assess a dynamic rather than static decision-making process.

Work by Law on the TSR2 aircraft project and Mort on the development of Chevaline and Trident missiles, focuses on the application of this theory in practice.⁹¹ For Mort and Law, the identification of key actors provides opportunities to understand the constant formation and failure of alliances of key officials, Ministers (and in Mort’s case unions) which led to particular decisions being taken. Mort shows, that through the employment of staff in a complex supply chain, technologies ‘enrol’ supporters as the project progresses, providing yet more members of an alliance in a project’s favour. By tracking the complex way in which the existence of the Trident project in turn supports a complex network of

⁸⁸ B. Latour, *Reassembling the Social: An Introduction to Actor-Network Theory*, (Oxford, 2005).

⁸⁹ Latour, *Reassembling the Social*, p 62; B. Latour, *Science in Action: how to follow scientists and engineers through society*, (Milton Keynes, 1987).

⁹⁰ Latour, *Reassembling the Social*, p. 12; Latour, *Science in Action*, p. 223.

⁹¹ J. Law, *Aircraft Stories: decentering the object in technoscience*, (Durham, North Carolina, 2002); M. Mort, *Building the Trident Network: A study of the enrolment of people, knowledge and machines*, (Cambridge, Massachusetts, 2002).

companies, government departments and local economies, Mort highlights clearly the way in which a technology can affect the decision-making process.

While Mort highlights the support which can be gained, Law's work shows how actors' support for technologies can decline, and the rapidity with which alliance members can change their minds. As both Mort and Latour note, this is a co-dependent relationship: enrolled actors are dependent (to varying degrees) on the maintenance of the technology, yet the technology is also dependent on the support of the enrolled actors for its continued maintenance. The conflict which declining support creates can be fatal. As Latour finds in his work on the Aramis light rail project, technologies can survive only as long as there is a significant network of actors willing to defend them.⁹²

Combining the approaches of bureaucratic politics, SCOT and ANT provides us with a more dynamic and flexible model of decision-making, which allows for decisions made with and without consensus by a variety of actors with a variety of motives. By combining this analysis with the framework suggested by Allison and others, this synthetic approach focuses attention on the network (or coalition) of actors which direct policy, and highlights the role played by civil servants in the direction of policy.

⁹² B. Latour (translated by C. Porter), *Aramis: or the love of technology*, (Cambridge, 1996).

Understanding distributed decision-making

Contrary to the various models of decision-making discussed above (bureaucratic politics and departmental-negotiating order), I offer no set model of policy-making in this thesis. Instead I suggest that policy-making is a much more diverse practice than any particular model captures. Although decisions are often made step-by-step, reaching agreement at official, Ministerial and Cabinet level is not always the case and agreed practices are regularly broken or subverted. I argue that although actors believed that a neat policy-making process existed and should be followed, the reality of many decisions lay outside such processes. Actors at all levels saw the policy making process as orderly with decisions made within (or between) departments at an official level before being passed to Ministers for approval, and frequently complained that such a process was not being followed. In the cases examined, however, there was no set path for decisions in a system of distributed decision-making at the official, Ministerial and Prime Ministerial level.

Histories of policy-making in the UK tend to focus on the role of the Cabinet and Prime Minister in the decision-making process. As Young notes, the focus of these histories is on 'policy co-ordination across relevant ministries... through a pyramid of committees, with the Cabinet at the tip, under which are ministerial committees, committees of officials, and various sub committees and working groups...'⁹³ With the Prime Minister and the Cabinet placed 'at the tip', it is common for historians

⁹³ Young, *Labour Governments*, p. 16.

and commentators to focus on the role of Prime Ministers and Ministers, and to imply that decisions taken were the outcome of politicians' actions or instructions.⁹⁴

However, as Dorey notes, the constitutional model of British government – where the Cabinet acts 'as a forum for systematic decision taking and detailed discussions concerning government policies is no longer accurate...'⁹⁵ The increased complexity of the British state in the post-war period has meant that the 'task of the Cabinet on most occasions' has slowly become 'to coordinate views, to approve decisions already made, and to authorise action to be taken...'⁹⁶ Neither Dorey or Bishop suggest when this transformation occurred. Throughout I highlight the changing role of Cabinet in providing advice and leadership in decision-making. However, even where decisions were made in Cabinet we must recognise that the positions taken by Ministers were not necessarily their own, and were influenced by a complex and lengthy bargaining process which often began long before Ministerial debates. I argue that as the role of the Cabinet became less important in the formulation of policy, we must look elsewhere to discover the priorities involved in policy-making.

If we accept that the 'set piece' battles of Cabinet are less important, then the modification of bureaucratic politics to include the dynamism of ANT and its exhortation to follow the actors becomes more important. While bureaucratic politics provides a methodology to tackle the set piece battles of Cabinet meetings,

⁹⁴ Young, *Labour Governments*; Parr, *Wilson and Britain's World Role*; May, 'Macmillan's Dilemma'; Deighton, 'British Foreign Policy-Making: the Macmillan Years'; Holmes, *Failure of the Heath Government*.

⁹⁵ P. Dorey, *Policy Making in Britain*, (London, 2014), p. 117.

⁹⁶ D.G. Bishop, 'The Cabinet and Foreign Policy', in R. Boardman, A.J.R. Groom (eds.), *The Management of Britain's External Relations*, (London, 1973), p. 157.

ANT's view of alliances offers an approach which encompasses the formation of alliances and conflicts which take place over longer periods, and include a wide range of actors, including technologies. The complex interplay between official, Ministerial and Prime Ministerial bargaining which directs policy-making is played out at all levels with conflicts between (and within) groupings of officials, Ministers and Prime Ministers shaping the decisions taken.

I show that decisions can be made by officials, Ministers and Prime Ministers with, and importantly, without recourse to their colleagues. As such, throughout this thesis I follow the path of decision-making highlighting the successful and unsuccessful interventions made by various actors seeking to shape and direct policy. In order to do this actors shaped debates through the provision of information, and recommendations, and relied upon alliances (vocal and tacit) in order to ensure the success of their chosen course of action. The alliances formed, particularly at an official and Ministerial level, sought to ensure that their advice on policy was accepted with little debate. As such an examination of the way in which advice was constructed and communicated is vital if we are to explain the priorities which shaped decisions as Ministers became ever more reliant on the advice of their officials.

In this distributed system of decision-making alliances formed between officials, Ministers and Prime Ministers to defend or advance policy options. I suggest that contrary to the arguments of ANT, these alliances are more often passive and tacit, rather than vocal or enrolling. Particularly at an official level, alliances are sought between those who have similar aims or remits based on assumptions that other

officials will 'stand where they sit'. These alliances often seek the maintenance of a certain policy path (for example improved Anglo-European relations), and only act in unison when that policy is challenged by others at any level. At the Ministerial and Prime Ministerial level, alliances are much less predetermined by a Minister's departmental position. As will be discussed below, Ministerial and Prime Ministerial interests are complex and more unpredictable making alliances fleeting and focused on how alliances benefit other Ministers' interests.

These interests are varied and diverse and differ greatly between Ministers and Prime Ministers and officials. Ministers and Prime Ministers have the ability to initiate policies personally. For Prime Ministers, close attention is paid to the political interests at stake in any potential decision. Some Prime Ministers are more concerned than others with particular issues and intervene to direct policies which they believe will meet manifesto commitments, ensure party stability, or simply gain favourable (or avoid negative) press comment.⁹⁷

Ministers, who have a broad focus on the political fortunes of their party, also aim to preserve or expand the remit of their department to increase their ability to pursue policy. Personal enthusiasm for certain policy opportunities can affect Ministers decision-making and shape their policy-making priorities in government. As I show, the two projects under examination in this thesis, ELDO and Black Arrow were begun because of the individual efforts and enthusiasm of Ministers who wished to see those projects initiated for personal and political reasons. Through

⁹⁷ For example, it has long been suggested that Harold Wilson was less concerned with British entry to the European Communities than Edward Heath: Gowland and Turner, *Reluctant Europeans*, p. 168; Lord, *British Entry to the European Community*; Young, 'Britain and the EEC', p.110.

Ministerial instructions politicians can direct officials to initiate policy and such instructions are a large part of the inflexible constitutional relationship between Ministers and officials.⁹⁸ Although Ministerial enthusiasm is important in instigating policy, it is not the only factor in initiating policy, and I suggest that close relations between Ministerial and officials' interests are vital.

Officials' interests are focused on the maintenance of their departmental remit, expertise, and (perhaps most importantly) the protection or expansion of the departmental budget.⁹⁹ Indeed, officials recommend new policy choices, or defend choices made by previous governments, based on policies which they believe will suit the departmental interest. When these departmental interests and Ministerial interests align, officials can provide Ministers with suitable arguments to ensure the success of policy aims, and can (as Kaufman notes) 'find ways not only round substantive difficulties but also procedural problems.'¹⁰⁰ In his book *How to be a Minister*, Kaufman describes this as 'steering', and suggests that 'Some officials will just suggest one course of action, for you to take or leave. Others, more cunning, will attempt to confuse you with a choice, while carefully steering you in the direction they want you to go.'¹⁰¹ In such a role there is scope for individual officials to direct policy through the steering of their Ministers (and thence the Cabinet) to accept one option over another.

The main advantage which allows civil servants such control of policy options is through their role in gathering and presenting information, and also through the

⁹⁸ M.J. Smith, D. Marsh and D. Richards, 'Central Government Departments and the Policy Process', *Public Administration*, 71(4), (Winter, 1993), pp.582-3.

⁹⁹ Smith et al, 'Central Government Departments', p.573.

¹⁰⁰ G. Kaufman, *How to be a Minister*, (London, 1997), p. 33.

¹⁰¹ Kaufman, *How to be a Minister*, p. 30.

permanence of their position. Unlike Ministers who can be re-shuffled regularly and replaced by changes of government, officials often occupy particular positions for many years. Also, under the conventions governing Whitehall, new governments were generally not allowed access to the deliberations of the old, further limiting Ministerial information and increasing their reliance on officials.¹⁰² The asymmetry between official and Ministerial access to information, time and outside expert advice has led to the development of conspiracist theories of an enduring civil service which uses 'resources and informal networks to thwart Ministers.'¹⁰³ I suggest that although the continuity of officials across governments does sustain an asymmetric relationship, this does not mean that Ministers and officials were constantly at odds with each other.

I argue that it is intra- (and inter-) departmental conflict at an official level which shapes the options available to Ministers. Attempts by officials to follow Ministerial instructions, or pursue their departmental interests involve the development and testing of various arguments for or against policies in intra or inter-departmental committees which pass recommendations to Ministers. More often than not, Ministers pursue the direction their officials recommend; however, just as at the official level, this ferments conflict between Ministers who also seek to preserve their departmental remit. These conflicts at the Ministerial level are often resolved in Cabinet. As with Ministerial instructions, Cabinet instructions are relatively

¹⁰² Theakston, 'Richard Crossman', p.124.

¹⁰³ Smith et al. 'Central Government Departments', pp.582-3. For discussion of the 'conspiracist' view of civil service advice see notably: B. Sedgemoore, *The Secret Constitution*, (London, 1980); For the 'elitist' view': H. Hecló and A.B. Wildavsky, *The Private Government of Public Money: Community and policy inside British Politics*, (London, 1974); P. Hennesey, *Whitehall*, (London, 1989); P. Kellner and Lord Crowther Hunt, *The Civil Servants*, (London, 1980). For the 'bureaucratic' view: A. Gray and W.I. Jenkins, *Administrative Politics in British Government*, (Brighton, 1985).

inflexible, however they can be creatively misinterpreted by officials and Ministers seeking to influence or shape policy in their own interests (something which is demonstrated in Chapters 1 and 4).

Policy is thus arrived at through a complex series of negotiations begun at the official level with interventions from Ministers, the Cabinet and Prime Ministers, in a complex and context dependent manner which no model fully describes. As such policy-making is distributed between all levels of government with contributions from officials, Ministers and Prime Ministers. Only by following key actors, and ascertaining the motives and interests at play in their attempts to direct policy can we understand the priorities involved in policy-making.

Primary Sources

Although this thesis draws on a wide variety of secondary literature, a large amount of archival work has underpinned its analysis. As space policy in the UK was directed by government, the majority of information is held at The National Archives (TNA) at Kew in London. Although the majority of archival work focused on the records of the Cabinet (CAB), Prime Ministers' records (PREM), Ministry of Aviation and its successors (AVIA) and Foreign Office (FO and FCO), collections from the Department of Scientific and Industrial Research (DSIR), Treasury (T), and Air Ministry (AIR) have provided valuable additional material.

The use of TNA sources allowed for the plotting of the complex history of those directing Black Arrow and ELDO in the period. Between 1960 and 1973 eight

Ministers had direct responsibility for ELDO and Black Arrow spread across three departments. The departments stemmed from the Ministry of Supply and represented various attempts to alter the way in which government research was conducted throughout the cold war, and space research was shifted from the Ministry of Aviation (MoA), to the Ministry of Technology (MinTech) and finally to the Department of Trade and Industry (DTI). Meanwhile, the much larger number of Ministers represented their often short tenure: Peter Thorneycroft, Julian Amery, Roy Jenkins, and Fred Mulley, as Ministers of Aviation; Tony Benn and Geoffrey Rippon as Ministers of Technology; and Frederick Corfield and Michael Heseltine as Ministers of Aviation Supply, and Aerospace and Shipping respectively.

The National Archives of Australia were also key in providing an alternative view on British policy in the period. Although Anglo-Australian relations were of declining importance, the fact that both projects were tested in Australian-built facilities and over Australian land and sea, made the Australian view of increasing interest as research on this thesis began. However, the spread of archives across Australia (in most major cities, but notably Sydney, Canberra, Melbourne and Adelaide) meant that the small research trip which was feasible focused on the records of the Prime Ministers' Department and Department of Foreign Affairs and Trade, held in Canberra. Australian opinions of British policy have been used notably in Chapters 1 and 3 to highlight rare instances of disagreement and conflict between the two nations, highlighting Australia's changing position in British foreign affairs.

Thesis outline

As British policy on Black Arrow and ELDO was developed throughout 1960-1973 it spanned five administrations. In order to reflect trends in the assessments of secondary literature and to highlight the role of civil servants providing continuity in advice (and outcomes) across governments, this thesis assesses the five administrations across four chapters. Doing so allows for the comparison of approaches to foreign, domestic and space policy for each government concerned. By assessing the policies of each administration this I will show who made decisions, how these were made, the alliances constructed to shape them, and the priorities which influenced them. This approach highlights the ability of individuals to influence the policy-making process, identifying the shifting balance of priorities in formulating British space policy.

In Chapter 1, I will challenge suggestions from historians such as Hutchinson, Porter, Young and Tomlinson that the Conservative governments of Harold Macmillan and Alec Douglas-Home were outdated and Edwardian.¹⁰⁴ Young suggests that ELDO was established as a 'prestige' project, and that governments had committed the UK to 'decades of overstretch'.¹⁰⁵ However, in this chapter I highlight the conflicting views of what was prestigious and how governments might seek to attain prestige. I suggest that the motivation for many officials was not in attaining prestige through

¹⁰⁴ G. Hutchinson, *The Last Edwardian at Number 10: an impression of Harold Macmillan*, (London, 1980); Porter, 'Downhill all the way'; Young, *Labour Governments*; S. Fielding, *The Labour Governments 1964-70: Volume 1: Labour and cultural change*, (Manchester, 2003); J. Tomlinson, *The Labour Governments 1964-70: Volume 3: Economic Policy*, (Manchester, 2003).

¹⁰⁵ Young, *Labour Governments*, p. 225.

projects pursued to keep up appearances in the face of British decline.¹⁰⁶ Instead, I highlight the role of caution and contingency as key priorities at an official level fuelled by American unreliability in the immediate post-war period. Focussing on the role of Ministers appointed in both governments (Peter Thorneycroft and Julian Amery), I show the importance of Ministerial agency in instigating policies without reference to Cabinet. ELDO's rapid development and loose organisation affected its ability to function successfully (discussed in Chapter 2), and the way in which Black Arrow was down-scaled to meet the demands of various Chancellors of the Exchequer affected its economic viability (discussed in Chapters 2 and 3). In doing so I highlight how officials can shape policy-making through the presentation of information, and the importance of Ministers in taking an initiating role. In the establishment of both ELDO and Black Arrow problems were created which would affect their future viability.

In Chapter 2 an examination of the first Wilson government's approaches to policy on ELDO and Black Arrow provides us with an example of the difference between Ministerial and civil service influence on policy-making. Wilson's 'White Heat' speech has affected assessments of his governments, with authors such Wrigley finding it hard to 'disentangle style and substance'.¹⁰⁷ More recent assessments of his policy by Young and Hickson and Crines suggest that Wilson's approach was more carefully thought out, and highlight his interventionist style of policy-

¹⁰⁶ Barnett, *The Lost Victory*, p. 235.

¹⁰⁷ Wrigley, 'Now you see it, now you don't', p.123; Theakston, *Volumes of Influence*; K. Hickson and A. Crines, *Harold Wilson: The Unprincipled Prime Minister?*, (London, 2016).

making.¹⁰⁸ As I show, it was Wilson's belief (before entering government) that ELDO was wasteful which led him to push for British withdrawal from the project. In the case of Black Arrow, however, attempts to establish tools for decision-making based on economics allowed civil servants to test and develop arguments which framed and delayed Ministerial debate on Black Arrow. The renaming of the Black Arrow programme by a key individual shows the importance of civil service advice in the making of decisions. The way in which decision-making on Black Arrow was distributed between Ministers and civil servants contrasts sharply with the way in which decisions on ELDO were taken rapidly by Ministers with little reference to officials. In determining the way in which decision-making power was distributed between civil servants and Ministers, this chapter highlights the role of civil servants in providing Ministers with the knowledge to make decisions, and their ability to shape and direct policy-making.

In Chapter 3, I highlight the increasing importance of economics in the decision-making process as the effects of the devaluation of sterling in 1967 took hold. The changing structure of government (with the merger of the Ministries of Aviation and Technology and the creation of the Department of Economic Affairs) shaped the way in which decisions were made, by increasing the number of actors who had to be consulted (and persuaded) in order to make decisions. Yet further economic analysis of Black Arrow prompted officials to expand their economic expertise in order to counter attacks on the project. Meanwhile, Benn's attempts to formulate a technological foreign policy under his own control prompted a battle between Benn

¹⁰⁸ Hickson and Crines, *Harold Wilson*; Young, *Labour Governments*, Fielding, *Labour and cultural change*; Tomlinson, *Economic Policy*; Sharr and Thornton, *Demolishing Whitehall*.

and Foreign Secretary Michael Stewart for primacy in the decision-making process. By understanding who made decisions, and how they were made, this chapter highlights attempts to utilise economics as a rational tool for decision-making, and impose this on existing European collaborations.

In assessing Heath's campaign to undertake a 'quiet revolution' of the conduct of government, Chapter 4 highlights the extent to which the continuity of officials (and their advice) shaped and directed the policy of government.¹⁰⁹ Although Heath was determined to ensure that his government was as unlike Wilson's as possible, I show that it is difficult to distinguish a new approach under Heath as he sought to tackle policy on ELDO and the prioritisation of scientific and technological research. Economic appraisal of Black Arrow was continued, and policy towards ELDO was at key times in conflict with Heath's aims to enter the European Communities. As British membership of ELDO was terminated, and the Black Arrow programme was cancelled I will focus on the process of cancellation and withdrawal to understand who shaped decisions. In the case of ELDO, as from its very beginnings, the Minister Michael Heseltine was key in shaping the British decision to withdraw; whereas, in the case of Black Arrow civil servants continued to personally influence and direct Ministers to a choice which was to some extent pre-arranged. The replacement of ELDO with ESA, and Black Arrow with an increased commitment to satellite research represented active choices to change the nature of UK space research.

¹⁰⁹ J. Bruce-Gardyne, *Whatever happened to the Quiet Revolution?: The story of a brave experiment in government*, (London, 1974); M. Laing, *Edward Heath, Prime Minister*, (London, 1972); Holmes, *Failure of the Heath Government*; S. Ball and A. Seldon (eds.), *The Heath Government 1970-1974: A reappraisal*, (London, 1996).

By examining the history of decision-making on Black Arrow and ELDO this thesis allows us to identify key actors in all levels of government. The examination of their ability to influence the ways in which policies were made highlights that no policy followed a set path between initiation and implementation. By assessing the priorities of decision-makers and the alliances and bargaining shaping policies, this allows us to reflect not only on the priorities shaping space policy, but the priorities of governments in foreign, domestic and economic policy. Through this approach this thesis allows cancellations to be recast, not as endings – symbols of British decline – but as active choices made by individuals at all levels of government.

Chapter 1: Ministerial influence, national prestige and the formation of ELDO and Black Arrow 1959-64.

1.1: Introduction

Between 1959 and 1964 perceptions of Britain's world role changed drastically. The decision to cancel Britain's nominally independent nuclear delivery system (Blue Streak) and instead deploy the American Skybolt, taken in 1960, coupled with the announcement of Britain's application to join the European Communities in 1961, contributed to these shifting perceptions. By choosing an American weapons system over an independent project, Macmillan was highlighting his policy of interdependence. However, for critics of the government, the cancellation seemed to admit that Britain could no longer afford to 'keep up with the Joneses' in the cold war arms race. The application to the European Communities too seemed to indicate a shift from a global to European role.

Although there had been plans for a UK satellite launcher as early as 1957, it was not until the cancellation of Blue Streak as a weapons project that the idea of converting it for use as a satellite launcher was seriously considered. The cancellation of the project threatened great embarrassment for the Macmillan government. In this chapter I show how in attempting to limit political embarrassment over the cancellation of the Blue Streak project (and its sister project Black Knight) the Macmillan government were led by civil servants and committed Ministers into engaging in a large scale European collaboration based on Blue Streak (known as ELDO) and an independent satellite launcher, Black Arrow (based on Black Knight). In identifying who made these decisions, I show how

Ministers and civil servants acting in consort can decide on and execute a policy without consent of Cabinet.

This chapter will examine why policy-makers decided upon commitments to large scale space research using the language of independence, interdependence and prestige to make their case. In doing so I will discuss the differing conceptions of 'prestige' used by actors, challenging Barnett's view that prestige projects were beyond British means and undertaken to give the impression that Britain could 'keep up with the Joneses'.¹ Instead, an examination of the decision to maintain Blue Streak research in the UK suggests that far from undertaking independent projects as an exercise in 'imperial delusion' decision-makers were attempting to create an insurance policy of technological knowledge in case a partner withdrew from a collaboration.

I will first examine the way in which ELDO was established before turning to examine the creation of Black Arrow. Krige and Ludwig suggested that Macmillan's prime aim in the foundation of ELDO was to ensure British entry to the European Communities by proving that Britain was a 'good European', willing to share its technological advances for the benefit of its European neighbours.² However, the creation of the independent Black Arrow programme just two years later challenges this idea. This chapter will identify the extent to which the decision to engage with European nations through the application to the European Communities and formation of ELDO represented a significant change in British foreign relations. In

¹ Barnett, *The Lost Victory*, p. 235.

² J. Krige, 'The Launch of ELDO', in Krige and Russo (eds.), *History of the European Space Agency: Volume 1*, p.91; Ludwig, 'The origins of European space policy', in K. Rüker and L. Warlouzet (eds.), *Quelle(s)Europe(s)? Nouvelles approches en histoire de l'intégration Européenne/Which Europe(s)? New approaches in European integration history*, (Brussels, 2006), p. 316.

understanding decision-making on Black Arrow, this chapter will highlight the important role of civil servants in assisting Ministers in their initiation of policy – even without Cabinet consent.

1.2: Choosing from three options

In April 1960, the decision in to cancel the Intermediate Range Ballistic Missile Blue Streak, which was meant to deliver the British independent nuclear deterrent was controversial. Arguments in Parliament and the press suggested that the end of an independent British deterrent was the ultimate display of Britain's declining position.³ For some historians the choice was nothing more than British acceptance that maintaining their position in the cold war arms race was beyond its means.⁴ For others, the choice of an American system was an indication of Macmillan's policy of interdependence, working closely with European and American allies to ensure a credible nuclear deterrent across the West as a whole.⁵ Whatever decision was made, the complexity of the project called for careful handling and careful public presentation.

³ I. Clark, *Nuclear Diplomacy and the Special Relationship: Britain's Deterrent and America, 1957-1962*, (Oxford, 1994); House of Commons Debates, '(Blue Streak)', Volume 621, Columns 1265-1271, 13th April, 1960; D. French, 'Duncan Sandys and the Projection of British Power after Suez', *Diplomacy and Statecraft*, 24 (1), (March, 2013).

⁴ J. Melissen, *The Struggle for Nuclear Partnership: Britain, the United States and the Making of an Ambiguous Alliance, 1952-1959*, (Groningen, 1993), p. 20; G.J. DeGroot, *The Bomb: A Life*, (Cambridge, 2004), p. 227; C.A. Pagedas, 'The Afterlife of Blue Streak: Britain's American Answer to Europe', *Journal of Strategic Studies*, 18(2), (1995); Clark, *Nuclear Diplomacy and the Special Relationship*.

⁵ N.J. Ashton, *Kennedy, Macmillan and the Cold War: The irony of interdependence*, (Basingstoke, 2002), p. 153; Clark, *Nuclear Diplomacy and the Special Relationship*; R. Moore, 'Bad Strategy and Bomber Dreams: A New View of the Blue Streak Cancellation', *Contemporary British History*, 27 (2), (June, 2013).

Initial proposals for independent space research were based on the utilisation of Blue Streak (in much the same way that the United States utilised various military rockets for their space programme).⁶ However, the decision to pursue ‘interdependence’ and purchase American Skybolt missiles meant the cancellation of the Blue Streak programme and the end of serious discussion of the proposals. As I shall show in this section, the cancellation of Blue Streak did not mean an end to large scale rocket research and development in the UK.

When the decision to cancel Blue Streak as a military weapon was agreed to in the Cabinet Defence Committee on 24 February 1960, the Prime Minister noted that the £60 million already spent on the project meant that ‘we must try to get what advantages we can from the expenditure already incurred...’⁷ Before announcing the decision to Parliament Macmillan set up the Missile Conversion Committee (MCC) to examine options which would:

- (i) get some value for constructions already nearing completion, e.g. in connection with a United Kingdom programme of research in outer space;
- (ii) minimise industrial dislocation;
- (iii) avoid loss of confidence in Australia and secure continuing Australian contribution to the Woomera range [LRWE];

⁶ N.E. Whyte, *United Kingdom Space Policy 1955-1960*, (Unpublished PhD Thesis, University of London Birbeck, 1996); S.R. Twigge, *The development of guided weapons in the United Kingdom*, (Reading, 1993); N. Whyte, and P. Gummatt, ‘The Military and early United Kingdom Space Policy’, *Contemporary Record*, 8(2), 1994; N. Whyte, and P. Gummatt, ‘Far Beyond the Bounds of Science: The Making of the UK’s First Space Policy’, *Minerva*, 35(2), 1997; T. Brown, ‘The American and Soviet Cold War Space Programs’, *Comparative Strategy*, 30(2), (2011), pp. 177-185; Pagedas, ‘The Afterlife of Blue Streak’; J. Krige, A. Long, A. Maharaj, A.L. Callahan, *NASA in the world: Fifty years of International Collaboration in Space*, (Basingstoke, 2013).

⁷ CAB 131/23, CDC D(60), 1st Meeting, 24 February 1960, CAB 21/3466, D.(60)2, Cabinet Defence Committee, ‘Deterrent Policy: Memorandum by the Prime Minister’, 24 February 1960.

- (iv) preserve and develop our relevant scientific and technological skills;
- (v) give us the opportunity to play a leading part in any N.A.T.O. development of missiles in Europe.⁸

The criteria identified the major ways in which the cancellation of Blue Streak was a difficult political choice in terms of foreign and domestic policy, but also set the scene for its conversion to a satellite launcher. Macmillan's desire to avoid job losses and to get value for time and money already spent stacked the odds heavily in favour of prolonging the Blue Streak programme as a civil scientific project. As we shall see the only way in which the MCC could meet the criteria above was in suggesting the obvious use of the defunct missile for the launching of scientific satellites (something which would require only minimal additional expense and adaptation).

The decision to cancel Blue Streak proved controversial within government as departments fought to protect their budgets, and the armed forces fought to protect their role in delivering the British nuclear deterrent.⁹ Macmillan chose to base the Committee within the Cabinet Office, but placed Chairmanship of it under his former Principal Private Secretary, F.A. Bishop, rather than under the Cabinet Secretary, Norman Brook.¹⁰ Macmillan was personally interested in a quick resolution of the political problems which the cancellation of Blue Streak

⁸ CAB 21/3466, D.(60)2, Cabinet Defence Committee, 'Deterrent Policy: Memorandum by the Prime Minister', 24 February 1960.

⁹ Clark, *Nuclear Diplomacy and the Special Relationship*; Moore, 'Bad Strategy and Bomber Dreams'; Pagedas, 'The Afterlife of Blue Streak'; French, 'Duncan Sandys and the projection of British power'.

¹⁰ Bishop was by this time Deputy Cabinet Secretary, but had spent 3 years as Principal Private Secretary under both Anthony Eden and Harold Macmillan.

represented. Upon accepting the Chairmanship, Bishop had been told that it was vital that the Committee should be both 'rapid' and 'secret', and that, if possible, it should report its findings 'within two or three weeks.'¹¹ Bishop was well aware that in order to come to a speedy resolution, he would need to choose the members of the committee carefully, and would have to 'avoid having a co-Secretary from the Ministry of Aviation, the Office of the Minister for Science or the Treasury [because these] Departments all have a pretty formidable axe to grind...'¹² The meetings of the MCC were initially acrimonious, as officials from the Ministries of Aviation and of the Air, who were angered by the loss of Blue Streak from their budgets attempted to protect the work already done, whilst Treasury officials, led by R.W.B "Otto" Clarke, Permanent Secretary to the Treasury, attempted to ensure that no further money was spent on large-scale rocket development.¹³ The Committee, formed by officials from the Treasury, Commonwealth Relations Office, Office of the Minister for Science, Ministries of Aviation and Defence and Department of Scientific and Industrial Research reflected those departments which had already battled over the cancellation of Blue Streak as a weapon throughout 1955-60.¹⁴ In such an environment, the Committee struggled to agree on the advice they should pass to Ministers as officials fought to defend their departmental interests.

A little over a month later, Macmillan pushed his officials for a recommendation, only to receive an interim report devoid of any recommendation at all. Writing to Macmillan, F.A. Bishop who chaired the MCC as 'neutral' member of the Cabinet

¹¹ CAB 21/3466, F.A. Bishop to R.W.B. Clarke, 'Missile Conversion Committee', 02 March 1960.

¹² CAB 21/3466, J.S. Orme to F.A. Bishop, 'BLUE STREAK Committee', 29 February 1960.

¹³ CAB 134/2227, M.C.(60) 3rd Meeting, Missile Conversion Committee, 14 March 1960.

¹⁴ Clark, *Nuclear Diplomacy and the Special Relationship*; Moore, 'Bad Strategy and Bomber Dreams'.

Office explained that ‘...the potentialities of space research... the extent to which we could depend on the United States... the scope for international collaboration... the value of the project in terms of national prestige – can only be estimated in vaguest terms. Even more than most political problems, it is like trying to do a calculation in imponderables.’¹⁵ Instead of a recommendation, the MCC concluded that there were three possible options which Ministers could choose from: cold-storage, conversion to a satellite launcher or outright cancellation of the programme and all large-scale rocket research in the United Kingdom.¹⁶

The three options had varying attributes which satisfied only some of the criteria Macmillan had set out. By careful framing of the ‘imponderable’ factors involved, the MCC’s report influenced the way in which Ministers approached the debate. Although bureaucratic politics highlights the importance of negotiation and compromise in the formation policy at ministerial level, I show that by deciding the options from which Ministers were able to choose officials could directly influence Ministers’ choices.¹⁷ I will now turn to examine the options presented, highlighting how officials in the MCC used their knowledge of wider policy aims and initiatives to steer Ministers towards one option, whilst discussing three – cold storage, conversion and cancellation.

The option of ‘cold storage’ was the least well regarded amongst all members of the MCC, and this option was suggested and discounted first as they were concerned that Ministers would opt for a space launcher programme if they felt pushed to

¹⁵ CAB 21/3467, F.A. Bishop to H. Macmillan, ‘Blue Streak’, 05 July 1960.

¹⁶ CAB 134/2227, M.C.(60)11, Missile Conversion Committee, ‘Interim Report’, 17 March 1960.

¹⁷ J.A. Rosati, ‘Developing a Systematic Decision-Making Framework: Bureaucratic Politics in Perspective’, *World Politics*, 33(2), (January, 1981).

make a quick decision. Marshall, an Assistant Under-Secretary in the Treasury, quickly stifled the idea highlighting that whilst the proposals would appeal strongly to Ministers, who would be given more time to make a decision. Cold storage would involve extensive costs (to pay for idle staff, and empty project facilities) and was 'financially to get the worst of all possible worlds.'¹⁸ Although prolonging the work of the Blue Streak project teams was certainly an aim of Burns – the lead representative from the Ministry of Aviation (MoA) – cold storage was not an option which he pushed hard to promote. Indeed, by allowing Marshall to point out the flaws of the idea, Burns was effectively limiting the options to the remaining two. This alliance between Treasury and Ministry of Aviation aims (although for diametrically opposite reasons) meant that the MCC's report stressed that the idea of cold storage should only be chosen if neither of the remaining options were acceptable. Cold storage was financially impractical and would not meet the criteria of avoiding job losses or maintaining good Anglo-Australian relations which Macmillan had outlined.¹⁹

Given Macmillan's political priority for British collaboration in Europe, Bishop highlighted that they would, 'have to take a view about the possibility of European collaboration...' and identified that 'this factor will be quite as important as any other in the minds of Ministers...'²⁰ The creation of the European Communities in 1957 followed by the formation of the European Free Trade Association (EFTA) in 1960 had split Europe into two groups (one of six nations and one of seven

¹⁸ T 225/1669, J. Marshall to Mr. McKean and Mr. Clarke, 22 March 1960.

¹⁹ CAB 134/2228, M.C.(60)16, Missile Conversion Committee, 'Final Report', 23 March 1960.

²⁰ T 225/2115, F.A. Bishop to F.F. Turnbull, 13 May 1960.

respectively).²¹ Abortive attempts to push for association between the two organisations led Macmillan to instruct the Foreign Office to examine the potentiality of a British application to join the European Communities, and to begin a search for further opportunities for collaboration in Western Europe.²² Bishop was right and whilst officials battled to come to a joint recommendation on European collaboration they sought to 'prepare the ground' by highlighting the links between decisions on Blue Streak and efforts to improve Anglo-European relations.

R.N. Quirk, Permanent Secretary in the Office of the Minister for Science advised his Minister, Lord Hailsham, that Britain should not lose the opportunity to take the lead in establishing a European collaboration, and raised the concern that if Britain did not go ahead with plans for a launcher, '... the French might perhaps want to press ahead with the development of some super-Veronique [a smaller scale French launcher].'²³ P. Dean, an Assistant Secretary at the Foreign Office argued that collaboration with European nations whether scientific or otherwise fell directly within his remit as his department 'attach[ed] importance... to our scientific reputation and achievements... because of the added influence and prestige it gives to our diplomatic effort.'²⁴ Aware of the complex nature of the 'three circles' in which British diplomacy engaged, Dean noted that collaboration on a launcher had the benefit of improving Anglo-European, Anglo-Commonwealth and also Anglo-

²¹ R.T. Griffiths, 'A slow one hundred and eighty degree turn: British policy towards the Common Market, 1955-60', in G. Wilkes (ed.), *Britain's Failure to Enter the European Community: The Enlargement Negotiations and Crises in European, Atlantic and Commonwealth Relations*, (London, 1997); J. Ellison, *Threatening Europe: Britain and the Creation of the European Community*, (Basingstoke, 2000).

²² A. Ludwig, 'The origins of European space policy'; Pagedas, *Anglo-American Strategic Relations*.

²³ CAB 21/3467, R.N. Quirk, 'European Co-operation In Space Research: Note of talk with Dr A. King 26th May', 26 May 1960.

²⁴ CAB 124/2271, P. Dean to Mr. Turnbull, 02 June 1960.

American relations, noting especially that ‘the prospects of American help would be improved if we had made substantial progress in space research independently...’²⁵

Dean successfully made a purely political case for conversion of Blue Streak into a collaborative satellite launcher, highlighting the ways in which conversion met the practical criteria which Macmillan had laid down to the MCC, whilst also drawing attention to the fact that conversion to a launcher engaged Britain in the European community as a good neighbour.

The continuation of research on Blue Streak through European collaboration met the departmental interests of many of those represented on the MCC. For Quirk, continuation of research ensured a project on which his department could continue to offer advice. For Dean, expanding a national programme into an international collaboration ensured the Foreign Office’s continued involvement, and influence upon a new area of scientific diplomacy. Treasury officials such as Marshall were less impressed with the idea of collaboration than cancellation – although the idea that other nations might foot part of the bill was certainly attractive to his interest to ensure a reduction in expenditure (whatever the outcome). Meanwhile Burns from the MoA was happy to accept the continuation of research on Blue Streak in any form.

By linking ideas of Anglo-European collaboration over Blue Streak with the effort to attain British membership of the European Communities, these officials were seeking to ensure Blue Streak’s conversion into a satellite launcher structured

²⁵ CAB 134/2228, M.C.(60)16, Missile Conversion Committee, ‘Final Report’, 23 March 1960.

around a European project. Tying a decision about a scientific project which would normally be limited to economic and domestic concerns to wider diplomatic policy aims (which occupied many Ministers personally) was a promising way of ensuring Ministerial attention and support when the decision was passed to Cabinet.

Although the MCC report recommended most strongly that Ministers should consider how the conversion of Blue Streak into a satellite launcher may support their foreign policy aims, it stopped short of recommending this step above the final option of cancellation.

The debate over whether Blue Streak should be cancelled focused on the economy. Treasury officials in particular were adamant that the 'gloomy' financial picture should be taken into more account, and noted that conversion was not a cheap option. Leading among these was "Otto" Clarke, who felt that it was not being made clear enough that Ministers were 'asking us to spend £90-100 m. of new money for the development of launcher and satellite... We have not suddenly got a bonus that can be put into an entirely new project for a civil launcher.'²⁶ Clarke was at the forefront of Treasury planning and forecasting in the British economy, and has been noted for his ability to persuade Ministers of the need for budget cuts.²⁷ In 1957, he persuaded the then Chancellor of the Exchequer, Peter Thorneycroft, of the need for drastic expenditure cuts to curb inflation (something which Thorneycroft resigned over, when they were rejected by Macmillan).²⁸ As the prime

²⁶ T225/1669, R.W.B Clarke to Mr. Bell, 05 April 1960.

²⁷ K. Theakston, *Leadership in Whitehall*, (Basingstoke, 1999); R. Christie, 'Britain's Crisis of Confidence': *How Whitehall planned Britain's Retreat from the extra-European world, 1959-1968*, (Unpublished PhD Thesis, University of Sterling, 2004).

²⁸ S. Crooks, *Peter Thorneycroft*, (Winchester, 2007).

economic civil servant, Clarke was sensitive to the wider economic situation – which as economic historians have noted, was particularly delicate.²⁹ In an economic climate of rising inflation, rising pay requests, and a widening trade deficit and a growing budget deficit, Clarke, and other Treasury officials sought to protect Treasury interests by seeking the cancellation of Blue Streak.³⁰

Treasury officials drafted a paper to show Ministers the alternative items that the amount requested could be spent on, including the completion of scientific and technical college building programmes, and the completion of the new motorway network, highlighting that these were infrastructure plans with proven commercial (and potentially political) return.³¹ Such projects were already underway, and were seen by officials as a key part of the Conservative's commitment to building a modern Britain, and these particular examples were chosen to appeal to Ministers.³² As for the more 'intangible' benefits of prestige highlighted by Dean, Clarke insisted that the MCC's final report warned that 'Our prestige might be better served by using our limited resources in some other direction... If the development of BLUE STREAK as a satellite launcher obviously strained our resources, it could be positively harmful to our prestige.'³³ The warning, explicitly provided, attempted to highlight that although conversion might have been an attractive option for political reasons, Ministers should be cautious. Given the

²⁹ J. Tomlinson, *The Politics of Decline: Understanding Post-war Britain*, (Harlow, 2000).

³⁰ R.A. Chapman, *The Treasury and Public Policy-Making*, (London, 1997); L. Pliatzky, *Getting and Spending: public expenditure, employment and inflation*, (Oxford, 1982).

³¹ CAB 21/3611, W. Geraghty to Prime Minister, 29 November 1960.

³² A. Sharr and S. Thornton, *Demolishing Whitehall: Leslie Martin, Harold Wilson and the Architecture of White Heat*, (Farnham, 2013); S. Mitchell, *The Brief and Turbulent life of Modernising Conservatism*, (Newcastle, 2006).

³³ CAB 21/3467, M.C.(60)37, Missile Conversion Committee, 'Space Research: BLUE STREAK: Report by Officials, 01 July 1960.

furor of Blue Streak's cancellation as a weapon, Clarke was inviting Ministers to consider the outcry should the much cheaper option of collaboration be considered an unacceptable financial burden in the future.

Here Clarke's view highlights the difficulty in understanding 'prestige'. Treasury conceptions of prestige are similar to those of authors like Barnett, and those in the House of Commons who criticised the Macmillan government for wasting too much money in ruinous attempts to 'keep up with the Joneses'.³⁴ However, the notions of prestige employed by decision-makers were far more complex than this. Although Foreign Office officials like Dean stressed the importance of attaining prestige through collaboration, Clarke was of the opinion that prestige came from a strong economic position. As with Dean, who 'stood where he sat' in recommending a diplomatic solution, Clarke and other Treasury officials led the push for cancellation. Even if Blue Streak was cancelled outright, British space research could continue through an existing US/UK arrangement whereby US Scout rockets would provide scientific satellites with a 'free ride'.³⁵ However, Scout was significantly smaller than Blue Streak and could not provide the launch capability required for large satellites. Officials noted that published information from NASA showed that Scout was so small a launcher that choosing it would 'severely restrict the types of experiment

³⁴ A. Adamthwaite, 'The Foreign Office and policy-making', in J.W. Young, (ed.), *The Foreign Policy of Churchill's Peacetime Administration 1951-1955*, (Leicester, 1988); F. Heinlein, *British Government Policy and Decolonisation 1945-1963: Scrutinising the Official Mind*, (London, 2002); G.C. Peden, *Arms, Economics and British Strategy: From Dreadnoughts to Hydrogen Bombs*, (Cambridge, 2007); T. Wilkie, *British Science Policy Since 1945*, (Oxford, 1991); Barnett, *The Lost Victory*, p. 235.

³⁵ M. Godwin, *The Skylark Rocket: British Space Science and the European Space Research Organisation 1957-1972*, (Paris, 2007), p. 109.

which are possible.³⁶ A launcher based on Blue Streak would be capable of launching large communications satellites into orbit, yet Scout would only be capable of launching small satellites into a low orbit. If the government wished to cancel Blue Streak, yet also supply itself with the means of equipping its own space research programme, the obvious solution was to purchase an alternative American launcher. This formed the debate around questions of interdependence: of whether or not it was acceptable for Britain as a major power to rely on the United States in the provision of its satellite launching capacity.

Treasury officials were surprised to find that officials in other departments were cautious about the idea of purchasing an American launcher. The MCC received guarded replies concerning the purchase of American launchers from most departments and was accordingly cautious in its final report, 'America could probably not be entirely relied upon as a satisfactory source of supply for satellite launchers, since the Americans might change their rocket development and production programme, or they might be unable to supply spares indefinitely.'³⁷ As discussed in the Literature Review, the end of nuclear information sharing in 1946 led to a rivalry between Britain and America, and led to a certain amount of distrust as to American reliability as an ally in close scientific cooperation. The enforced independence of the late 1940's and 1950's led as much to an independent nuclear programme as did concerns of prestige, and must have had an impact on the

³⁶ CAB 132/215, S.R.G.(60) 22(Final), Steering Group on Space Research, 'Summary of views of members of the British National Committee on Space Research and the Chairman of Working Groups on the application of BLUE STREAK/BLACK KNIGHT to space research', 26 May 1960.

³⁷ CAB 134/2227, M.C.(60) 11th Meeting, Missile Conversion Committee, 01 June 1960.

officials of the Ministry of Supply – the fore-runner to the MoA.³⁸ The idea that Britain should retain Blue Streak instead of becoming solely reliant on American goodwill seems less a part of arrogant independence, and more a carefully considered insurance policy.

Civil servants such as R.H.W. Bullock, an Under Secretary in the Ministry of Aviation (and its successors), were vital in shaping this policy. Officials out-live the usual lifetime of many governments, and officials in the Ministry of Supply (the forerunner to the Ministry of Aviation, and main beneficiary of information-sharing) had borne the brunt of American actions in 1946. For officials in the Ministry of Aviation, such concern about American reliability may have become customary, but Treasury officials felt that it was curious. Writing to “Otto” Clarke, McKean questioned this attitude: ‘We are ready to rely on the Americans for our allegedly vital defence interests like the [nuclear] Deterrent. Why should we hesitate to rely on them for a marginal activity like space research?’³⁹ However this question missed the mark entirely, as concern about the future of the nuclear deterrent was the main reason for this caution. This caution highlights that for officials like Bullock independence was not only pursued to indicate Britain’s strength and capabilities, but was also pursued to protect British interests in the case of partnering with an unreliable ally.

With cancellation discredited by concerns about American reliability, the MCC presented the three options of cold-storage, conversion and cancellation. Although

³⁸ See for example: L. Arnold, *A Very Special Relationship: British Atomic Weapon Trials in Australia*, (London, 1987); M. Gowing and L. Arnold, *Independence and deterrence: Britain and Atomic Energy, 1945-1952*, (London, 1974); Paul, *Nuclear Rivals: Anglo-American atomic relations*; B. Cathcart, *Test of Greatness: Britain’s Struggle for the Atomic Bomb*, (London, 1994).

³⁹ T 225/2115, D. McKean to Mr. Clarke, 01 July 1960.

the final MCC report provided all three options, it also advised that Blue Streak should continue on a provisional basis until the end of 1960 whilst the views of European nations on establishing a collaborative satellite launcher were sought.⁴⁰ Ministers, who had been well prepared by their civil servants to understand the potential importance of space policy in improving Anglo-European relations agreed to this interim step without question. Although the MCC and Ministers hoped that European nations would quickly decide to support the venture, there was an element of naivety in this. The initial request for views had been sent to nearly twenty governments, yet had little more than an outline of the project, and a tentative budget proposal of £64 million.⁴¹ Although this was the first European scientific collaboration which Britain had proposed, the timing of the announcement – coming on the heels of Macmillan’s announcement of Britain’s application to the Common Market (European Communities) – shows that at the Ministerial level at least, the idea of Britain taking a positive and proactive European role was a key motivation.

In this section I have shown the influence of officials in shaping the options available for Ministers to choose from. By highlighting difficulties with cancellation and cold storage, the final MCC report (although it stressed that it made no recommendation), decided the way in which Ministers could act. Cold storage was presented as neither desirable nor practical, and cancellation was portrayed as dangerous. Yet, by including three options the chair of the MCC, Bishop, had

⁴⁰ CAB 21/3467, M.C.(60)37, Missile Conversion Committee, ‘Space Research: BLUE STREAK: Report by Officials, 01 July 1960.

⁴¹ DO 35/10883, ‘Brief for Secretary of State: Ad hoc meeting of ministers at 10.30 A.M. Wednesday 6th July, 1960 at No. 10 Downing Street: Space Research : BLUE STREAK’, 06 July 1960.

steered a careful path through the conflicting departments' interests. By maintaining three options which satisfied the interests of the two key departments (the Treasury and Ministry of Aviation), Bishop successfully constructed a report which contained little in the way of concrete recommendations, yet led Ministers to view one option as the best choice.

The rejection of cold storage as an option had satisfied Treasury officials such as Clarke and Marshall who though it politically attractive yet economically wasteful, and MoA officials such as Burns who saw the rejection of cold storage as a way of forcing Ministers to choose between two 'hard' options of conversion and cancellation. The framing of American launchers as unsuitably small and expensive by Bullock represented concerns about the reliability of the US as a consistent ally in the conduct of scientific collaboration and simultaneously reduced the chances of cancellation being chosen. The decision to maintain independent capabilities was taken as an insurance policy, rather than through an arrogant overestimation of British funds or place in the world. Officials' concerns about the security of American assistance led Ministers to choose independence over interdependence (even if they did not know the reasons). This left the final option of conversion, which officials in the Foreign Office and MoA were keen to highlight would intersect with Ministers' desires for closer Anglo-European relations. Although conversion did not satisfy Clarke's desire for a substantial reduction in expenditure, the opportunity to improve Anglo-European relations was too great for Ministers committed to seeking British membership of the European Communities. In the

next section, we shall see Ministers sought to direct European collaboration in space to meet these broader aims.

1.3: Independence, interdependence and the turn to Europe

Suggestions that the UK should collaborate with European nations using Blue Streak as the first stage of a satellite launcher touched on all three 'circles' of British Foreign relations. Although collaboration with Europe would represent an obvious commitment to that 'circle', Blue Streak was based on American designs and represented Macmillan's policy of interdependence with the United States in defence procurement.⁴² And, if the collaboration did go ahead then all of the testing would be done in Australia at the Long-Range Weapons Establishment. If Blue Streak was cancelled, however, then the Establishment would probably have to close due to lack of work. Taking place alongside British negotiations to enter the European Communities between 1960 and 1963, Krige and Ludwig have suggested that the negotiations for ELDO were part of a coherent effort by Macmillan to 'sweeten the deal' of British entry to the Communities.⁴³ In this section I will show how policy was driven by an interested Minister of Aviation – Peter Thorneycroft - (rather than the Prime Minister) and officials in his Ministry, and show that domestic policy imperatives dominated the effort to establish a European collaborative space programme.

Consultation with European nations began in earnest throughout May and June

⁴² Clark, *Nuclear Diplomacy and the Special Relationship*; Ashton, *Irony of Interdependence*.

⁴³ J. Krige, 'The Launch of ELDO', p.91; Ludwig, 'The origins of European space policy', p. 316.

1960, with Britain offering its work on Blue Streak and Black Knight as the foundation of a three stage launcher for large satellites in a European Launcher Development Organisation (ELDO). During negotiations for entry to the European Atomic Energy Community, the Minister for Science had pushed for the Atomic Energy Authority to have control of the negotiations (given the highly scientific nature of discussions).⁴⁴ This set a precedent in the case of ELDO negotiations, and the MoA had full control of their approach to European governments.⁴⁵ Although it was standard practice for departments to discuss and co-draft telegrams with the Foreign Office, in this case the MoA sent telegrams to the Foreign Office for immediate transmission to foreign Ministers and Ministries. This meant that the Foreign Office acted solely as a telegraphy office for the MoA, and Foreign Office officials were unable to re-draft or discuss the content of telegrams before transmission. This led to many inconsistencies and embarrassing oversights.

Aware that any offer of collaboration with European nations could have a large impact on the success of the impending European Community negotiations, J. Collings, an official in the Foreign Office, was concerned that the Ministry of Aviation would not have the expertise in diplomacy to strike the appropriate tone. As more than half of the work on a European launcher based on a combination of Blue Streak and Black Knight would be carried out in Britain, Collings was concerned that the initial approach by the Ministry of Aviation suggested that 'we were only interested in this "European" project if it was going to mean British contracts...

⁴⁴ S.A. Butler, 'The Struggle for Power: Britain and Euratom 1955-63', *International History Review*, 36(2), (2014).

⁴⁵ FO 371/149657, J. Collings to Western Department, 19 September 1960.

[which] would be seen as an example of what most Europeans feel is really the British attitude to Europe, despite all our previous statements.’⁴⁶ The MoA’s position seemed insincere particularly as MoA telegraphs gave the distinct impression that the ultimate aim was Anglo-French rather than Anglo-European collaboration. Only French space scientists were invited to discuss the project in detail, and this was just ‘another example of the way in which the M[inistr]y of Aviation are bulldozing this whole exercise into one based mainly on Anglo/French collaboration, at the expense of the other Europeans who may wish to join it.’⁴⁷ Given the Foreign Office’s aim of ensuring accession to the European Communities, the MoA’s attempts to limit the project to bilateral collaboration meant that opportunities to highlight Britain’s ‘turn to Europe’ were being missed. This highlights the differences of departmental interest at play. MoA officials were interested in achieving a rapid end to negotiations so that research teams could be preserved and new research could begin. Meanwhile, the interests of Foreign Office officials were in establishing a collaboration which exemplified the government’s commitment to playing a full part in European affairs.

The question of finance dominated the replies received, as various nations questioned the firmness with which the Ministry of Aviation had posited a cost of £64 million. Financial matters certainly played a part in the reluctance of nations to give a rapid reply. French officials conducted their own estimates after attending a briefing given by the MoA in early 1961 and concluded that the figures were not as certain as they had been led to believe. French officials made it clear that the only

⁴⁶ FO 371/149657, J. Collings to Western Department, 19 September 1960.

⁴⁷ FO 371/149658, D. Gibson, Handwritten note, 21 September 1960.

way they could afford to contribute towards a collaborative launcher project would be if Britain released scientific information from the Blue Streak development programme which would enable France to save money on their own missile programmes.⁴⁸ Given that Blue Streak had been based on American licenses, this request caused great anxiety in the Foreign Office.

However, Macmillan deemed that French support was vital and felt that, in spite of Anglo-American agreements, 'there may be some items of military information which we could release, without consultation with the United States.'⁴⁹ With de Gaulle's creation of the independent *force de frappe* and the removal of the French Mediterranean fleet from NATO control the Foreign Secretary, Sir Alec Douglas-Home questioned whether releasing the plans was in Britain's wider interests 'Do we and the Americans want France to get ahead quickly with the military side of rocketry?'⁵⁰ Douglas-Home's introduction of American interests highlighted that Blue Streak was not an entirely British creation, and the designs licensed from US companies could only be shared with the consent of the US government.⁵¹ Careful interventions by Bishop ensured that Macmillan 'clearly understood and agreed so far as United Kingdom Ministers are concerned that there can be no question of our giving military information to the French at this stage.'⁵² For the time being, concerns about the Anglo-American relationship over-rode Macmillan's desire to make a tangible gesture of Britain's commitment to being a 'good European'.

⁴⁸ AVIA 92/23, 'Extract from Report of Anglo-French discussions held on 12th April 1960', 12 April 1960.

⁴⁹ CAB 21/4453, F. Bishop to Mr. Geraghty, 02 January 1961.

⁵⁰ CAB 124/2301, A.D. Home to Prime Minister, 'Blue Streak', 30 December 1960; C.G. Cogan, *Forced to Choose: France, the Atlantic Alliance, and NATO*, (Westport, 1997); K. Stoddart, *Losing an Empire and Finding a Role: Britain, the USA, NATO and nuclear weapons, 1964-70*, (Basingstoke, 2012).

⁵¹ Clark, *Nuclear Diplomacy and the Special Relationship*, p. 163.

⁵² CAB 124/2301, H. Macmillan to Foreign Secretary, 03 January 1961.

French support was still deemed vital and Macmillan's decision not to release detailed plans for Blue Streak stymied the initial negotiations with French officials. Bishop advised the Prime Minister that in the circumstances, 'It may well be right to abandon this project... [except for the fact] that our true international interests lie in coming to a comprehensive political understanding with General de Gaulle...'⁵³ Bishop's views were shared by Clarke who was most averse to let expenditure (of around £1 million per month) go on whilst negotiations continued with no end in sight.⁵⁴ Treasury officials were concerned essentially with the problems of 'sunk costs' and 'entrapment'; that the more time and money spent on keeping Blue Streak alive, the more an aversion to wasting the money and time already spent would be used as justification to keep the project going indefinitely.⁵⁵ While for Ministers the motivation may have been the political concern of improving Anglo-European relations (as Ludwig and Krige suggest), the focus on funds shows that the major motivation of civil servants was economic.⁵⁶ Although officials in the MoA such as Bullock took an active role in encouraging European participation, this was aimed at maintaining the project in the face of Treasury opposition rather than from any commitment to improving Anglo-European relations.

To counter increasing pressure from Clarke and other Treasury officials to cancel the project, nations were sent regular prompts to remind them that the 'final

⁵³ CAB 21/4453, F.A. Bishop to Prime Minister, 01 December 1960.

⁵⁴ CAB 134/1428, B.S.(60) 1st Meeting, Ministerial Committee on Blue Streak, 30 November 1960.

⁵⁵ See, for example: B. Flyvberg, N. Bruzelius and W. Rothengatter, *Megaprojects and Risk: An anatomy of ambition*, (Cambridge, 2003); W. Walker, *Nuclear Entrapment: THORP and the politics of commitment*, (London, 1999); W. Walker, 'Entrapment in large technology systems: institutional commitment and power relations', *Research Policy*, 29 (2000), pp. 833-846.

⁵⁶ Ludwig, 'The origins of European space policy'; Krige, 'Launch of ELDO'.

decision on the future of “Blue Streak”... is for Her Majesty’s Government alone to take... and, for financial reasons, they must do so quickly – if possible before the end of 1960.⁵⁷ With no responses immediately forthcoming even the Prime Minister began to doubt that discussions would yield any firm results, and posited cancellation for the first time ‘if further attempts to establish a co-operative project with other countries of Europe seemed unlikely to succeed by, say, the middle of January [1961]...’⁵⁸ Here Macmillan’s cautious attitude shows that the push for Anglo-European collaboration was useful only as long as it was achieved quickly. It was far more politically embarrassing for Macmillan to sanction further expenditure on Blue Streak with no end to negotiations in sight than it was to cancel the project. Cancellation could be painted in the House of Commons (and at Prime Ministers’ Questions in particular) as a difficult but necessary decision taken regretfully. Meanwhile the continued expenditure of £1 million a month with no sign of interest from European nations was open to easy charges of waste and mismanagement.

Advice from his officials had convinced the Minister of Aviation, Peter Thorneycroft of the necessity of Blue Streak’s continuance. He explained to Macmillan and other Ministers that to pull out at this stage would hardly improve Britain’s European relations; ‘It would be unwise, having made initial approaches to them, immediately to tell them that we have now decided that it must stop... they would feel resentful and might feel that we had again been perfidious.’⁵⁹ Thorneycroft’s allusion here was to the British “Plan G” attempts to establish a European Free Trade Area which

⁵⁷ CAB 124/2304, Foreign Office to Geneva, 28 November 1960.

⁵⁸ CAB 130/173, Gen.716/3rd Meeting, ‘BLUE STREAK’, 05 December 1960.

⁵⁹ CAB 21/4453, F.A. Bishop to Prime Minister, 01 December 1960.

would rival the European Communities, and had damaged Anglo-European relations in the late 1950s.⁶⁰ He hoped that by referring to past iniquities he could provoke the support of Europhile Cabinet colleagues such as Minister for Commonwealth Relations Duncan Sandys and Lord President of the Council, Edward Heath, establishing an alliance of 'friendly' Ministers in the Cabinet.

In doing so, Thorneycroft was attempting to secure a group of Ministers who could assist in countering the Chancellor's resistance to any further expenditure and persuade Macmillan to give him more time. As a former Chancellor (and one who had resigned over Macmillan's rejection of spending cuts), Thorneycroft was no doubt aware of Treasury opposition to increasing expenditure, and the difficulty in achieving reductions in spending against an alliance of Ministers in Cabinet who thought a project necessary. In ensuring an alliance of Ministers who were also convinced of the necessity of establishing a British-led European collaboration in space as a 'card of re-entry into Western Europe' Thorneycroft sought to ensure a pitched resistance to Treasury attacks on the grounds of economics.⁶¹ Leading this alliance of pro-European Ministers, Thorneycroft sought to link the essentially domestic policy of retaining Blue Streak as scientific project with British accession to the European Communities.

In order to ensure the success of his aims, Thorneycroft had to act rapidly. As a result of a barrage of personal messages to various Ministers in the French

⁶⁰ J.R.V. Ellison, 'Perfidious Albion? Britain, Plan G, and European Integration, 1955-1956', *Contemporary British History*, 10 (4), 1996.

⁶¹ CAB 124/2271, Hailsham to H. Watkinson, 26 April 1960.

government, Thorneycroft persuaded French officials to co-host a large meeting of European Ministers and officials in Strasbourg.⁶² Thorneycroft proposed that this be a final meeting where nations would agree a convention for a European launcher development organisation. Whilst the initial suggestion of a satellite launcher had been Macmillan's much of the motivation to secure a working collaboration of European nations came from Thorneycroft who 'took on with enthusiasm the task of convincing Britain' European partners'.⁶³ For Thorneycroft a collaborative project with European nations was not only right for British foreign policy, but also saved the Blue Streak and Black Knight projects from cancellation, and preserved his Ministry's expertise.

Opening the conference with a rousing speech, Thorneycroft declared that 'I, personally, would be sorry to see the skill and the wit and the wisdom of Europe not applied in this new field. I would be sorry to see a monopoly of the techniques left in the hands of others however friendly or however generous...'⁶⁴ In spite of Thorneycroft's appeals, the lack of firm figures meant that most of the discussion was taken up by matters of finance. Thorneycroft proposed that costs be apportioned on the same basis as those agreed for the European Organisation for Nuclear Research (CERN). CERN was seen as model for the space organisation envisaged. Providing a base for collaboration on high cost physics, countries' contributions to CERN's costs were based on their comparative Gross National

⁶² CAB 124/2305, Sir P. Dixon to Foreign Office, 13 January 1961.

⁶³ Crooks, *Peter Thorneycroft*, p. 206.

⁶⁴ CAB 21/4454, Strasbourg Conference on Development of Satellite Launcher: Opening Speech by the Rt. Hon. Peter Thorneycroft, M.P., British Minister of Aviation, Head of British Delegate and Chairman of the Conference', 30 January 1961.

Product, with the richest nations paying the greatest share.⁶⁵ In seeking to adopt a successful precedent Thorneycroft clearly hoped to speed up negotiations.

However, as the Conference progressed various delegations indicated that the potential costs were too great. If all the nations involved in the conference did not sign up, then costs would increase for the nations remaining (as the total cost would be shared by whatever number of members based on their proportionate GNP).

With the Prime Minister away, Thorneycroft telegraphed the Cabinet to request the authority to raise the British contribution still further from the initial 25% to 40% (in order to reduce the contributions of other nations).⁶⁶ Clinging to the belief that 'There were immense political advantages in Europe getting together on a project of this kind which would straddle the existing divisions between Six and Seven', and perhaps hoping that to do so would see the end of the protracted negotiations, the Cabinet authorised the increase.⁶⁷

As the Conference drew to a close, Thorneycroft attempted to encourage other nations to see the future potential of space research. He was sure to highlight that the UK had agreed to pay more than its share, and would allow other nations to build the second stage of the launcher (it had been proposed in January that Black Knight would be used as the second stage).⁶⁸ For Thorneycroft success was so

⁶⁵ A. Hermann, *History of CERN, Volume 1, Launching the European Organization for Nuclear Research*, (Amsterdam, 1987).

⁶⁶ CAB 21/4454, Strasbourg to Foreign Office, 31 January 1961.

⁶⁷ CAB 134/1430, B.S.(O)(61)2, Official Committee on Blue Streak, 'Strasbourg Conference On Satellite Launcher Development', 23 January 1961; CAB 134/1430, B.S.(O)(61)4, Official Committee on Blue Streak, 'Talks with German, Danish and Norwegian Ministers: 10th-14th January 1961', 23 January 1961.

⁶⁸ T 225/2121, J.A. Marshall to C. Gandy, 17 February 1961.

important that he was prepared to engage in a small amount of duplicity. McKean later noted with horror that Thorneycroft had separately offered German and Italian Ministers sole rights on the contract to build the third stage of the launcher, and warned that 'cleverness of this kind was unlikely to do us any good...'⁶⁹ With inconsistencies in the British offer, and the un-resolved issues of provision of the second and third stages of the launcher, and of how to finance the project, the Conference ended without any formal convention being signed. Thorneycroft's attempts to hurry nations into agreeing to a European organisation were aimed at forestalling growing concern that expenditure was continuing with no further evidence of European support for the idea.

In spite of failing to achieve his primary aim, Thorneycroft was still convinced that the conference had gone well, and informed the Prime Minister that, 'I believe that we have a good prospect of obtaining European support for the launcher project based on BLUE STREAK.'⁷⁰ However, no nation had authorised their Ministers to sign the proposed convention, and Thorneycroft was forced to play for yet more time, suggesting that nations be given three further weeks to respond definitively.⁷¹

Other departments viewed this time-scale as 'wholly unrealistic' and served only to highlight further the MoA's inexperience in foreign affairs.⁷² Even the Air Ministry, used to negotiating exchanges of information with friendly powers, felt that, 'by the end of February [we will be] where we are today. Work will be going on at the

⁶⁹ T 225/2122, D. McKean to Mr. France, 27 March 1961.

⁷⁰ AIR 20/10573, Peter Thorneycroft to Prime Minister, 15 February 1961.

⁷¹ CAB 124/2302, P. Thorneycroft to Prime Minister, 16 January 1961.

⁷² AIR 20/10930, R.C. Kent, 'Blue Streak Committee', 17 January 1961.

current rate of expenditure... The Treasury will still be grumbling about it...⁷³ The Air Ministry were correct, and as February dragged on into March the Foreign Office suspected that 'The overriding criticism here was financial...'; as each nation's financial contribution could only be calculated once all the nations had signed up this led to a "we will if they will" attitude' which served only to prolong negotiations.⁷⁴

Although Ministers such as Sandys and Heath were convinced of the benefits of establishing a British-led collaboration with European nations based on Blue Streak, the lack of firm interest from European nations called the ongoing expenditure on Blue Streak into question. If Thorneycroft could establish European collaboration rapidly, Ministers would not begrudge the cost of keeping Blue Streak in being given the benefit to Anglo-European relations. By mid-1961 Thorneycroft's efforts to 'sell' Blue Streak to European nations were beginning to become embarrassing for Macmillan. As suggested by a cartoon published in *The Guardian* (Figure 2), Thorneycroft came across as a rather undignified door-to-door salesman, eager but ultimately unsuccessful in closing the deal. Macmillan worried that 'There is a point beyond which we cannot hawk this around Europe without becoming slightly ridiculous.'⁷⁵ Although Krige and Ludwig suggest that the improvement of Anglo-European relations were the prime aim in the British development of proposals for a European space organisation, there were limits to how far Ministers were

⁷³ AIR 20/10930, R.C. Kent, 'Blue Streak Committee', 17 January 1961.

⁷⁴ CAB 124/2306, 'Reactions to the Anglo-French Blue Streak proposals – March 1', 01 March 1961.

⁷⁵ CAB 124/2302, H. Macmillan to Minister of Aviation, 24 April 1961.

prepared to go in pursuing this aim, and the Prime Minister was certainly concerned about the impact on domestic political concerns.⁷⁶

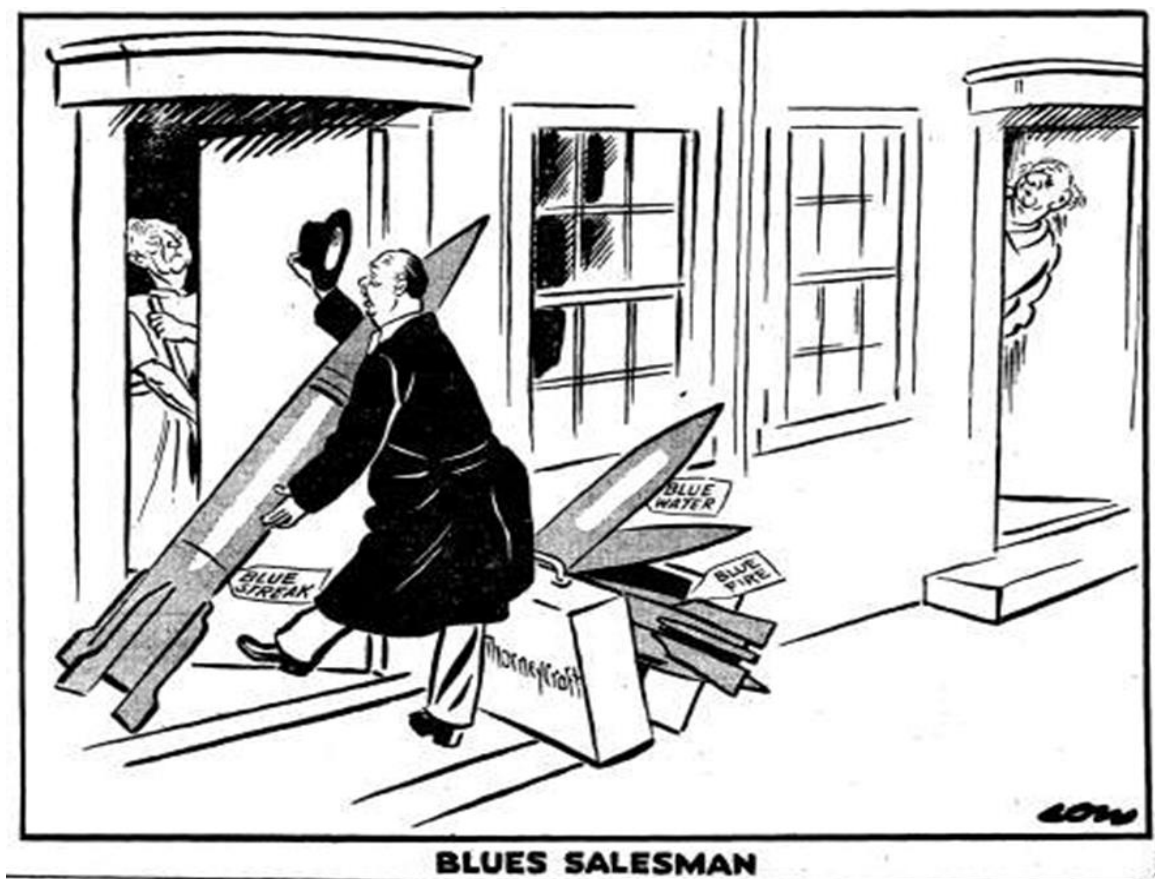


Figure 2: D. Low, 'Blues Salesman', *The Guardian*, 13 January 1961, p.11.

For Macmillan, who was concerned with the re-election of a Conservative government at the next election, Thorneycroft's ambitions for a European space programme, highlighting Britain's commitment to Europe, was beginning to become too domestically embarrassing. Members of Parliament from both parties were pressuring the government for a quick resolution to the future of Blue Streak, and the topic was raised in both Houses of Parliament throughout 1961. For opposition

⁷⁶ Ludwig, 'The origins of European space policy'; Krige, 'Launch of ELDO'.

MPs, the continuing expenditure on Blue Streak with no collaboration forthcoming offered an opportunity to attack the government for wasting funds and threatening valuable scientific jobs. Labour members, in particular, were adamant that the government should act more quickly to achieve a European collaboration or cancel the project.⁷⁷ Harold Wilson, the Shadow Chancellor of the Exchequer and Chair of the Public Accounts Committee, made much of continued 'wasted' expenditure on Blue Streak. Wilson frequently categorised the ongoing efforts at establishing collaboration as purely an effort to 'save the face' of the government which would result in unnecessary expenditure.⁷⁸ Meanwhile, Conservative and Liberal members were keen for the government to establish a space research programme to guard against job losses, and prove their commitment to establishing Britain as a key partner to European nations. Similar criticism was also raised (although less regularly) in the House of Lords.⁷⁹

The sustained criticism of MPs on both sides of the House was not the only public criticism Macmillan was facing over the continued lack of progress over ELDO. With the issue being kept alive by MPs, Lords and Shadow Ministers, there was significant

⁷⁷ House of Commons Debates, 'Space Research (European Conference)', 06 February 1961, Volume 634, Columns 28-33; House of Commons Debates, 'Blue Streak', 27 February 1961, Volume 635, Columns 1187-9; House of Commons Debates, '25 April 1961, British Space Programme', Volume 639, Column 227; House of Commons Debates, 'Space research', 11 May 1961, Volume 640, Columns 634-6; House of Commons Debates, 'Blue Streak', 15 May 1961, Volume 640, Columns 911-2; House of Commons Debates, 'Blue streak' 05 June 1961, Volume 641, Columns 617-8; House of Commons Debates, 'Space Vehicle Launchers (European Co-operation)', 10 July 1961, Volume 644, Columns 19-21.

⁷⁸ In fact Wilson used this exact term regularly in Parliament. See: House of Commons Debates, 'Economic Situation', 07 February 1961, Volume 634, Column 325; House of Commons Debates, 'Budget Resolutions and Economic Situation', 18 April 1961, Volume 638, Column 978; House of Commons Debates '26.—(SURCHARGES ON EMPLOYERS.)', 13 June 1961, Volume 642, Column 342; House of Commons Debates, 'ECONOMIC SITUATION', 18 July 1961, Volume 644, Column 1175; House of Commons Debates, 'PUBLIC ACCOUNTS COMMITTEE (REPORTS)', 30 November 1961, Volume 650, Column 644.

⁷⁹ House of Lords Debates, 'Blue Streak', Volume 229, Column 225, 02 March 1961.

interest in the press, which also commented on the plight of the scientists and engineers who would lose their jobs if Blue Streak were cancelled.⁸⁰ Not only workers but their employers supported the further development of Blue Streak, using the press to highlight their concerns and even announcing, in May, that they would be willing to commit their own funds to reduce the costs. The former project manager of Blue Streak from the De Havilland Aircraft Company, Gerald Pardoe, complained that “We have the test and launching facilities, the rocket and the scientists and engineers who are raring to go. All we need is leadership from the Government.”⁸¹ The lack of political leadership by Macmillan was attacked, in these terms, however, Thorneycroft in particular was adept at assuring the press that it was ‘up to Europe’ to decide whether the project would go ahead, and urged his counterparts both by telegram and in the media ‘not to delay’.⁸²

The continued lack of certainty about whether or not European nations would support the formation of a European project provided the opportunity for sensational headlines based on statements from European statesmen about their review of the terms.⁸³ The media also focused on the cost of delays, with the *Daily Mail* correspondent A. MacPherson, going as far as to calculate that Blue Streak was

⁸⁰ Cyril A. Lee, Michael Watts, Mrs. Sylvia A. Williams and Mrs. M. I. Johnson, *Daily Mail*, ‘More questions for Mr MacMillan’, 13 January 1961; Anon., *The Guardian*, ‘Space research: “Britain's best brains going to US and Canada”’, 03 May 1961.

⁸¹ By our Science Correspondent, *The Sunday Telegraph*, ‘Industry Wants Space Projects’, 14 May 1961.

⁸² W. Hamsher *Daily Express*, ‘Blue Streak: It is up to Europe’, 31 January 1961. From Our Own Correspondent, *The Daily Telegraph*, ‘Germans Urged Not to Delay’, 14 January 1961,

⁸³ Express Science Reporter, *Daily Express*, ‘Blue Streak takes another knock’, 05 April 1961; P. Mennem, *Daily Mirror*, ‘Blue Streak Gets Chance’, 06 July 1961; From Our Own Correspondent, *The Daily Telegraph*, ‘Rocket Plan Denied’, 08 February 1961.

costing '£7 a minute', and urged politicians to arrive at a decision quickly.⁸⁴ Under attack on both sides of the House (albeit for different reasons), in the press for acting too slowly, making a decision immediately – even a decision to cancel – a high priority.

Furthermore, Macmillan may have come to the conclusion that other domestic projects would be more worthwhile recipients of the money, both economically and politically. Whilst debating the MCC, Treasury officials had highlighted projects such as motorway construction which would be more economically beneficial uses of the funds (see 1.2). The choice of motorways as a target by the Treasury was astute. As early as July 1960, T.J. Bligh, Macmillan's Principal Private Secretary, had advised Macmillan that the funds for Blue Streak could easily be used to bolster 'the many candidates waiting for a share of the national resources', including the motorways programme.⁸⁵ Macmillan had come under some criticism for the slow development of British motorways, and extra funds for a popular and economically valuable programme would have taken some of the sting out of announcing the end of the Blue Streak programme.⁸⁶ The combination of these very public and political pressures on Macmillan (and the government as a whole) to make a decision sooner rather than later, and the availability of more politically and economically acceptable options, make Macmillan's growing unease over the lengthy negotiations easy to understand.

⁸⁴ A. MacPherson, *Daily Mail*, 'Blue Streak Teams are Costing £7 a Minute', 28 February 1961.

⁸⁵ PREM 11/3098, T.J. Bligh to Prime Minister, 05 July 1960.

⁸⁶ D. Kynaston, *Modernity Britain: Opening the Box, 1957-1959*, (London, 2013), p. 46.

For Thorneycroft, however, reprieve came at the vital moment. Just as Macmillan began to be persuaded that it might be politically less embarrassing to abandon the project altogether, the Foreign Office received the unexpected news that ‘yesterday the Federal Government approved German participation...’⁸⁷ With West German accession to the Organisation it was thought that the ‘smaller nations’ (such as Belgium, the Netherlands, and Spain) would be easily encouraged to agree.

Thorneycroft immediately sought to maintain the momentum German agreement provided by suggesting a second conference to be held in London in August 1961. He assured his colleagues that the end was in sight as ‘The aims of the conference would be two-fold – to enshrine in convention language an agreement establishing the organisation, on the basis of the initial programme to develop a launcher based on BLUE STREAK and to make preliminary financial arrangements...’⁸⁸ Invitations were again sent out to governments which had, in some cases, not responded in any way to the initial request for a decision in January.

Throughout this section Thorneycroft’s personal direction of policy-making is clear. With the support of an alliance of Ministers such as Heath and Sandys, Thorneycroft was able to continue negotiations for the establishment of a European space organisation over a period of months against the growing disquiet of colleagues who began to feel that his salesmanship was beginning to become embarrassing. While Thorneycroft was no doubt dependent on his officials for information, he was

⁸⁷ CAB 21/4455, K. Adenauer to H. Macmillan, 29 June 1961.

⁸⁸ CAB 134/1430, B.S.(O)(61) 4th Meeting, Official Committee on Blue Streak, 20 June 1961.

able to formulate policy which met both his and his departmental interests. Thorneycroft's role and his enrolment of key pro-European Ministers in the Macmillan Cabinet show the success of his attempts to link the formation of a collaborative research project with the increasing importance of Anglo-European relations. As closer Anglo-European ties were prioritised in this period, the 'three circles' convention of British diplomatic priorities suggests that Anglo-American and Anglo-Australian would be conversely neglected. In the next section I will examine how Anglo-Australian relations were affected by Thorneycroft's attempts at personal diplomacy.

1.4: Anglo-Australian relations and the 'turn to Europe'

Although the major focus of converting Blue Streak into a satellite launcher with European collaboration had been the beneficial effect on Anglo-European relations, the decision to pursue Anglo-European collaboration had an important impact on Anglo-Australian relations. Whether Thorneycroft was protecting British domestic interests or executing a 'turn to Europe' through his efforts to establish ELDO, the collaboration was viewed by the Australian government as further evidence that the UK was abandoning its Commonwealth partners in favour of its regional neighbours.⁸⁹ The asymmetry between British and Australian power in this period

⁸⁹ G. Wilkes, 'The Commonwealth in British European Policy: Politics and Sentiment 1956-63', in A. May (ed.), *Britain, the Commonwealth and Europe: The Commonwealth and Britain's applications to join the European Communities*, (Basingstoke, 2001), p. 53; J.B. O'Brien, 'The Australian Department for Trade and the EEC: 1956-1961', in May, (ed.), *Britain, the Commonwealth and Europe*; R.T. Griffiths, 'A slow one hundred and eighty degree turn: British policy towards the Common Market, 1955-60', in G. Wilkes (ed.), *Britain's Failure to Enter the European Community: The Enlargement Negotiations and Crises in European, Atlantic and Commonwealth Relations*, (London, 1997); S. Ward, 'Anglo-Commonwealth relations and the EEC membership: the problem of the old Dominions.' in Wilkes (ed.), *Britain's Failure to Enter the European Community*; S. Ward, *Australia*

has led to criticism of an Anglo-Australian relationship in which Australia acted passively – allying to British interests at the expense of Australian interests.⁹⁰ In this section I show how Australian actions to protect their interests limited Thorneycroft's independence as a policy-maker, and highlight an active rather than passive role for Australia in criticising British policy.

The preparations for the London Conference were the spark for complications in Anglo-Australian relations. Australian Prime Minister Robert Menzies cabled London just prior to the conference clearly setting out five conditions which, if not met, would preclude their agreeing to the use of Woomera as a test site:

- (i) That by reason of past expenditure on the joint project [Australia was] entitled to free membership of E.L.D.O., and that by virtue of their offer of continuing expenditure of £9.5 millions over the next five years, which contained an element for space research, they would be entitled to free membership of all resulting organisations to exploit space in which the United Kingdom took part.
- (ii) That we [the UK] should adopt a system they [Australia] had proposed for estimating their share in the proceeds of any resulting commercial enterprise.
- (iii) That we should actively sponsor their free membership of E.S.R.O.
- (iv) That Australia should have the right to invest fresh money in any resulting project.
- (v) That since the joint project was between the United Kingdom and Australia only, whereas E.L.D.O. incorporated foreign countries, it

and the British Embrace: The Demise of the Imperial Ideal, (Melbourne, 2001); A. Benvenuti, *Anglo-Australian Relations and the 'Turn to Europe', 1961-1972*, (London, 2008).

⁹⁰ Arnold, *A Very Special Relationship*.

would be necessary for E.L.D.O. to negotiate afresh with the Australians the use of Woomera.⁹¹

The Australian conditions provoked a reaction close to outrage in Whitehall. Cabling Menzies directly, Thorneycroft, with the support of Minister for Commonwealth Relations Duncan Sandys, was adamant that these conditions (particularly (v)) were unacceptable. Sandys and Thorneycroft regarded themselves 'entitled to use Woomera' even if 'Australia did not join the organisation...' and pointed out that bilateral American-Australian work had taken place there without Anglo-American negotiations.⁹² In reply, Menzies noted that the requests had been cabled to London a year before but received no answer. He was intractable: 'My Ministers and I have looked at this matter most carefully and we find it difficult to avoid the impression that the Australian views and requirements are not being met.'⁹³ Attempts to placate Menzies and the Australian Cabinet seemed of little use.

If the United Kingdom did not agree to the Australian conditions, Menzies wrote, then, 'we can see no value in our attending [the] E.L.D.O. [conference in January.] Indeed, we can see much embarrassment [for the UK].'⁹⁴ Thorneycroft responded to the Australian démarche with anger, proposing a response which should indicate that, 'if we could not reach agreement with the Australians there was no basis on which to hold the Conference and there seemed to be no alternative but to place

⁹¹ CAB 134/1430, B.S.(O)(61) 10th Meeting, Official Committee on Blue Streak, 26 October 1961.

⁹² CAB 134/1430, B.S.(O)(61) 11th Meeting, Official Committee on Blue Streak, 27 October 1961.

⁹³ CAB 21/4458, Mr Menzies to Mr. Thorneycroft, 27 October 1961; CAB 21/4458, Mr Menzies to Mr. Thorneycroft, 30 October 1961.

⁹⁴ CAB 21/4458, Mr Menzies to Mr. Thorneycroft, 27 October 1961.

the blame for the breakdown on them.⁹⁵ Thorneycroft's views were softened by McKean, who preferred to avoid discussion about Woomera, '...saying if need be that certain matters were still under discussion between us and the therefore we could not consider the question until later in the Conference.'⁹⁶ Although concerns about Anglo-Australian relations were spoken of regularly by Ministers and officials from many departments in Cabinet and inter-departmental meetings, there had been little discussion of what to do in the event of a disagreement other than to bully or ignore Australian demands until events overtook them.

This hectoring approach, has led Australian historians such as May to describe Australia as a subservient partner in the Anglo-Australian relationship. Menzies, Prime Minister from 1949-66, is particularly noted for his anglophilia and criticised for establishing and maintaining an unquestioning attitude towards British policy.⁹⁷ However, the Australian (and particularly Menzies') stance on the use of Woomera could not have been more clear; his insistence that ultimate control of the range at Woomera was Australian was hardly subservient. The motivation for the Australian demands seems to have been a visit by Thorneycroft in 1961, where his eagerness to secure agreement again slipped the bounds of the possible.⁹⁸ Aware that a significant proportion of the Australian Cabinet did not support the idea of a European Launcher project being tested at an Anglo-Australian facility built using Australian money, Thorneycroft suggested that the project would have a multitude

⁹⁵ CAB 134/1430, B.S.(O)(61) 10th Meeting, Official Committee on Blue Streak, 26 October 1961.

⁹⁶ CAB 134/1430, B.S.(O)(61) 10th Meeting, Official Committee on Blue Streak, 26 October 1961.

⁹⁷ May, 'Macmillan's Dilemma', p.92; S. Ward, 'Sir Alexander Downer and the embers of British Australia', p. 146.

⁹⁸ National Archives of Australia, A1838 692/4/2 Part 2, 'Notes on a Meeting held in Prime Minister's Department on 17th July 1961 to discuss the Blue Streak Club Project', 18 July 1961.

of benefits for Australia. Not only would membership fees be negligible (or non-existent) Thorneycroft suggested that within a few years the European Launcher Development Organisation would be able to provide facilities for the design and launching of Australian communications, television, and mapping satellites (none of which was planned for in the initial programme). As with Thorneycroft's offer of work on the third stage of the launcher to both Germany and Italy, his exaggerated offer was quickly identified, and Menzies was angered to discover that the ELDO programme did not offer the benefits Thorneycroft had promised.⁹⁹

Combined with the UK's application to the European Communities and Menzies' accurate perception that Australian trade concerns would matter little to British delegations in Brussels, Menzies and his Cabinet had good reason to seek assurances from the British that their rights within ELDO would be protected. However, whilst this may have been done in a forthright way, Menzies and his Ministers were not intending to break their relationship with the UK. Indeed they were concerned that 'By adopting this "stand and deliver" position... we run some risk that the United Kingdom will give us an outright rejection' which would irreparably damage Anglo-Australian relations.¹⁰⁰ Instead of adopting a passive position, and accepting the effects of British policy with little regard to Australian interests, Menzies pursued them actively. Although concerns were raised that objections were pushed too far Menzies' 'stand and deliver' approach was calculated to ensure that such an attitude could no longer be regarded as

⁹⁹ National Archives of Australia, A1838 692/4/2 Part 2, 'Notes on a Meeting held in Prime Minister's Department on 17th July 1961 to discuss the Blue Streak Club Project', 18 July 1961.

¹⁰⁰ National Archives of Australia, A1838 692/4/2 Part 4, 'ELDO', 26 October 1961.

acceptable. As far as ELDO was concerned, British Ministers would have to accept that Australia would pursue its own interests, even if these were at odds with British ones. Borne out of a sense of desperation that Australia's views were being ignored, Menzies' demands highlighted the problems Britain faced in this period in maintaining good European and Commonwealth relations simultaneously.

The Australian response to Thorneycroft's attempts at personal diplomacy highlight the difficulty Ministers faced acting outside their departments' traditional remit. Ministers are used to being supported by the resources of information, time, and expertise which officials can provide. However, in circumstances such as these where Thorneycroft, the Minister of Aviation, was attempting to resolve a situation which was essentially a foreign policy issue, departmental officials could offer little advice. Policy-making with little reference to officials in other departments with knowledge ensured that Thorneycroft's attempts to resolve a relatively minor crisis quickly spiralled out of control, with damaging consequences for the Anglo-Australian relationship.

1.5: Ensuring the foundation of ELDO

When the conference began in London on 31st October, there was no Australian delegation present (nor even an observer from the Australian High Commission). However, this was not the main issue facing the British delegation. Since the previous conference Germany, Belgium and France had agreed to participate, yet other nations were still unwilling to commit. The conference was almost a summit.

While the majority of nations sent committees of officials, Thorneycroft attended as Chair to drive the process along personally, relying on officials to provide the information requested by other nations. Thorneycroft noted that above all, the conference would aim to 'drive all along to a conclusion and to avoid a situation in which each Government is waiting on the decision of others' and ensure the signing of the convention.¹⁰¹ The shape of the organisation, and of the launcher was settled by this time and the British provided drawings of the suggested launcher and test-satellite vehicle which would be split between Britain using Blue Streak as the first stage, France using a Veronique rocket as the second stage, West Germany constructing the third stage, and Italy constructing the test-satellite (see Figure 3). Belgium and the Netherlands would provide range equipment such as radio trackers and high-speed cameras. Pointing to the positive decisions on membership announced by Belgium, Germany and France since the last conference, Thorneycroft tried to persuade other nations to agree to a convention which had now been under consideration for nearly a year.

Thorneycroft worked hard throughout the week to ensure free associateship of the organisation for Australia, persuaded the Belgian, German, French and Dutch delegations to declare their intention to sign the convention by the 27th of November, and also extracted the promise of further consideration from other nations. Although Macmillan noted that, 'we did not get quite what we hoped and there are still uncertainties...' he was convinced that 'the Conference has been a

¹⁰¹ CAB 124/2302, P. Thorneycroft to Prime Minister, 31 October 1961.

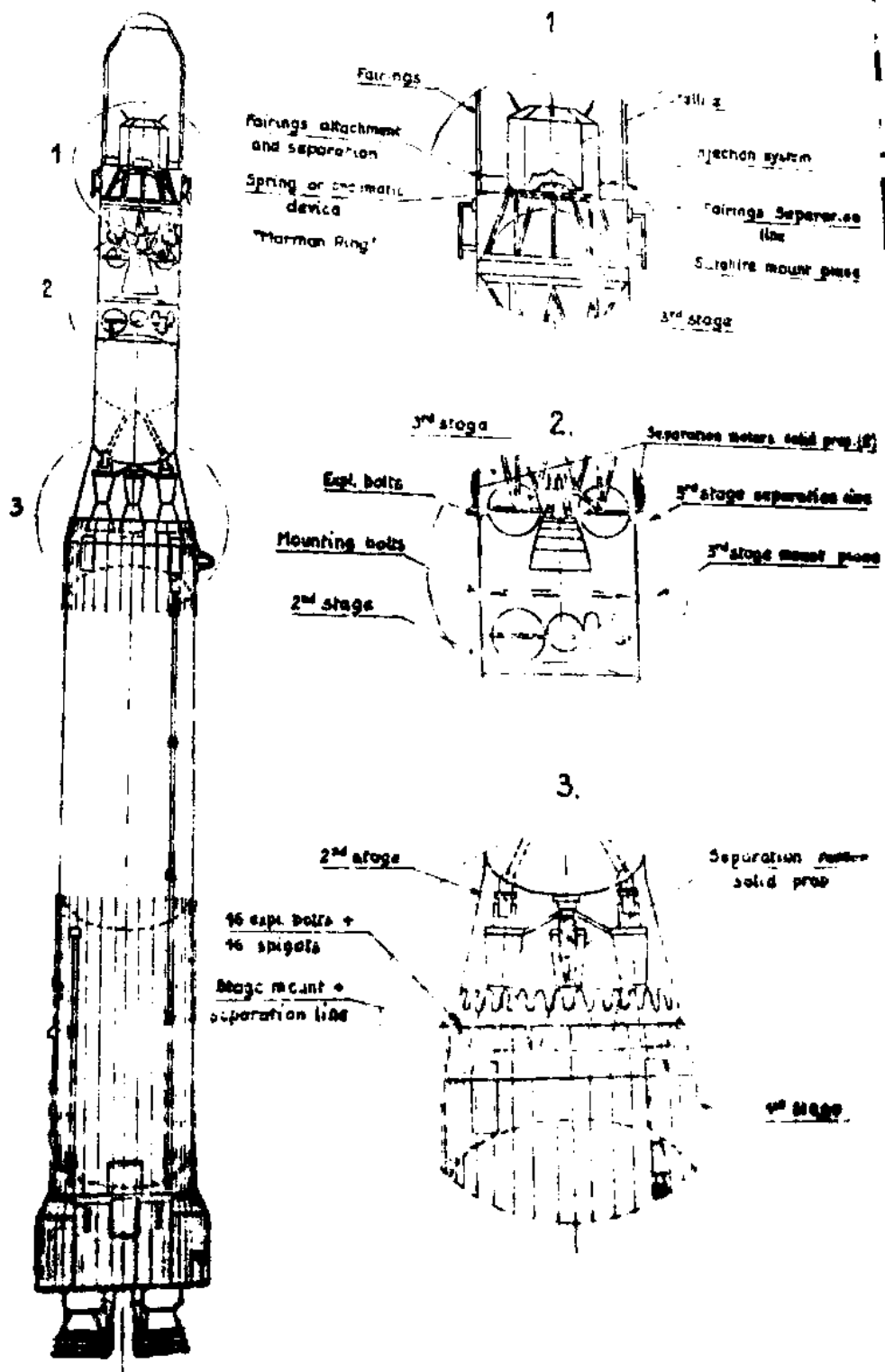


Figure 3: DSIR 23/32243, A.N. Christmas, 'The E.L.D.O. Initial Launcher System: Design Objectives and Development Programme', 25 September 1964

considerable success.’¹⁰² The Ministers in the Blue Streak Committee agreed that ‘The result of the recent E.L.D.O. Conference was undoubtedly a triumph for the Minister of Aviation...’¹⁰³ In spite of all the difficulties which had been created by Thorneycroft’s personal diplomacy (see 1.4), his effort in creating and sustaining the Strasbourg and London Conferences was vital in the creation of ELDO.

In his work on bureaucratic politics in foreign relations with Halperin, Allison states that all too often decision-makers, well aware of division and delay in their own Ministries fail to view states and their Ministries as complex entities.¹⁰⁴ The complexity of other governments (and Thorneycroft’s inability to understand those complexities) meant that yet again the deadline of the 27th of November was missed. As the deadline set for signatures passed, the Cabinet Office noted that ‘So far no country has given this confirmation.’¹⁰⁵ France and Germany, although they had announced they would sign, refused to do so as they were concerned that if Italy did not join they would be asked to shoulder a much heavier burden. However, a concerted effort by Macmillan pressured the French and German presidents to encourage the Italian government to join. Such pressure was a common element of British European policy in the period and had been used to no small effect throughout the late 1950s.¹⁰⁶ Personal telegrams from Macmillan rather than Thorneycroft, to the leaders of foreign nations (rather than equivalent Ministers)

¹⁰² CAB 21/4458, H. Macmillan to Minister of Aviation, 06 November 1961.

¹⁰³ CAB 134/1428, B.S.(61) 7, Ministerial Committee on Blue Streak, ‘European Launcher Development Organisation: Memorandum by the Lord President of the Council and Minister for Science, 16 November 1961.

¹⁰⁴ G.T. Allison and M.H. Halperin, ‘Bureaucratic Politics: A Paradigm and Some Policy Implications’, *World Politics*, 24 (Spring 1972).

¹⁰⁵ CAB 21/4458, W. Geraghty to Prime Minister, 29 November 1961.

¹⁰⁶ J. Ellison, *Threatening Europe*; M.P.C. Schaad, *Bullying Bonn: Anglo-German Diplomacy on European Integration 1955-61*, (Basingstoke, 2000).

sought to highlight a firm British desire to see the organisation formed, and to provoke leaders to approve their nation's membership. With this pressure from its close European allies, the British government received confirmation of Italian agreement to join ELDO early in December.¹⁰⁷ With Belgian, Dutch, French, German and Italian membership, the organisation was much smaller than initially imagined, yet from a foreign policy perspective remained potentially useful (being the only formal collaboration between Britain and the five major members of the European Communities).

The eventual formation of ELDO on 28 March 1962 was 'a triumph' for the Minister of Aviation, who piloted the decision through a political and administrative environment which was not supportive (and sometimes openly hostile). Thorneycroft's personal interventions persuaded the Cabinet to support two conferences and a larger British contribution to the running costs of the organisation. However, it is important to note that the signing of the Convention did not end discussions surrounding the content of any collaborative programme, which did not die down even after the Organisation was engaged in research.

Thorneycroft's personal interest in seeing the organisation formed was vital. His adoption of the arguments of his civil servants – that conversion of Blue Streak into a European collaborative space organisation would drastically improve the Anglo-European relations necessary for British accession to the

¹⁰⁷ CAB 124/2308, A. Fanfani to Prime Minister, 08 December 1961.

European Communities – enrolled allies amongst members of the Cabinet who supported British accession. However, the personal diplomacy in which Thorneycroft engaged, and the Cabinet's acceptance that a slightly increased expenditure was balanced out by the potential domestic political and foreign relations benefits of keeping Blue Streak and launching a European collaborative project stored up problems for the future. As we shall see in later chapters, policies engaged in largely at the instigation of individual Ministers are open to attack, and suffer from problems of legitimacy in a system which is built upon (theoretically at least) collective Cabinet decision-making.

This section challenges Ludwig and Krige's assertions that ELDO was formed for foreign policy purposes.¹⁰⁸ For Macmillan and Thorneycroft, the use of Blue Streak as a European satellite launcher solved a number of problems. It projected an image of Britain as a technologically advanced, 'good European' nation willing to share the fruits of its labours with its neighbours for shared benefits. The decision to establish ELDO was formed of domestic political considerations, and whilst it had obvious potential foreign policy benefits these were not its main aims. Instead, the benefits of Britain forming a European organisation containing members of the EFTA and European Communities was regularly put forward as a benefit, but only after arguments about wasted effort, wasted money, and industrial dislocation had failed to make headway. The Macmillan government was willing to use

¹⁰⁸ Ludwig, 'The origins of European space policy'; Krige, 'Launch of ELDO'.

the establishment of a space programme to fulfil domestic political concerns as well as foreign policy, and the decision to engage in that programme would not have been taken and directed without the intervention of an interested Minister with allies in Cabinet (by late 1960 Macmillan was prepared to cancel the project). However, as we shall see below – the establishment of allies in Cabinet, and even Cabinet approval are not always necessary requirements for the foundation of major technological projects.

1.6: Policy-making without consent: the establishment of Black Arrow.

Although the formation of ELDO had maintained work on Blue Streak, there was still the question of its sister project, Black Knight. Begun in 1955 as a test vehicle (to test the re-entry properties of Blue Streak warheads), its success had led to various follow-up research shared with Australia and the United States.¹⁰⁹ Again keen to retain knowledge and skilled staff, the MoA suggested a smaller launcher programme based on Black Knight. The Black Arrow programme aimed to create a series of small experimental satellites and a small scale satellite launcher, a decision which would add to the budget of the MoA and require Cabinet assent. By October 1963 Macmillan himself had been replaced by former Foreign Secretary Sir Alec Douglas-Home, who is often forgotten in discussions of British policy in the 1960s.¹¹⁰

¹⁰⁹ D. Millard, *The Black Arrow Rocket: A history of a satellite launch vehicle and its engine*, (London, 2001).

¹¹⁰ A. Holt, *The Foreign Policy of the Douglas-Home Government: Britain, the United States and the End of Empire*, (Basingstoke, 2014).

As Dorey and Bishop have noted, the Cabinet is no longer where decisions are made, it is only where they approved.¹¹¹ Although Thorneycroft had been promoted to Minister of Defence during Macmillan's "night of the long knives" in 1962, his replacement, Julian Amery, was no less enthusiastic about the possibilities of British space research.¹¹² Indeed in the case of Black Arrow I show how Ministerial enthusiasm led directly to a large-scale scientific and technological project initially estimated to cost some £7 million without Cabinet consent.

Announced to the public five days before the date of the 1964 general election was declared (in which Wilson's rhetoric on the transformative power of science and technology had captured the public imagination and transformed the political debate) the Black Arrow programme was immediately satirised in the press by Evening Standard cartoonist Vicky (Victor Weisz) as no more than an election ploy (see Figure 4). Showing Amery in a space suit emblazoned with a Union Jack, and carrying the proposal for a space programme, the Minister hoped that it "may solve our problems of re-entry" in the General Election. Littered behind him are the names of various scandals in science, technology and defence procurement associated with previous Conservative Ministers in the same role. The Blue Streak controversy was discussed earlier, but perhaps the most illustrative scandal is the 'Ferranti Affair'. Also known as the 'Bloodhound Affair', the scandal arose late in

¹¹¹ P. Dorey, *Policy Making in Britain*, p. 117; D.G. Bishop, 'The Cabinet and Foreign Policy', in R. Boardman, A.J.R. Groom (eds.), *The Management of Britain's External Relations*, (London, 1973), p. 157.

¹¹² K. Alderman, 'Harold Macmillan's 'Night of the Long Knives'', *Contemporary Record*, 6(2) (1992).

1963 as it emerged that a fixed-price contract granted to the electronics firm, Ferranti for the production of the electronic systems for the surface-to-air Bloodhound missile had been overvalued to the extent that the company accrued at least an 80% profit.¹¹³



Figure 4: V. Weisz, ‘... and, of course, it may help us solve our problem of re-entry!’, *Evening Standard*, 11 September 1964.

¹¹³ J. Ayles, ‘Bloodhound on my Trail: Building the Ferranti Argus Process Control Computer’, *International Journal for the History of Engineering and Technology*, 82(1), (2012); J.L. Flower, ‘The Case of the Profitable Bloodhound’, *Journal of Accounting Research*, 4(1) (1966, Spring).

The Black Arrow programme was based around an expanded version of Black Knight and designed to place small 'technological satellites' in orbit. These satellites would test various technologies in the space environment, identifying suitable motors, solar cells, or designs and materials for antennae which could then be exploited by private industry – building satellites out of components with a proven track-record.¹¹⁴ The major expense in the programme would be in stretching the Black Knight design into a three-stage launcher capable of placing satellites into orbit, and, whilst officials in the MoA would exercise budgetary control, it would be officials in the Royal Aircraft Establishment (RAE) Space Department at Farnborough who would design the improved rocket and place contracts in industry for its construction.

Treasury officials such as J.W. Lloyd opposed Black Arrow from the beginning, utilising their status as economic experts to assert that 'we do not need satellites for our own purposes. The case for developing them, either alone or in association with Europe, rests upon the arguments of prestige, technological spin-off, foreign exchange earnings... and the need to provide jobs for design staffs etc.'¹¹⁵ For officials in the Treasury, prestige was found in maintaining the monetary credibility of the UK, and for officials like Lloyd, expenditure on Black Arrow would clearly put this at risk. Indeed, officials in the Treasury could not understand why an independent project needed to be undertaken, as teams of scientists at the RAE and in Universities across the country had had free access to American launchers for the

¹¹⁴ AVIA 92/125, 'Space Activities of the Ministry of Aviation', 10 October 1963.

¹¹⁵ T 225/2125, J.W. Lloyd to Mr. Mountfield, 03 June 1964 [emphasis in original].

launching of scientific satellites to study the upper reaches of the atmosphere since 1960.¹¹⁶

Early arguments for the launcher put forward in Cabinet suggest that considerations of prestige were vital. Amery argued that ‘unless alone among major European countries, the U.K. is going to be content with exclusive reliance on international organisations and to abandon all national work in space – and I do not regard such a policy as defensible - we ought to go ahead...’¹¹⁷ For the Treasury, prestige was still to be found in economic strength (see 1.2); for the Minister of Aviation, prestige was found in undertaking research being done in neighbouring European countries. Seeking to blunt Treasury accusations that Black Arrow was a prestige project, the Minister sought to reassure that the MoA was not ‘competing with the gigantic programmes of the U.S.A. and U.S.S.R...’, but instead basing their considerations on competition with other European countries (particularly with France, who had just begun construction of a similar launcher, Diamant).¹¹⁸ Highlighting concerns over a loss of knowledge, officials noted that whilst the United Kingdom might never undertake a large scale space programme, ‘the absence of an adequate research and experimental programme’ would mean that ‘this ultimate decision will have been taken for us by default.’¹¹⁹ This clash over what research was necessary, and what it meant for research to be ‘prestigious’ is at the heart of debates about Black Arrow.

¹¹⁶ Godwin, *Skylark*; Sir H. Massey, and M.O. Robbins, *History of British Space Science*, (2nd edition, Cambridge, 2009).

¹¹⁷ T 225/2125, Julian Amery to Chief Secretary Treasury, 03 January 1964.

¹¹⁸ AVIA 92/125, ‘Space Activities of the Ministry of Aviation’, 10 October 1963.

¹¹⁹ AVIA 92/125, ‘Space Activities of the Ministry of Aviation’, 10 October 1963.

Amery's arguments for Black Arrow rested on the fact that, for a relatively small price (compared to American and French projects), the programme would project an image of a nation capable of high level scientific research (rather than a power in decline) and maintain the UK's ability to take part in the growth of developing industries in the future. Treasury officials were worried that, in Cabinet, Ministerial concerns about 'image' would lead to rapid Cabinet approval of a project they thought useless.¹²⁰ In this period, Treasury officials were particularly sensitive about expenditure on science and technology (no doubt increased by press comment and humour – see Figure 4). The establishment of the Concorde project against Treasury advice, and the various procurement scandals in the defence industries all seemed to suggest that economic control outside of the Treasury was lax (indeed Chapman suggests that Treasury officials became arrogant about their superiority in managing financial matters).¹²¹ Having 'lost out' in its attempt to recoup savings from the cancellation of Blue Streak and failed in its attempts to forestall Concorde, Barratt, Under Secretary in the Treasury (and the primary liaison with the MoA) was particularly concerned that the Treasury was 'in some danger of losing [the argument] over space, which has the same sort of emotive attraction as supersonic air transport.'¹²² Concerned 'that overall space will turn out to be an even bigger economic dud than the Concord [*sic*]', Barratt and his colleagues at the Treasury,

¹²⁰ T 225/2127, G.R. Bell to Sir R. Clarke, 12 June 1964.

¹²¹ R.A. Chapman, *The Treasury in Public Policy Making*, (London, 1997), p. 49; L. Johnman and F.M.B. Lynch, 'A treaty too Far? Britain, France and Concorde', 1961-1964, *Twentieth Century British History*, 13 (3), (2002).

¹²² T 225/2127, F.R Barratt to Mr. Bell, 12 June 1964.

worried that political motivations (or as he termed it 'emotive attractions'), could see the project approved by Cabinet with little consideration.¹²³

Amery 'showed particular interest' in Black Arrow and demanded that a project study be completed 'by the end of February 1964.'¹²⁴ Whether Amery found space research of particular personal interest, or thought that establishing a space research project would be politically beneficial in the upcoming election is unknown. However his interest added urgency to a cautious discussion of approaches by officials and the project was rushed through internal departmental discussions. Although the cost of the project study was estimated at only £20,000, the cost of the programme (if approved) would involve an increase in the MoA budget. To avoid over-spending in the MoA, the Treasury and MoA had agreed practices giving officials at the Treasury a veto over the commencement of any project study which would involve a budget increase.¹²⁵ Project studies often involved obtaining estimates from the private companies who would do the research. As companies would take the existence of a study to imply a new contract for research, agreed practices dictated that officials at the MoA allow two weeks for the Treasury to study the initial proposal; beginning a study and informing private companies could occur only once this time had passed.¹²⁶ With the pressure of a Ministerial deadline for the completion of the project study MoA officials were forced to choose between keeping to the agreed procedure and completing the study by Amery's deadline.

¹²³ T 225/2125, F.R. Barratt to Mr. Bell, 20 July 1964.

¹²⁴ AVIA 92/125, C.J. Stephens to A.D.C.10, 14 May 1964.

¹²⁵ AVIA 70/1, Ministry of Aviation Finance Handbook.

¹²⁶ AVIA 92/125, M. Senior to A.S./L.G.W., 06 January 1964.

As Kaufman notes, when Ministerial and civil service interests align, they can become a powerful force in decision-making, with Ministers providing defence of a project in Cabinet and civil servants providing 'ways around... procedural problems'.¹²⁷ Amery was keen to ensure that Black Arrow could be announced before the date of the General Election was announced (in September), and was strict with his deadlines. Amery's interest in ensuring a quick announcement also chimed with officials in the MoA who sought to retain work on Black Knight through the creation of Black Arrow. In order to meet the instructions of their Minister (and to protect the departmental interests) officials would need to seek 'ways around' procedure in order to speed up interdepartmental discussion and obey their Minister's instructions.

In December 1963 R.A. Clifford, a junior civil servant at the MoA, informed officials at the Treasury that he had 'put in hand a project study for a small satellite launcher...'¹²⁸ Officials at the Treasury reacted strongly to this challenge to their authority, as they had received no earlier indication that the MoA intended to begin a project study. Although Clifford and his colleagues insisted that the project had been mentioned at an earlier meeting of the Weapons Development Committee meaning that Clifford was 'in breach of at least the spirit of the procedure if not its actual letter' officials at the Treasury made it quite clear that the MoA had not met the requirements, and were endangering their budget.¹²⁹ Barratt was shocked by the break of protocol, yet was forced to accept that the study should go ahead

¹²⁷ G. Kaufman, *How to be a Minister*, (London, 1997), p. 33.

¹²⁸ AVIA 92/125, R.A. Clifford to P. Mountfield, 13 December 1963.

¹²⁹ AVIA 92/125, M. Senior to A.S./L.G.W., 06 January 1964; AVIA 92/125, F.R. Barratt to R. Anderson, 24 January 1964.

‘Since it is now, I take it, too late to stop work ...’¹³⁰ Treasury officials noted that officials at the MoA had engaged in this kind of behaviour before and that after the Ferranti Affair, this break of procedure was only ‘another episode in the sorry tale of our deteriorating relations...’¹³¹ A desire to meet Amery’s instructions had led MoA officials to break with agreed procedure, and the deteriorating relations between individual civil servants in the Treasury and MoA were important in the progression of the Black Arrow programme through the policy-process.

Clifford’s break of procedure allowed Barratt to attach conditions of his own to the project study: ‘One is that no publicity whatever should be given to this study. The other is that... this project study, and any development work arising out of it which Ministers may ultimately authorise, should be paid for out of the Defence Budget.’¹³² As Barratt was well aware of the ‘considerable pressures which were developing within your Department [MoA] which led you to wish to avoid any unnecessary delay’, the restriction on publicising the project study would frustrate the hopes of the Minister for an early announcement and mean that the study would have to be finished and the programme approved by a series of committees before any announcement could be made.¹³³ Undeterred by Barratt’s conditions, officials at MoA discussed ways in which Amery could ‘short circuit further discussion at the official level by putting the satellite launcher proposition to his ministerial colleagues forthwith.’¹³⁴ Such a move, which would breach the agreed practices of decision-making concerned Treasury officials, who worried that if the

¹³⁰ T 225/2125, F.R. Barratt to R. Anderson, 20 December 1963.

¹³¹ T 225/2125, P. Mountfield to Mr. Barratt, 21 January 1964.

¹³² T 225/2125, F.R. Barratt to R. Anderson, 20 December 1963.

¹³³ T 225/2125, P. Mountfield to Mr. Barratt, ‘Draft letter to Mr. Anderson’, 21 January 1964.

¹³⁴ AVIA 92/125, W.G. Downey to P.S./Minister, 09 June 1964.

decision went 'to Cabinet on the straight issue of the Minister of Aviation's proposals, he is more than likely to gain his colleagues' support and approval.'¹³⁵

These breaches of agreed practice by MoA officials only damaged the project's legitimacy in the long term – encouraging Treasury officials to attack a programme which they saw as established through deceit.

Amery's civil servants were a valuable source of procedural knowledge and advice. From a position of outright Treasury opposition, a project study had been initiated without consent, and although publicity had been prohibited by Barratt in return, this did not prohibit Amery from discussing the project with his colleagues. Amery had the support of his civil servants to force a quick decision on Black Arrow, and sought to establish an alliance of Ministers and politicians to promote Black Arrow in Cabinet in order to gain approval for the project before the general election. This combination of Amery's personal political interests and officials' departmental interest in establishing the project created a formidable alliance between Amery and his officials. By searching for the support of politicians outside of Cabinet, Amery sought to extend the alliance of actors in favour of Black Arrow and create the impression that its foundation was vital.

Amery was not the only Conservative with an interest in space technology. Airey Neave, Chairman of the Conservative Parliamentary Group for Space, regularly wrote to the Prime Minister pressing for Britain to undertake further space research.¹³⁶ Representing a group of backbench Members of Parliament, Neave may

¹³⁵ T 225/2127, G.R. Bell to Sir R. Clarke, 12 June 1964.

¹³⁶ No records of the group can be found in personal or Conservative Party archives – this may represent its narrow interest, and suggests that the grouping was temporary. Although its influence may be limited overall it is certainly vital in this case.

have been unaware of discussions at official level about the Black Arrow programme, and sounded a note of caution: 'So far, after many years work, we have got only Blue Streak, Black Knight, Skylark and some designs for satellites... [However] we are concerned that there do not appear to be any plans for "follow-up" research...'¹³⁷ A reply to Neave's letter from the Prime Minister Sir Alec Douglas-Home took some time to formulate, not only because responsibility for space research was spread across various departments, but because MoA officials 'thought it would be better to delay a reply until they could refer to the decision on the small satellite launcher.'¹³⁸ It is possible that Amery may have encouraged Neave to write to the Prime Minister in order to add pressure to announce the Black Arrow programme, in much the same way that Ministers 'inspire' questions in parliament from their backbench MPs. The further pressure from the Minister of Aviation and from backbenchers such as Neave meant that the Cabinet Office allowed discussions on the programme to move from interdepartmental meetings between officials to Ministerial discussions in Cabinet without agreement having been reached at an official level. By increasing the scope of his alliance beyond his departmental officials, and even beyond Cabinet, Amery had established Black Arrow as a vital policy-matter of some urgency. Political pressure brought on the Prime Minister meant that the decision leapfrogged the usual stage of agreement at official level.

This lack of agreement at official level meant that Cabinet were not being asked, as usual, to ratify a decision which had been recommended (to proceed with Black

¹³⁷ PREM 11/4984, A. Neave to A. Douglas-Home, 17 July 1964.

¹³⁸ PREM 11/4984, T.H. Caulcott to P.J. Woodfield, 22 September 1964.

Arrow), but were being asked to make the decision of whether to proceed or not. Amery pushed hard for Ministers to accept the Black Arrow proposal, relying heavily on the uncertainty of future requirements; the Chief Secretary meanwhile 'stressed in reply the pressures on expenditure...'¹³⁹ Whilst Amery was making the case for a project which would be electorally popular – very close to the General Election - the economic situation (which by mid-1964 was severe) dictated Ministerial opinion more strongly than electoral advantage. The Cabinet agreed that the programme should go ahead subject to yearly limits on expenditure arrived at by the Treasury, and 'subject to the Secretary of State for Defence and the Minister of Aviation satisfying the Chancellor of the Exchequer that equivalent savings could be found from their Votes [budgets].'¹⁴⁰ Such a decision, favoured both the Treasury's position of concern about the economic situation, and Amery's political concerns that the project should be announced before the election. However, the Cabinet's decision, which did not side strongly with economic stringency or the Black Arrow programme allowed Amery to continue to agitate for the project to begin.

Amery's enthusiasm had rapidly pushed through a decision on Black Arrow, yet he did not relax pressure on his officials at the MoA demanding that the savings be identified 'within a week' to enable an immediate announcement.¹⁴¹ Treasury officials attempted to convince the MoA to take a slower, more considered approach, and civil servants in the Cabinet Office even went as far as suggesting that Ministers 'defer decisions on further major issues until the new Administration

¹³⁹ AVIA 92/125, C.B. Benjamin to U.S.(F), 21 July 1964.

¹⁴⁰ AVIA 92/125, C.B. Benjamin to U.S.(F), 21 July 1964.

¹⁴¹ AVIA 92/125, C.B. Benjamin to U.S.(F), 21 July 1964; AVIA 92/125, R. Anderson to E.H. St.C. Moss, 22 July 1964.

is in office after the General Election'.¹⁴² As the election and Labour's concentration on science and technology were major considerations in the Minister's reasoning for a rapid announcement on the project, such a delay was something which Amery could hardly countenance.

Again, it was Amery's civil servants who attempted to find a way around this 'procedural problem'. As a contracting department the MoA's funding situation was complicated; providing services (particularly the construction of scientific equipment and aircraft) for other departments, and employing private companies as contractors meant multiple budgets were tied together and that there were often large charges to pay for the cancellation of programmes. In these circumstances Bullock looked to planned expenditure (on programmes which had not yet been approved, but for which approval would be sought within the next financial year) to provide the majority of savings.¹⁴³ Identifying savings by cancelling the remaining contracts for Black Knight (whose staff would be absorbed by the Black Arrow programme anyway), and reductions in various programmes which had not yet been approved, MoA officials believed they had met the Cabinet's requirements, yet refused to discuss the savings with officials from other departments.¹⁴⁴ In doing so officials hoped that the figures would only be scrutinised by busy Ministers in a Cabinet meeting, and presumably MoA officials hoped that Amery's unswerving enthusiasm and the less critical eye of busy Ministers would allow the project to go ahead.

¹⁴² CAB 134/1455, C.C.C.(64)39, Combined Communications-Electronics Committee, 'United Kingdom Policy in Space: Note by the Chairman', 01 September 1964.

¹⁴³ T 225/2125, R. Way to Sir R. Clarke, 27 July 1964.

¹⁴⁴ T 225/2125, F.R. Barratt to Chief Secretary, 20 July 1964.

For Amery the approaching General Election provided motivation to ensure that Black Arrow was announced. As Harold Wilson toured the country capitalising on Labour's 'Plan for Science', the Conservative government led by the Thirteenth Earl Home of the Hirsell was portrayed as conspicuously out of date.¹⁴⁵ Although Black Arrow would maintain teams already in being, Amery was clearly interested in the political capital which could be made from announcing Black Arrow in highlighting that Conservatives had a plan for science too.

As the October election approached, Amery tried numerous strategies to force the Treasury to accept the savings which had already been identified, requesting that the matter be discussed again in Cabinet, writing to various members of government, and encouraging the Permanent Secretary of the MoA to discuss the matter with "Otto" Clarke (his opposite at the Treasury), and even encouraging a backbench MP, Victor Goodhew to raise the matter in the House of Commons.¹⁴⁶

Amery, who had hoped that the savings would be accepted by the time Goodhew's question was received, was forced instead to give the question the 'rather lame reply' that 'This subject is under consideration by the Government and I am not yet in a position to make a statement.'¹⁴⁷ These measures, outside the agreed practices of policy-making only served to concern Treasury officials and the Chief Secretary further, especially when, just over a month before the election, MoA officials

¹⁴⁵ D. Porter, 'Downhill all the way: thirteen Tory years 1951-64', in R. Coopey, S. Fielding, and N. Tiratsoo (eds.), *The Wilson Governments 1964-1970*, (London, 1995), p. 10; People's History Museum, Manchester, 360006749/AG/Labour Party – Box 3/A, H. Wilson, 'Labour's Plan for Science', October 1964.

¹⁴⁶ T 225/2125, R. Way to Sir R. Clarke, 27 July 1964; T 225/2125, P. Mountfield, handwritten note, 31 July 1964; House of Commons Debates, 'Space Launching Programme', 31 July 1964, Volume 699, Column 432.

¹⁴⁷ T 225/2125, P. Mountfield, handwritten note, 31 July 1964; House of Commons Debates, 'Space Launching Programme', 31 July 1964, Volume 699, Column 432.

identified further savings in the budget which appeared to be just £1 million short of meeting the Cabinet's conditions.¹⁴⁸ They were right to be concerned, and the manner in which the MoA went about achieving these savings was important for the future of the programme. Instead of finding savings, 'the latest moves and proposals designed to secure the earliest possible Government decision to proceed' were simply to reduce the amount required for the programme. This was done by 'stretching the development of the satellite launcher over a longer period' and by classifying the cost of developing the inertial guidance system as optional (even though it would be a vital necessity).¹⁴⁹ Such an approach whilst useful in the short term only served to store up problems for the future (as we shall see in the next chapter).

With Parliament dissolved for the campaign Amery had little scope to make a public announcement of the launcher before the election except for his appearance in a Ministerial capacity at the Farnborough Airshow. Hosted by the Society of British Aircraft Companies, the Airshow was (and remains) an international event for British manufacturers to display their aircraft to the world. Such an event had a large public audience, and any announcement of an all-British satellite launcher was sure to generate the kind of favourable press comment which Amery desired. With only £1 million of savings left to find Amery offered to accept a cut to the joint MoA – Ministry of Defence aircraft and aero-engine research programme, on the condition that he would be able to announce the launcher project that night at the Farnborough Airshow. The Chief Secretary, who was little impressed with the short

¹⁴⁸ AVIA 92/125, W.W. Abson to D./Space, 09 September 1964.

¹⁴⁹ AVIA 92/125, W.W. Abson to D./Space, 09 September 1964; AVIA 92/125, R.A. Clifford to W.G. Downey, 08 July 1964.

notice warned that he must 'obtain Peter [Thorneycroft, the Minister of Defence]'s agreement in time...'¹⁵⁰ There is no evidence that Amery received Thorneycroft's agreement and in the hands of a less determined Minister the project might never have been approved. At a cocktail party after his speech at the Airshow Amery met representatives from the private firms involved, and after highlighting his difficulties in having the project announced before the election, received from them an 'offer of joint assistance of up to £1 million, towards the cost of this project...'¹⁵¹ Amery made no attempt to check that this new offer (instead of the reduction already proposed) would 'satisfy the Chancellor of the Exchequer' as stipulated by Cabinet and instead announced the project that evening to a large press conference.¹⁵²

The decision to announce the project to the press with no firm consent from the Cabinet was a *fait accompli* by Amery. Once the decision was announced, the proximity of the election meant that even the Chief Secretary felt that he could not oppose Amery any longer. To do so would risk painting a 'picture of bitter strife' which would be 'very bad for the Government image generally...', and as such he accepted that Black Arrow should go ahead.¹⁵³ Amery's *fait accompli* ensured that the Conservative government was committed to the project, however the knowledge that the project had been approved without usual oversight (or obvious Cabinet consent) by a Minister who made oral agreements at a cocktail party, affected the legitimacy of the project under the new Labour government elected just a month later.

¹⁵⁰ T 225/2125, J. Boyd-Carpenter to Minister of Aviation, 09 September 1964.

¹⁵¹ AVIA 92/125, J. Amery to Sir R. Verdon Smith, 18 September 1964.

¹⁵² AVIA 92/125, C.B. Benjamin to U.S.(F), 21 July 1964.

¹⁵³ T 225/2125, J. Boyd-Carpenter to Minister of Aviation, 09 September 1964.

Amery's ability to force through acceptance of the Black Arrow programme without having met the demands of Cabinet highlights the amount of power which he was able to wield as the head of a diverse alliance of Ministers, officials and back-bench Conservative MP's. Beginning Black Arrow with no firm estimate of cost, economic analysis, and no consensus amongst departments that the programme was anything other than a prestige project damaged its future prospects. As illustrated by Vicky in the *Evening Standard*, the announcement of Black Arrow was seen as little more than electoral ploy to cover the 'Edwardian' and scandal tarnished Conservatives with a façade of modernism. The election, returning the first Labour government since 1951, and one committed to the ending of wasted expenditure on prestige projects, was not seen to be good news for proponents of Black Arrow.

1.7: Conclusion

In this chapter I have shown how Ministers played a key role in initiating the formation of ELDO and Black Arrow, and how civil servants played a vital role in framing their decisions. Peter Thorneycroft and Julian Amery announced British commitment to two large scale projects without the continued support of Cabinet colleagues (or in Amery's case without their consent at all). Decision-making on these two projects was heavily reliant on the personal enthusiasm and actions of the two Ministers. Thorneycroft, by establishing alliances with Heath and Sandys ensured that the ELDO negotiations could continue even as Macmillan began to lose patience as deadlines to sign the treaty passed. Amery's enrolment of the support of his civil servants in finding ways around key stages in the policy-making process

allowed for discussion of Black Arrow at Cabinet without consensus at official level and for his announcement of the project without Cabinet approval.

By seeking to understand the meaning of space research for the UK officials in the MCC provided conflicting definitions of what was prestigious, and the kinds of research it was appropriate for the UK to undertake either alone or in collaboration with other nations. I have shown that two very different concepts of prestige were in operation – one focused on achieving a stable monetary position, and one based on creating a satisfactory settlement of Anglo-European relations. The balance of these two conceptions of how prestige should be attained and maintained is of importance in the rest of this thesis as officials and Ministers sought to exploit, and avoid conceptions of prestige in order to successfully argue for the maintenance of British commitments to Black Arrow and ELDO.

Contrary to suggestions by Krige and Ludwig that the creation of ELDO was part of a coordinated effort aimed at improving Anglo-European relations, Ministerial enthusiasm for the creation of an organisation to save domestic political embarrassment over the cancellation of Blue Streak as a weapon was a primary aim. Although Thorneycroft was undoubtedly committed to the formation of ELDO, arguments that its formation would assist the improvement of Anglo-European relations were regularly made, but dismissed by Ministers and the Prime Minister (particularly as negotiations continued throughout 1962-4). By analysing the national record rather than the European record as Krige does, this Chapter highlights the importance of domestic political concerns in the formulation of policy on ELDO.

Throughout, the role of civil servants has been shown to be vital in supporting the vast amount of work required at international conferences to establish ELDO, in framing the options from which Ministers could choose over the cancellation of Blue Streak, and in assisting Ministers to arrive at policy decisions rapidly. The key place of civil service advice in the decision-making process will be discussed further in the next chapters where its presence (and absence) is discussed and problematised in further detail. In this chapter we have seen how the alignment of Ministerial enthusiasm with civil servants' advice led to rapid policy-making without the wholehearted consent of Ministerial colleagues. Throughout this chapter civil service advice has been (largely) united and accepted by Ministers. In Chapters 2 and 3 I will show how increasing differences between previously united groups of civil servants led Ministers to reject civil service advice and make policy without reference to their expertise.

In the next chapter I will show how the new Wilson government sought to utilise civil service advice to rationalise the decision-making process, increasing the employment of economic techniques and decreasing reliance on unquantifiable notions concepts such as prestige as values of import in the decision-making process. By following the development of policy on ELDO and Black Arrow I will compare and contrast the ways in which decisions are made when Ministerial interests and civil service advice do not align, and highlight the role that individual civil servants can play in shaping advice and policy.

Chapter 2: The first Wilson government and British space research 1964-6

2.1: Introduction

In 1964, Harold Wilson became Prime Minister leading a government with a small majority of four seats. Authors such as Young suggest that the government's early actions were shaped by the economic situation inherited from the Conservatives (a balance of payments deficit initially thought to be £800 million).¹ Wilson's government came to power on a wave of optimism about the potential of government planning of science and technology for the benefit of society.² Wilson's rhetoric attacked the previous government for engaging Britain in wasteful prestige projects, over-stretching British resources to the detriment of economic growth and living conditions.³

This chapter will chart the development of British space research during the first Wilson government 1964-66. Beginning with the government's attempts to rationalise British space policy through the formulation of economic criteria for research, the chapter will then turn to examine the government's policy towards ELDO and Anglo-European policy. I show what happens to the decision-making

¹ J.W. Young, *The Labour Governments 1964-70: Volume 2: International Policy*, (Manchester, 2003), p.1.

² H. Wilson, *Purpose in Power: Selected Speeches*, (London, 1966), pp. 133-156; Young, *Labour Governments*); S. Fielding, *The Labour Governments 1964-70: Volume 1: Labour and cultural change*, (Manchester, 2003); J. Tomlinson, *The Labour Governments 1964-70: Volume 3: Economic Policy*, (Manchester, 2003); R. Coopey, S. Fielding, and N. Tiratsoo (eds.), *The Wilson Governments 1964-1970*, (London, 1995); P. Dorey (ed.), *The Labour Governments 1964-1970*, (London, 2006); D. Edgerton, *Warfare State: Britain, 1920-1970*, (Cambridge, 2006); D. Edgerton, 'C.P. Snow as anti-historian of British Science: Revisiting the Technocratic Moment, 1959-1964', *History of Science*, 43, (2005).

³ H. Wilson, *The Labour Government 1964-1970: A Personal Record*, (London, 1971), p.243.

process when a Prime Minister who centralises policy control has little interest in the decisions being made. The first Wilson government's experience of space policy is one of extremes. As the Black Arrow programme continued without Cabinet approval, but under constant review, a lack of interest from the Prime Minister and all the Ministers involved meant that civil servants were able to monopolise and stall the decision-making process to suit their own ends. The decision to withdraw from ELDO (whilst beginning the 1966 'probe' of European capitals to begin a second British application to the European Communities) highlights the difficulties faced when decisions are made at Ministerial level with little reference to civil service advice. By highlighting how decision-making was differently distributed in the cases of ELDO and Black Arrow I show how differing interests came together to form complex, and at times contradictory, policy.

2.2: New priorities and a new language of power: Establishing Black Arrow

In response to their unexpected defeat in 1959, the Labour Party had set about a detailed examination of policy. Tracts such as Crosland's *The Future of Socialism* published in 1960 identified how Labour could move on from its defeat and offer a radical new alternative to the seemingly permanent Conservative governments.⁴ Focusing on science and modernisation was of particular benefit to Labour, who identified in their analysis of the 1959 election that they had failed to secure the increasingly important 'scientific vote' from largely middle class scientists,

⁴ A. Crosland, *The Future of Socialism*, (London, 1956).

technicians and engineers. Labour strongly identified themselves with concerns about Conservative approaches to science, and the perceived decline in the 'thirteen wasted years' of Conservative governments from 1951-64. As Tomlinson notes, this focus on science as a force for modernisation was not only a tool to garner more votes, but also to unite the often fractious Labour Party.⁵ Wilson's speech to the Labour Party conference in October 1963 was the first opportunity to highlight concerns of decline, and also the focus on scientific and technological progress which would challenge these concerns.

More often remembered for promising 'the white heat of the scientific revolution' Wilson's speech focused on Britain's comparatively slow economic growth, a lack of trained scientists and engineers, and perceived government waste on societally useless and economically unviable prestige projects.⁶ The Ministry of Technology, usually known as MinTech, was created in 1964 to provide strategic oversight of (and intervention into) research and development in the UK. Various described as a brave reshaping of the government's commitment to and interests in science and technology, and as an ineffective gimmick, MinTech did not lead British space programmes initially.⁷ The MoA and MinTech were not merged until 1967 as their responsibilities overlapped, and to merge the two Ministries would be complex.

⁵ Tomlinson, *Economic Policy*, (p. 37).

⁶ A. Sharr and S. Thornton, *Demolishing Whitehall: Leslie Martin, Harold Wilson and the Architecture of White Heat*, (Farnham, 2013), p. 7; People's History Museum, Manchester, 360006749/AG/Labour Party – Box 3/A, H. Wilson, 'Labour's Plan for Science', October 1964, p.1.

⁷ P. Hennessy, *Whitehall*, (London, 1990), p. 431; J.W. Young, 'Technological Cooperation in Wilson's Strategy for EEC Entry', in O.J. Daddow (ed.), *Harold Wilson and European Integration: Britain's second application to join the EEC*, (London, 2003); Edgerton, *Warfare State*., pp. 266; 251; G. Ortolano, *The Two Cultures Controversy: Science, Literature and Cultural Politics in Postwar Britain*, (Cambridge, 2009); R. Coopey, 'The white heat of scientific revolution', *Contemporary Record*, 5(1), (1991); R. Coopey, 'Ministry of Technology 1964-70', *Contemporary Record*, 5(1), (1991); R. Coopey, 'Restructuring Civil and Military Science and Technology: the Ministry of Technology in the 1960s' in R. Coopey, G. Spinardi and M. Utley (eds), *Defence Science and Technology: Adjusting to Change* (London, 1993).

Throughout this chapter, the MoA continued to lead the Black Arrow programme from its Space Administration Branch (also created in 1964), in conjunction with scientific design oversight at the MoA's Royal Aircraft Establishment (RAE) at Farnborough.

Early attempts to re-shape government science and technology were quite confused. Wilson established a series of cabinet committees to examine and review projects, and charged one committee with creating economic criteria for the assessment of civil science projects. Wilson, who was noted for his economic acumen, may have been hoping for a set of economic criteria which would cover all scientific projects and allow for decisions on new projects to be taken with knowledge of their effect on the economy.⁸ In doing so he could have been attempting to limit the role of Ministers' political interests and personal enthusiasm, by prising decision-making powers from Ministers and leaving the assessment of projects to an impartial economic rubric.

Officials in the Committee on Technology, chaired by Government Chief Scientific Adviser, Sir Solly Zuckerman, struggled to arrive at a comprehensive numerical method as the benefits of engaging in science and technology ranged from the concrete to the abstract. Tangible benefits included exports, spin off (e.g. benefits to industry of improving knowledge, standardising parts, or establishing new manufacturing techniques), while the less tangible included benefits to general diplomatic relations, engendered by collaboration on a project with other nations.

⁸ B. Pimlott, *Harold Wilson*, (London, 1992); P. Ziegler, *Wilson: The authorised life of Lord Wilson of Rievaulx* (London, 1993); J.W. Young, *Labour Governments*; Fielding, *Labour and cultural change*; Tomlinson, *Economic Policy*.

Thus, whilst the Committee recognised that a project 'should be sanctioned only if it represents a worthwhile expenditure ... Those questions which cannot be answered quantitatively may be considered in qualitative terms.'⁹ Such an admission, that some effects of research could only be assessed qualitatively considerably reduced the impartiality of the criteria, and prepared the ground for lengthy interdepartmental wrangling. The final report was never given to Ministers as it would not provide them with the 'logical system of decision-making' that they had requested.¹⁰ This failure to quantify the effects of research and development, and the establishment of MinTech led to a large increase in the number of committees which had extensive oversight of expenditure in science and technology.

Wilson's request for a comprehensive review of all UK space projects and collaborations meant that UK space policy was actively under consideration by at least ten committees (not including the Cabinet) between 1964 and 1967. As can be seen from Figure 5, the Committees which discussed the future of Black Arrow had varying objectives but all over-lapped. Although Wilson and his Cabinet colleagues may have believed that recommendations from these committees would assist them in making decisions with fuller knowledge, the complex bureaucratic politics involved in the framing of arguments and forming of policy options in such a large number of committees only served to pass control of the debate to a small number of civil servants.

⁹ CAB 134/2545, T.(O)(65)22 (Revise), Official Committee on Technology, 'Criteria for the appraisal of civil technological projects', 01 December 1965.

¹⁰ CAB 134/3312, ST(O)(66) 2nd Meeting, Official Committee on Science and Technology, 26 October 1966.

Committee Name	Terms of Reference
Central Advisory Council for Science and Technology	To advise the Government on the most effective national strategy for the use and employment of our scientific and technological resources.
Combined Communications-Electronics Committee	To co-ordinate in peace and war, user and policy aspects of communications-electronics systems, at home and overseas, including those in space.
Committee on Public Expenditure	To consider and keep under review programmes of public expenditure and to make recommendations thereon to the Cabinet.
Committee on Science and Technology	To co-ordinate and keep under review the Government's scientific and technological policy.
Committee on Technology	No set terms of reference.
Communications-Electronics and Space Committee	To co-ordinate in peace and war, Departmental plans and activities concerning communications-electronics and space.
Launchers and Vehicles for Space Committee	To co-ordinate policy and requirements for launchers and vehicles for space purposes.
Public Expenditure Survey Committee	To arrange for officials to work out a plan for the development of the public sector and its expenditure over the next four years, on the assumption that the ratio of public expenditure to the gross national product should remain at 42.5%, to examine methods of financing such expenditure, and to report on the implications for economic growth, taxation and the balance-of-payments.
Space Policy Review Committee	To review United Kingdom policy in relation to technological developments in space in order to meet civil and military requirements, with particular reference to the relevant scientific, economic, military and political factors and to related work and requirements in other countries.
Task Group on Government Expenditure	The "strict review" of Government expenditure... "task group" on civil expenditure with an economic aspect.'

Figure 5: The committee structure implemented by Wilson

In spite of the large number of committees involved, and the large number of departments invited to attend (around 20), the same individual officials from each department usually represented their department at all of the meetings. For example, Bullock represented SAB at the majority of meetings while “Otto” Clarke represented the Treasury position. Although at least 20 people were in attendance across all of the meetings, only a quarter of the departments had any real interest in the Black Arrow programme itself, meaning that space policy was in effect directed by various committees of the same five people attending regular meetings on the same topic. The varying committees focused on space to different extents, and after a few meetings, it became clear that there was something of an order of precedence. Issues would be discussed first in the economic and general science and technology committees (such as the Public Expenditure Survey Committee and Committee on Technology) before being referred for further detailed discussion in the Communications-Electronics and Space Committee, which would then agree to await the publication of the Space Policy Review Committee (RSP). While such delay might seem odd it allowed officials to carefully test and hone arguments on Black Arrow first in one committee, then with slight adjustment in the second, third and fourth (etc.) strengthening their opinions after each with reference to successful arguments or other departments who had expressed an interest.

As such the first large scale review of British space research was conducted in the RSP, which aimed to ‘enable Ministers to re-appraise our policy in relation to space

activities which hitherto had been taken ad hoc or in a series of holding decisions.¹¹ The arguments for and against Black Arrow were largely centred on the concerns of Treasury officials about its expense, whilst MoA officials focused on the value of ensuring that they would be able to provide advice to government and industry on the role of satellite technology. These arguments were specifically developed to address concerns raised by Wilson about government spending on prestige projects on the one hand and concerns to ensure that Britain was a leading industrial power on the other. Although neither MoA nor Treasury officials had the power to approve (or cancel) the project they had the power and ability to shape the argument within language which they believed would appeal to Ministers, and relied on their knowledge as experts in specific areas. In this case, officials 'stood where they sat', and fought to influence policy on Black Arrow based on critiques which played on their expertise.

As such, the Treasury's first attack on the programme was on economic grounds. Concerned that Labour Ministers would be as attracted to the project for political reasons as their Conservative predecessors, Treasury officials became particularly focused on cancelling the Black Arrow programme. Established at the same time as ELDO, the Anglo-French Concorde project to develop a supersonic airliner had rapidly increased in time-scale and budget. Given that the UK was bound to continue in the programme through a convention, the Treasury was unable to exert control over the UK contribution to the Concorde budget, or the ELDO budget.¹² As

¹¹ CAB 134/2459, R.S.P.(64) 4th Meeting, Space Policy Review Committee, 30 November 1964 [Emphasis in original].

¹² L. Johnman and F.M.B. Lynch, 'The Road to Concorde: Franco-British Relations and the Supersonic Project', *Contemporary European History*, 11 (2), (2002); L. Johnman and F.M.B. Lynch, 'A treaty too

a direct result of their inability to control this expenditure, officials felt that it was 'more important to take a rigorous line with the project which remains within our own control.'¹³ Writing to the Permanent Secretary of the MoA, "Otto" Clarke highlighted that Treasury scrutiny of the figures was vital: 'What I am trying to see is how big a package is really implicit in what may be represented as a relatively cheap decision...'¹⁴ The idea that whilst satellites were 'sensible', an independent launcher was not, was a common assertion made by Treasury officials like Clarke. For them, satellites launched on American launchers, rather than the full launcher and satellite programme of Black Arrow, would provide the UK with a scientifically advanced but more affordable 'foot in the door' in satellite communications technology which might prove to become a rapidly growing market. When preparing submissions for Ministers, Treasury officials were careful to highlight that they were not seeking to damage Britain's reputation as a technologically advanced power but were keen to ensure, as Ministers were, that British science and technology was engaged in the most economic manner.

At a cost of under £10 million spread between 1966 and 1971 the development of the Black Arrow launcher alone was considered inexpensive by Treasury officials, but the way in which the MoA accounted for the programme meant that the Clarke was right to be concerned. MoA estimates of the total cost of the programme including launches at the LRWE at Woomera (Australia) and the construction of

Far? Britain, France and Concorde', 1961-1964, *Twentieth Century British History*, 13 (3), (2002); J. Davis, *The Concorde Affair*, (London, 1969); E.J. Feldman, *Concorde and Dissent: Explaining high technology project failures in Britain and France*, (Cambridge, 1985).

¹³ T 334/8, P. Mountfield to Mr. Hall, 29 June 1965.

¹⁴ AVIA 92/126, R.W.B. Clarke to Sir R. Way, 22 October 1965.

several test satellites were £42 million.¹⁵ The development of the Black Arrow launcher was more expensive than the development of the satellites and components which it would test, and as such discussions centred on the launcher more than the programme of test satellites that it would launch. Aware that the satellites were seen as necessary scientific research, whereas the launcher was seen as an unnecessary expense by Treasury officials like Clarke, MoA officials were concerned that 'if we fail to get the Black Arrow programme approved Treasury might argue that the basic satellite technology programme would then serve little useful purpose... on balance, I think it is better to try and get the two parts of the programme viewed together as an integrated U.K. national space programme.'¹⁶ As Treasury arguments against the economic benefits of Black Arrow took shape, MoA officials had to respond, arguing that the programme was necessary for them to meet their departmental remit of providing accurate advice to government and departments. Stressing that any programme of satellites had to be carefully designed to ensure that commercially useful components could be tested, and that satellite design had to be carefully integrated with the design and capabilities of the launcher, strengthened the MoA's case for the launcher.

The Assistant Secretary of the SAB, S.A. Goodson, was vital in reshaping the Black Arrow programme. In letters and papers to the various officials and committees discussing Black Arrow, Goodson began informally (and then formally) to use the title National Space Technology Programme when referring to Black Arrow.¹⁷ The

¹⁵ CAB 134/2545, T.(O)(65)19 (Final), Official Committee on Technology, 'Space Policy Review', 08 December 1965.

¹⁶ AVIA 92/126, A. Goodson to D.S./S.A.B., 11 November 1965.

¹⁷ AVIA 92/126, A. Goodson to D.S./S.A.B., 11 November 1965.

changing title of the programme changed the arguments which Goodson and other MoA officials were able to make about it.¹⁸ Instead of arguing that the Black Arrow launcher was necessary as a 'means to an end' to launch the satellites envisaged, Goodson argued that to abandon the launcher meant ruin for the entire National Space Technology Programme. Without the National Space Technology Programme industry would suffer as the Space Department of the RAE would have to close, and there would be no source of advice for industries looking to expand into space products. As a result of this, companies 'would get a reduced share of international space contracts and there would be a further decline in our technological capability.'¹⁹ Industry would not be the only group to lose out: other government departments and agencies with an interest in space research (such as the Ministry of Defence, for surveillance, the Post Office, for telecommunications, and the Meteorological Office, for weather prediction). This 'rebranding' of the Black Arrow programme had the immediate effect of broadening the discussion out. Instead of focussing on whether Britain should develop satellites or launchers, or whether Black Arrow should be continued or cancelled; the debate now had to include all other 'National' space activities such as scientific satellites created by universities. Goodson's rebranding highlights the way in which civil service framing affected decision-making. As the department in charge of the programme, MoA officials' use of the name 'National Space Technology Programme' went uncontested, and was used for the entire life of the programme. The change of name meant that instead

¹⁸ AVIA 92/127, U.S. (R.G.), 'Black Arrow and the National Technological Space Programme', 03 August 1966.

¹⁹ AVIA 92/127, U.S. (R.G.), 'Black Arrow and the National Technological Space Programme', 03 August 1966.

of referring to the Black Arrow launcher and the satellites that it would carry as two separate elements of the same programme, officials in the MoA could refer to the National Space Technology Programme to include both elements of a unified whole. Before the name change, briefs were written by the MoA defending the 'launcher element' of the Black Arrow programme, but after they were written by the Treasury attacking the 'launcher element' of the National Space Technology Programme. Even the name, 'National Space Technology Programme' gave the impression that the programme had permanence and represented a plan for the development of specific technologies (rather than the home of a project which had been under threat of cancellation). Strangely, whilst the changed name was heavily used by civil servants reporting to their Ministers, they largely continued to use the old name – Black Arrow – when corresponding with each other. Not only does this highlight the intent with which Goodson altered the name of the programme, but it also highlights the success with which he chose language which influenced Ministers.²⁰

The rebranding of the programme did not mean that it no longer required defence from the Treasury. Given the Treasury's ability to impose strict financial limits on the programme Goodson was forced to reduce the size and scope of the Black Arrow programme as costs increased. As temporary contracts had been established before the General Election to keep the project's teams in being, Treasury officials were keen to ensure that these continued (allowing for minimal cancellation costs if the project was not approved by the Cabinet).²¹ Such contracts, renewed quarterly,

²⁰ Throughout I will refer to Black Arrow (unless otherwise quoted) for the sake of consistency.

²¹ AVIA 92/126, W.W. Abson to US/LGW, 11 December 1964.

allowed for excellent short term control of finances but frustrated long term predictions of expenditure. The holding contracts prevented the bulk ordering of materials and promoted a rapid increase in wages to ensure the retention of highly-skilled workers. By 1966 costs for only the launcher element of the programme had risen from the original estimate of £7.2 million to £9.5 million.

While MoA officials exercised project management and defended the programme in Whitehall it was officials at the RAE who had begun detailed design work and the placing of contracts with industry for the construction of the first test launcher.

MoA and RAE officials reduced various elements of the programme in order to keep within the Treasury fiscal ceiling which was non-negotiable. The first casualty was the contingency fund which was shrunk from an initial 25%, to 19%, and finally to zero.²² To off-set this reduction the Head of the Space Department, J.G. Lewis, felt that 'contingency may be considered in terms of time rather than money...', and suggested that this be achieved 'either by simplifying the experiments in particular satellites or by slowing down the rate of firing.'²³ The reduction of the contingency fund, and Lewis' suggestion of reducing the rate of firing would play a direct part in damaging the longevity of the project (see 4.2), as reduction of the fund, and a reduction in the number of launchers produced meant that there was little room for failure of any kind. Although it damaged the project in the medium-term, the simple solution to the issue of maintaining control of expenditure in the short-term was taken up by Goodson, and the programme was reshaped to reduce the number of

²² AVIA 92/126, W.W. Abson to US/LGW, 11 December 1964; AVIA 92/127, A. Goodson to P.S./Secretary, 11 July 1966; AVIA 92/126, W.W. Abson to F.R. Barratt, 23 April 1965, AVIA 92/126, J.G. Lewis to AS/SAB, 07 March 1966.

²³ AVIA 92/126, J.G. Lewis to AS/SAB, 07 March 1966.

firings and the number of satellites launched. These reductions significantly reduced the amount of expenditure in the next two years, and met the Treasury ceilings for expenditure planned in the following years.²⁴

Having placed the programme in a new context by renaming it, Goodson and Lewis sought to tackle other arguments put forward by the Treasury. Their case for the launcher rested on the lack of a suitable alternative which could be purchased abroad. The American Scout launcher, whilst slightly less expensive and capable of launching a similar weight of satellite (c.250lbs) to a suitable orbit, had a smaller payload bay limiting the size of satellite which would be carried. The French Diamant launcher was also a similar price to Black Arrow, but could only launch satellites weighing c.110lbs, and had an even more restricted payload capacity.²⁵

Given that the aim of the programme was to test components for use in commercial satellites, MoA officials were concerned that to purchase rockets from another country would reduce British competitiveness. Not only could the organisations supplying the rockets (NASA for the USA and CNES for France) request detailed information and technical drawings of the payload carried (on the grounds of compatibility, and for the identification of legal liability should any accident occur), but R.H.W. Bullock, Principal Financial Officer at the SAB stressed that the programme would have other, less quantifiable benefits from spin off such as the

²⁴ CAB 134/2545, T.(O)(65)19 (Final), Official Committee on Technology, 'Space Policy Review', 08 December 1965.

²⁵ AVIA 92/127, W.A. McIlroy, 'Comparison of the Payload Capabilities of Small Satellite Launch Vehicles', 30 June 1966.

maintenance of expertise in private industry, and increased purchasing of British electronic components.²⁶

This was one of the main aims of MinTech, and such arguments were clearly aimed at creating an alliance with MinTech officials in various committees due to their overlapping departmental interests (see Chapter 3). MinTech was created to provide long-term direction of scientific and technological projects, and to ensure that government science and technology was directed to uses which were either of interest to industry or beneficial to society.²⁷ Relations between the two departments were good, and MinTech and MoA officials often found themselves supporting each other in various committees, including those seeking to determine British space policy.

Seeking further support from MinTech colleagues, Bullock and Goodson highlighted the fact that it was impossible to quantify the economic value of space research at this early stage and with predictions for the viability of commercial satellites ranging from the conservative to the over-enthusiastic the Black Arrow programme was, for such a minimal expenditure, a sensible insurance policy against future developments.²⁸ These arguments about caution, contingency, and keeping Black Arrow as an 'insurance against future developments' are reminiscent of previous debates amongst officials and Ministers after the cancellation of Blue Streak as a military project (see Chapter 1). Indeed, Bullock, who had made these arguments previously, was applying them to Black Arrow. We shall see in Chapters 3 and 4 the

²⁶ AIR 2/17593, Space Review Committee, SR/M(65)3, 11 February 1965.

²⁷ Coopey, 'The white heat of scientific revolution'; Coopey, 'Ministry of Technology 1964-70'.

²⁸ CAB 134/2545, T.(O)(65)19 (Final), Official Committee on Technology, 'Space Policy Review', 08 December 1965; CAB 134/1456, C.C.C.(65)1, Combined Communications-Electronics Committee, 'Report of the Space Policy Review Committee', 13 January 1965.

importance of civil service continuity in shaping decisions; however, I will turn next to the impact of Bullock's arguments on Ministers' opinions.

In this section I have shown how civil servants prepared and framed arguments in response to changing contexts. In challenging Treasury concerns on the economics and necessity of the Black Arrow programme Goodson, Lewis and other officials in MoA and RAE were testing the strength of arguments for their Minister to take to Cabinet in defence of Black Arrow. By renaming Black Arrow the National Space Technology Programme, Goodson was trying to ensure that the programme reflected the rhetoric of the Wilson government (and particularly of Wilson himself) by avoiding notions of prestige, and highlighting the benefits of the programme to the economy and the nation. Given time to gather data on other options (such as Scout and Diamant) Goodson and Bullock were attempting to ensure that even if doubts were raised by Ministers about the Black Arrow programme, no other option had been considered suitable by the 'experts' in MoA, meaning that no other option would be readily available without debate and consideration. As we shall see, this framing of the arguments about Black Arrow heavily shaped the decisions Ministers took about Black Arrow.

2.3: Ministerial priorities in the approval of Black Arrow

Wilson's government is known for the devaluation of sterling, and although a decision was not taken to devalue until November 1967, the government endured a very difficult economic climate from 1964 onwards.²⁹ The Public Expenditure Survey

²⁹ Tomlinson, *Economic policy*, pp. 49-53.

Committee (PESC, set up to ensure that growth in expenditure was limited to the rate of growth in the economy) was given greater oversight of expenditure by Wilson.³⁰ The economic situation was so bad, and so well-known that even officials at the MoA advised their Minister that, 'If it is clear that in the prevailing economic circumstances Ministers are not prepared to approve the Black Arrow development and associated satellite work, it is suggested that a final decision should if possible be postponed.'³¹ Postponing the decision did not mean that the MoA had decided to drop their support for the Black Arrow programme. On the contrary Bullock, Goodson and Lewis again adapted their arguments, and the project to suit the economic situation.

Goodson looked again at Lewis' suggestion that the number of firings could be reduced, and pushed the private contractors to provide updated estimates of costs. Whether due to Treasury officials' continued concern at the level of expenditure involved, or due to worries about poor budgeting by the private contractors, Goodson suggested that the programme should be halved.³² The number of firings and satellites were further reduced three satellite launches to one per year, from five test firings of the Black Arrow launcher to three, and the development of less well-equipped test satellites. As such the total cost of the programme was reduced from £42 million to £28.5 million.³³ Although the reduction in the programme affected future plans, rather than the work going on that financial year, the cutting

³⁰ T 320/328, I. P. Bancroft, 'Note for Record', 13 April 1965; L. Pliatzky, *Getting and Spending: Public Expenditure, Employment and Inflation*, (Oxford, 1982), p. 51.

³¹ AVIA 92/127, 'Black Arrow: Brief for Cabinet Meeting on July 21', 19 July 1966.

³² AVIA 92/127, U.S. (R.G.), 'Black Arrow and the National Technological Space Programme', 03 August 1966.

³³ AVIA 92/127, U.S. (R.G.), 'Black Arrow and the National Technological Space Programme', 03 August 1966.

of the programme to meet the economic situation was known and understood in the companies constructing the launcher.³⁴ The reduced programme made the project far more attractive to Ministers concerned about rises in public expenditure.

After nearly a year in government, the various committees involved in the production of the various reviews of UK space capabilities were still engaged in the collection of data and in revising reports to gain the acceptance of all involved. Although the MoA had found allies in MinTech, the continued opposition of Treasury representatives to any expenditure on a launcher stymied the production of Ministerial guidance from the committees. Cabinet came to accept that no forthright guidance on UK space research would be forthcoming from the various committees which had been engaged with the issues for over two years.³⁵ Although the RSP had a similar role to the MCC in assessing options for the direction of research, officials had not been given the same kind of criteria which Macmillan had given the MCC in 1960 (see 1.2). While the MCC was the only committee in which policy on Blue Streak would be decided, the RSP was simply the most *relevant* committee in which policy on Black Arrow could be discussed; and although the MCC could seek advice from other committees if it wished, the RSP was *dependent* on other committees for information and recommendations. All this overlap led to a delay in advice reaching Ministers, who believed that the issue was being debated in the RSP.

³⁴ D. Millard, *The Black Arrow Rocket: A history of a satellite launch vehicle and its engine*, (London, 2001).

³⁵ AVIA 92/128, D./Space, 'Joint Project Policy Advisory Committee Black Arrow Satellite Launcher', 09 January 1967.

In an attempt to break the deadlock, the Cabinet Secretary proposed a series of dedicated Ministerial discussions on the project alone and, failing to achieve agreement on who should attend, put the decision on the agenda for Cabinet to discuss in January 1967. Although officials had monopolise discussions on Black Arrow for nearly a year, the seeming inaction prompted Ministers to by-pass officials' arguments. After listening to the Minister of Aviation, Fred Mulley outline the project's importance, the steps taken to reduce expenditure, and his strident assurance that there was no alternative if Britain wished to retain any foothold in space technology, the Cabinet finally approved the reduced programme on the condition that 'the allocation of funds has to be on an annual basis and thus the programme must inevitably be subject to review [on an annual basis]...' ³⁶ The review would be undertaken by MinTech which would by this time have merged with the MoA. Black Arrow's fortunes within the different policy-making environment of MinTech is the major focus of the next chapter, which will highlight the growing role of economics in government decision-making. The approval of Black Arrow for the whole financial year 1967-68 allowed stock to be bought in bulk, and for contracts to be granted to staff on a twelve, rather than three month basis reducing administration costs. For this brief period, at least, it seemed sure that the programme would proceed, and that Britain would have an independent launcher capability.

The establishment of a large number of committees engaged with different elements of the decision to continue with Black Arrow ensured that policy-making

³⁶ AVIA 92/128, D./Space, 'Joint Project Policy Advisory Committee Black Arrow Satellite Launcher', 09 January 1967.

was tied up by civil service discussions. The comprehensive Space Policy Review aimed to break with the ad-hoc way in which Labour believed the previous government had formed policy, yet served only to pass control of the debate to civil servants. The structure which was established as a result, of many specific committees reporting to one larger committee (the RSP), meant that whilst specific reports could be agreed on various approaches to policy, a final Space Policy Review which could give Ministers clear guidance not only on Black Arrow but also British space activities as a whole never emerged. For the first twelve months of the Wilson government this mattered little as Ministers would not engage in a discussion of the programme without the comprehensive report they had asked for. Deadlock at the official level, and a lack of pressure from Ministers allowed civil servants the time to frame their arguments in detail, and in the language they thought would be most persuasive to Ministers, focusing on increased industrial competence, and economic stringency. I have thus shown how civil servants can still steer Ministers towards making particular choices, even if the committees they are engaged in pass along no reports or recommendations.

Policy-making on Black Arrow – to defer making a decision until the myriad of committees had reported – reflects the way in which politicians are reliant upon civil servants for advice. In a situation where no advice was forthcoming due to on-going wrangling between Treasury and MoA officials, Ministers were reluctant to make a decision on something which they had no strong opinion and was costing a relatively small amount of money. I shall now turn to examine Ministers' approaches to decision-making on the much larger and more expensive ELDO in

which Ministers took control of the decision-making process far more actively. Instead of officials directing debate by framing the options available (as Goodson, Bullock and Lewis sought to do in this section) we shall see how officials struggled to respond to Ministers' decisions made without reliance on civil service guidance.

2.4: British approaches to ELDO

Although Wilson had created a structure which allowed officials to frame the debate around Black Arrow, this was not the case for ELDO. The Wilson government (and particularly Wilson himself) quickly defined and pursued a new British policy towards ELDO. From 1964-5 suggestions that Britain should leave the organisation were rebuffed by Ministers, officials and ambassadors in the Foreign Office who stressed that to leave would be a major contradiction of the government's new European policy (to achieve closer relations with the Six nations of the European Communities) and could be illegal.³⁷ If this was the case, then how did the UK come close to causing the collapse of ELDO by announcing its wish to withdraw at a Ministerial Conference in February 1966?

This section will highlight the way in which Foreign Office Ministers, officials and ambassadors attempted to shape British scientific diplomacy in the period, and the ways in which limited Ministerial and Prime Ministerial time and attention affected the decision-making process. First examining the role of the Foreign Office and the new Scientific Relations Department (SRD), the section will examine how early

³⁷ FO 371/178071, J.A.C. Gutteridge, 'Space policy – Possible withdrawal from ELDO', 16 December 1964; R. Crossman, *The Diaries of a Cabinet Minister, Vol 1: Minister of Housing, 1964-66*, (London, 1975), p. 530.

decisions about British policy towards ELDO were made (contrasting sharply with the path of Black Arrow).

Finally, the section will contrast the official history of Britain's attempt to withdraw from ELDO with the domestic archival record. In the official history of the European Space Agency, Krige describes Britain's attempt to leave ELDO as a result of the completion of work on Blue Streak. As British industry would be limited to only producing more Blue Streak rockets on a production line, rather than researching and developing new equipment, Krige claims that this reduced the attractiveness of expenditure on ELDO. Furthermore, the fact that the British contributed more to the project than was spent in the UK producing Blue Streak meant that British money would be used to develop French and German stages of the launcher, something which he suggests British Ministers found 'a difficult pill to swallow'.³⁸ He regards the subsequent reduction in the British contribution as a concession made by the European powers to keep Britain in the organisation, and the British threat to withdraw as a ploy for the reduced contribution, and not a serious manoeuvre. Focusing on the national record, however, this chapter demonstrates that the main motivation in the British decision was economic, and that the reduction of the British contribution to ELDO was a snap judgement made only when it became clear that withdrawal would be illegal.

While the RSP consistently failed to agree any policy options concerning the Black Arrow project, decisions on ELDO were more easily agreed. Wilson's rhetoric during

³⁸ J. Krige & M. de Maria, 'The Reorientation of ELDO's Programme and the First Steps Towards a Coordinated European Space Effort', in J. Krige and A. Russo, *A History of the European Space Agency: 1958-1987*, p. 110.

the election campaign had focused on the reduction of British commitments to prestige projects, ineffectual collaborations which wasted the valuable resource of British scientists. Wilson felt that ELDO was little more than a face-saving exercise, designed to save the Macmillan government the embarrassment of fully cancelling Blue Streak.³⁹ As the first ELDO Council meeting since the change of government approached in December 1964, European governments were keen to establish the views of the new British government.⁴⁰ Early Ministerial statements had echoed campaign rhetoric, and Mulley had quickly engaged his French counterparts in discussions about the advisability of continuing the Concorde project.⁴¹ With Wilson's views on ELDO clear, Foreign Office officials were concerned that they would have a very fine line to tread at the Council meeting; their delegate would 'have to be very careful to avoid giving the impression that a decision has been taken to continue cooperation with ELDO, and to avoid giving the opposite impression that a decision has been taken to pull out.'⁴²

J. McAdam Clark (Assistant Secretary in the Foreign Office's SRD), came to the conclusion that Ministers needed to be made more aware of the importance of foreign policy considerations in ELDO decisions. He arranged the publication of a memorandum aimed at Ministers highlighting the 'Foreign Policy considerations to be taken into account when reviewing space policy as a whole'.⁴³ The note set out his view of British foreign policy aims and priorities in relation to collaborative space

³⁹ H. Wilson, *A Personal Record*, p. 243.

⁴⁰ FO 371/178073, 'Italy and the European Launcher Development Organisation (E.L.D.O.) and the European Space Research Organisation (E.S.R.O.)', 18 November 1964.

⁴¹ Johnman and Lynch, 'The Road to Concorde'; Davis, *The Concorde Affair*; Feldman, *Concorde and Dissent*; Young, *Labour Governments*.

⁴² FO 371/178073, M.S. Williams to J. McAdam Clark, 24 November 1964.

⁴³ FO 371/178071, 'Note by Foreign Office on the Foreign Policy considerations to be taken into account when reviewing space policy as a whole', 25 November 1964.

research. Starting from the basic assertion that 'Foreign policy is the art of making friends and influencing people abroad' the note went on to warn that 'if for some reason a friend cannot be made, we at least seek to avoid making enemies... there is a big difference between no one being satisfied and everyone being dissatisfied.'⁴⁴ Although the Labour Party's position on Anglo-European relations may have been ambiguous at best throughout the 1950s and 1960s, the note made the FO's dedication to good Anglo-European relations (and the importance of space research policy in maintaining them) clear: 'E.S.R.O. and E.L.D.O. are organisations though which we can influence other countries and which in the context of our foreign policy form important elements of our willingness to cooperate in Europe.'⁴⁵ In opposition, Labour had had an equivocal position on membership of the European Communities, criticising the Conservatives' efforts at accession, and the effect of membership on the Commonwealth.⁴⁶ Once in power, Wilson's views shifted as he became more aware of the difficulties facing the UK.⁴⁷ By setting out the way in which space policy decisions could impact a much broader set of foreign policy relations, McAdam Clark was attempting to secure his (and the FO's) inclusion in the decision-making process.

⁴⁴ FO 371/178071, 'Note by Foreign Office on the Foreign Policy considerations to be taken into account when reviewing space policy as a whole', 25 November 1964.

⁴⁵ FO 371/178071, 'Note by Foreign Office on the Foreign Policy considerations to be taken into account when reviewing space policy as a whole', 25 November 1964.

⁴⁶ Young, *Labour Governments*; Parr, *Harold Wilson and Britain's World Role, 1964-1967*, (2006, Abingdon); H. Parr and M. Pine, 'Policy Towards the European Economic Community', in P. Dorey, *The Labour Governments 1964-1970*, (London, 2006); A. Deighton, 'British-West German relations, 1945-1972', in K. Larres and E. Meehan (eds.), *Uneasy Allies: British-German relations and European integration since 1945*, (Oxford, 2006); C. Wrigley, 'Now you see it, now you don't: Harold Wilson and Labour's foreign policy 1964-70', in R. Coopey, S. Fielding, and N. Tiratsoo (eds.), *The Wilson Governments 1964-1970*, (London, 1995).

⁴⁷ H. Parr, 'A Question of Leadership: July 1966 and Harold Wilson's European Decision', *Contemporary British History*, 19 (4), 2005.

Although prompted by the creation of the RSP, this increasing FO involvement in the decision-making process of scientific collaborations was not new, but was becoming increasingly formalised through the establishment of specialist scientific units in Foreign Ministries. As noted by various authors, such as Wolfe and Krige, the US State Department attempted to utilise American science (and scientists) for domestic and foreign policy gain.⁴⁸ Similarly in the Foreign Office, the remit for science policy moved from a small Section of the Western Department to becoming the standalone SRD in January 1965. For McAdam Clark 'scientific and technological developments were bringing with them new tasks which foreign policy had to take into consideration... joining politics and economics as the main strands determining foreign policy.'⁴⁹ These efforts were driven by the increasing number of European scientific collaborations in which the UK was engaged and also by FO experience in the 1960-63 negotiations to join the European Atomic Energy Community.

Throughout those negotiations Foreign Office input had been ignored in favour of advice from 'scientific experts' in the Atomic Energy Authority; and Sir Con O'Neill (who had led the British delegation to the European Communities between 1963-5) had identified that the suppression of FO opinion had led to difficult and protracted negotiations.⁵⁰ By creating the SRD, FO officials led by O'Neill were hoping to increase their ability to influence future negotiations should the UK attempt to join the European Communities a second time. It was hoped that the formation of the

⁴⁸ A. Wolfe, *Competing with the Soviets: Science, Technology and the State in Cold War America*, (Baltimore, 2013); J. Krige, *American hegemony and the postwar reconstruction of science in Europe*, (Cambridge, Mass., 2006).

⁴⁹ AIR 2/17593, Space Review Committee, SR/M(65)1, 26 January 1965.

⁵⁰ S.A. Butler, 'The Struggle for Power: Britain and Euratom 1955-63', *International History Review*, 36(2), (2014), p. 336.

SRD would create a dedicated staff of diplomats (some with scientific training) who would be able to shape and determine British scientific diplomacy to closely fit its wider foreign policy priorities.⁵¹

SRD arguments were largely based around the political necessity of remaining in ELDO which was the only large organisation in which Britain and all the major members of the European Communities were colleagues. McAdam Clark was keen to emphasise that Britain's membership engendered 'some political goodwill' which was not just limited to Anglo-European relations.⁵² The creation of ELDO had also prevented 'the cancellation of BLUE STREAK [which] would have had an adverse effect on United Kingdom/Australia relations.'⁵³ Most obviously, FO officials pointed out that under the direction of Thorneycroft and Macmillan 'the United Kingdom was the moving spirit in establishing the Organisation... our withdrawal and ELDO's consequent break-up now might have implications for our interest in European co-operation.'⁵⁴ Sticking solidly to the foreign policy aspects of withdrawal from ELDO kept MacAdam Clark's arguments solely in his area of expertise but ignored challenges on other based on other criteria. F.R Barratt at the Treasury thought that the opinions put forward by McAdam Clark would carry little weight for Ministers:

I do not think that it will suffice simply to suggest that the political consequences of a withdrawal would be so damaging that withdrawal is in fact out of the question on political grounds. This would in effect be to tell

⁵¹ AIR 2/17593, Space Review Committee, SR/M(65)1, 26 January 1965; Young, *Labour Governments*.

⁵² CAB 130/222, Misc. 31/1, European Launcher Development Organisation, 'Report of Space Policy Review Committee', 08 January 1965.

⁵³ AIR 2/17593, Space Review Committee, SR/M(65)6, 26 February 1965; CAB 130/222, Misc. 31/1, European Launcher Development Organisation, 'Report of Space Policy Review Committee', 08 January 1965.

⁵⁴ CAB 130/231, Misc. 63/7, Space Policy Review, 'Draft Report to Ministers', 24 September 1965.

Ministers that there is really nothing at all for them to decide as regards U.K. policy in ELDO, and that the views and ambitions of other European countries must be regarded as of overriding significance when it comes to determining H.M.G.'s policies in the space field.⁵⁵

McAdam Clark's argument was further hampered by the common assertion that ELDO was a healthy and fully functional organisation. While even the Ministry of Aviation was of the opinion that 'Collaboration in ELDO had been difficult' FO officials sought to persuade Cabinet Ministers that this was not unusual: 'These organisations are still handicapped by their novelty, by national antagonisms and other ills from which international organisations suffer.'⁵⁶ Whether new international organisations took a long time to settle down to work or not, these arguments did little to sway Ministerial opinion. Such trenchant argument for remaining in ELDO, for reasoning which Ministers could conceive of as dubious at best (and politically motivated at worst), only weakened the FO's position in the decision-making process.⁵⁷

Claims that ELDO was a functioning organisation were not limited to FO officials eager to preserve British membership. The official history of ELDO written by Krige and Russo focuses largely on the technical progress made, and the meetings and resolutions of the ELDO Council, the work (perhaps unsurprisingly) barely mentions the difficulties imposed by a byzantine organisational structure.⁵⁸ ELDO suffered

⁵⁵ FO 371/178071, F.R. Barratt to P. Rogers, 11 December 1964.

⁵⁶ CAB 130/231, Misc. 63/1st Meeting, Space Policy Review, 19 May 1965; CAB 130/222, Misc. 31/1, European Launcher Development Organisation, 'Report of Space Policy Review Committee', 08 January 1965.

⁵⁷ Crossman, *Diaries*, p.530.

⁵⁸ J. Krige and A. Russo (eds.), *A History of the European Space Agency 1958-1987: Volume 1 The story of ESRO and ELDO 1958-1973*, (Noordwijk, 2000).

severe organisational problems from its very beginning. Its representatives were drawn from the members' national governments, and it took over two years to arrange a full complement of staff (and a single building to house them could not be arranged until 1967). Although work on Blue Streak and other projects began in 1964, staffing problems meant that the ELDO Secretariat did not take control of the project in full until 1965. Even then early ELDO Council meetings agreed that the central organisation was too weak, and discussed various options to increase the management power of the Secretariat.⁵⁹ In order to ensure that countries ratified the Convention quickly, the British had structured ELDO so that each national government had responsibility for the contracts to supply their portion of the project – allowing national governments to develop their own nascent space industries. As such the ELDO launcher had two layers of technical and administrative management before the ELDO Secretariat could exert any control (in the companies and in the contracting governments).⁶⁰

This hierarchical structure proved slow at responding to the necessities of scientific research. Preparing for the fourth test launch of the ELDO launcher, Australian and British engineers at the test site at Woomera noticed a small defect in the German third stage. Rather than fix the problem themselves (as they were capable and equipped to do), they were unwilling to make the repairs to the rocket, which was the property of the West German Government, making them legally liable should the stage fail. The West German government, slightly nonplussed by this, sent tools

⁵⁹ CAB 21/5442, 'Report on E.L.D.O. Council meeting held on 1st and 2nd July, 1965', 08 July 1965; FCO 55/135, ELDO/CM (December 66)PV/1, European Space Vehicle Launcher Development Organisation, 'Ministerial Conference December 1966', 14 December 1966.

⁶⁰ CAB 21/5442, 'Report on E.L.D.O. Council meeting held on 1st and 2nd July, 1965', 08 July 1965.

and scientists to Woomera. Although the journey took four to five days by air, Woomera's security procedures meant that all staff had to be cleared by the Australian Security and Intelligence Organisation – a process which took a further four to six weeks.⁶¹ These delays, organisational complexities, and lack of central control served only to increase the cost of the launcher (from the £70 million estimated in 1961) to over £150 million in 1965.⁶²

The Council itself was not a harmonious organisation. Meetings were frequently interrupted, postponed, or cancelled by the actions of member states who felt their views were not being heard. Sometimes, these delays were caused by the discussion of reasonable concerns (such as a Belgian initiative to increase the Secretariat's power to maintain financial control).⁶³ Sometimes, however, proceedings were brought to a halt by relatively minor considerations. For example after the Council meeting in July 1965 the British delegate reported that 'A lengthy debate then ensued with the Italian delegate (Bettini) invoking the financial rules, the Convention, Italy's lawful rights and so on in an attempt to move the Council. All he succeeded in achieving, however, was a considerable loss of valuable time...'⁶⁴ Similar paroxysms occurred when the German delegate requested that German be used as an official language of the organisation, 'The Italians immediately asked for Italian also to be accepted as an official language, which left the Dutch no option but to ask for their language too.'⁶⁵ With such a lot of time spent on relatively minor matters, UK delegates reported that Council meetings were 'tedious' and that most

⁶¹ National Archives of Australia: A1209 1966/7103 PART 1, Melbourne to Paris, 09 March 1966

⁶² FO 371/189514, T.W. Garvey to Sir C. O'Neill, 03 June 1966.

⁶³ CAB 21/5442, 'Report on E.L.D.O. Council meeting held on 1st and 2nd July, 1965', 08 July 1965.

⁶⁴ CAB 21/5442, 'Report on E.L.D.O. Council meeting held on 1st and 2nd July, 1965', 08 July 1965.

⁶⁵ CAB 21/5442, 'Report on E.L.D.O. Council meeting held on 1st and 2nd July, 1965', 08 July 1965.

useful discussions occurred between individuals rather than in the Council meetings themselves.⁶⁶ ELDO was hampered as much by its own structure, as it was by the ‘national antagonism’ of its members. Unlike the assessment of Krige and Russo, based largely on ELDO’s own records, this assessment from the national perspective shows an organisation in a state of almost constant crisis, and one which it was difficult to claim was operating successfully.

However, in spite of these difficulties, and reports from their delegation covering the inability of ELDO to function successfully, FO officials like McAdam Clark continued to recommend that ministers should maintain British membership. Since its inception in 1962, ELDO membership had become inextricably linked to the UK’s policy towards Europe in general (see Chapter 1). Barratt had been right when he suggested that Ministers would find McAdam Clark’s arguments unconvincing. Richard Crossman, Minister for Housing, was present at some of the meetings discussing Britain’s future in ELDO, and thought that ELDO could not possibly be a major determinant of Anglo-European relations.⁶⁷ By relying solely on foreign policy arguments McAdam Clark’s position was easily attacked by experts from other departments whose voice carried as much weight with Ministers as his own.

In this section I have shown how the FO’s attempt to formalise a scientific foreign policy, attempted to convince Ministers that its views were of prime importance in decision-making on ELDO. The failure of FO officials to create an argument which not only convinced Ministers of FO expertise in scientific relations, but also addressed the valid criticisms of others about the organisation’s difficulties made

⁶⁶ AVIA 92/60, G. Wheeler to Secretary. ‘E.L.D.O. Progress Report’, 08 March 1966.

⁶⁷ Crossman, *Diaries*, pp. 530; 537.

Cabinet less disposed to act on FO advice. The attempt to establish the SRD as the centre of expertise for policy advice on ELDO had clearly failed, damaging the link MacAdam Clark was attempting to make between Ministers' attempts to formulate a second British application to the European Communities and continued British membership of ELDO. In the next section we will see how this rejection of MacAdam Clark's advice led Ministers to create policy without little reference to civil service guidance. As Ministers made policy in this manner, MacAdam Clark had to react to, rather than attempt to steer, Ministerial decisions.

2.5: The "turn to Europe"?

By 1966, Wilson had become convinced that Britain should apply for European Community membership a second time, and there is evidence that key civil servants in the Foreign Office began preparing the departments involved for the government to re-open negotiations as early as mid-1965.⁶⁸ Although Wilson and George Brown did not begin their 'probe' of European capitals to assess the potential success of a British re-application until 1967, it is clear that, from mid-1966 onwards, improving the UK's relations with members of the European Communities became a key priority.⁶⁹ Wilson centralised the policy-making apparatus for the 'Approach to Europe' around himself and the Cabinet Office, believing that under the last government British policy towards Europe had been uncoordinated.⁷⁰ Why then, did

⁶⁸ Young, 'Technological Cooperation', p.111; S.A. Butler. *The Struggle for Power: British Applications to Euratom 1955-1973* Unpublished MA Thesis, (The University of Nottingham, 2010), p. 25.

⁶⁹ Young, 'Technological Cooperation', p.111; CAB 134/2705, E(66)1st Meeting, Ministerial Committee on Europe, 09 May 1966.

⁷⁰ Parr, 'Gone Native: The Foreign Office and Harold Wilson's Policy Towards the EEC', p. 83.

Wilson and his Cabinet also choose this time to announce their withdrawal from ELDO – the only large organisation in which Britain was a partner with the five major European Community nations? Authors such as Young, Parr and Baker suggest that Britain's approaches to ELDO in this period damaged Anglo-European relations at a time of intense scrutiny of these relations at home and abroad. However, neither accounts for how or why this damaging decision was made.⁷¹

The decision to withdraw followed a complex path, analysed in more detail below. However, the rapid, ad-hoc implementation of the decision to withdraw is certainly the kind of messy picture Daddow suggests (see p.22), and for clarity's sake a brief summary of the events is provided here. Withdrawal from ELDO was first decided on by Cabinet in December 1965, and arrangements for its announcement at the March 1966 ELDO Ministerial Conference were made. In spite of the Foreign Secretary's attempts to stall the announcement, the government sent a telegram notifying the member states of its intention to withdraw in February. The British announcement prompted the postponement of the ELDO conference from March to June 1966, and in the intervening time, the government (notably Wilson) altered the policy dramatically. This section will highlight the rapid decision-making process which led the Cabinet to make a decision which contradicted their aim of closer European relations, and the importance of the Prime Minister in changing policy at short notice.

The Foreign Secretary, Michael Stewart, had been convinced by MacAdam Clark's advice that '...it would seem odd, if not positively counter-productive to appear to

⁷¹ Young, 'Technological Cooperation', p. 98; Parr, *Wilson and Britain's World Role*, p. 33; Baker, 'Policy Towards ELDO'.

be breaking up E.L.D.O. at a time when in the field of general European policy we are anxious to build more bridges between ourselves and our European neighbours in functional fields.'⁷² The Chief Secretary of the Treasury (Jack Diamond), however, was firmly of the view that withdrawal was the only sensible option: 'I do not believe that the Government's European policies should be prayed in aid [saved at the expense] of co-operative projects whose sole justification is that they are co-operative.'⁷³ Whilst the Foreign Secretary and his advisers sought to put foreign policy first, the Chief Secretary to the Treasury and Chancellor of the Exchequer sought to cut a project which they believed wasted expenditure. Having failed to extricate the UK from the Concorde agreement, the Chancellor, James Callaghan, and the Chief Secretary took aim at ELDO in the hope of setting a precedent for the cancellation of such projects.

At a meeting of the full Cabinet in December 1965, the Foreign Secretary restated MacAdam Clark's arguments that British withdrawal would damage Anglo-European relations. However, he found himself outnumbered by those who believed, as the Chief Secretary had outlined, that ELDO was such a waste of money that Anglo-European relations should not be the prime concern. It was decided that Britain should 'work towards terminating [its] commitment at the earliest opportunity, but with due regard to the need to minimise the political damage of such a withdrawal.'⁷⁴ As it was the Foreign Secretary who would have to 'minimise the

⁷² EW 25/52, S.T. Charles to P. Jefferies, 25 May 1965.

⁷³ CAB 130/222, Misc. 31/6, European Launcher Development Organisation, 'Memorandum by the Chief Secretary to the Treasury', 26 March 1965.

⁷⁴ CAB 128/39, CC(65) 71st Conclusions, 16 December 1965.

political damage', he instructed his officials to find a way of presenting the decision in the best possible light.

Attempting to delay the announcement Stewart suggested that there should be a wide ranging European space policy review, during which he would announce British withdrawal or seek to persuade other nations to agree to terminate ELDO.⁷⁵ As the main drivers behind the consideration of withdrawal (and motivated by the savings which would improve the budget deficit), the Chief Secretary to the Treasury and Chancellor of the Exchequer thought that Britain should announce its withdrawal and cut off funding at the next ELDO Council meeting to be held in 1966, as 'It was essential not to allow a decision to drift on or become tied up with any general review of European space activity'.⁷⁶ Stewart would therefore have to 'take the necessary action through diplomatic channels to minimise the political repercussions of our withdrawing from the programme.'⁷⁷ Precisely what that action should be, or could entail was never discussed, and the lack of a plan to do so would damage Anglo-European relations. Although Stewart continued to express alarm at the political ramifications of withdrawal, Treasury officials were instructed by the Cabinet to draw up an *aide memoire* announcing Britain's withdrawal from ELDO.

It was not just the Prime Minister and Chancellor who doubted ELDO's effectiveness. Mulley was, by this time taking a much more circumspect view of ELDO. Although this did not mean that officials such as Bullock were recommending

⁷⁵ CAB 21/5444, Sir P. Reilly, Paris to Foreign Office, 22 December 1965.

⁷⁶ CAB 134/2395, P.E.(66) 1st Meeting, Committee on Public Expenditure, 10 January 1966.

⁷⁷ CAB 134/2395, P.E.(66) 1st Meeting, Committee on Public Expenditure, 10 January 1966.

British withdrawal to Mulley, they were suggesting that ELDO should be forced to abandon its current programme and start again.⁷⁸ The organisation's spiralling costs, recent French and German announcements that their portions of the projects would be both over-budget and late, and pressure on the MoA budget due to continuing commitment to Concorde all played their part in forcing a reassessment at the MoA.

With the loss of key allies in the MoA, FO officials were frequently in a 'minority of one' at various meetings discussing withdrawal from ELDO. The loss of MoA support for continuing in an un-changed ELDO severely weakened FO arguments, and greatly strengthened those who felt Britain should seek to leave entirely – as they felt that the MoA were best placed to pass judgement on ELDO's value, and their equivocal stance spoke volumes.⁷⁹ However, T.W. Garvey, Assistant Undersecretary at the FO felt the matter important enough that 'it would be a mistake to give in at this stage'.⁸⁰ He was concerned that 'if the Foreign Office were to capitulate... the grip of the Treasury, DEA [Department of Economic Affairs] and others on the handling of this question will be consolidated, so that our power to control or influence the manner of H.M.G.'s eventual extrication from ELDO will be greatly reduced.'⁸¹ As a full Cabinet meeting approved the Chancellor's proposal to set a

⁷⁸ CAB 134/2545, T.(O)(65) 7th Meeting, Official Committee on Technology, 22 October 1965.

⁷⁹ CAB 134/2395, P.E.(66) 1st Meeting, Committee on Public Expenditure, 10 January 1966.

⁸⁰ CAB 21/5444, P. Rogers to First Secretary of State, 'Space Policy Review', 17 December 1965; FO 371/189509, T.W. Garvey, 'ELDO', 24 January 1966.

⁸¹ FO 371/189509, T.W. Garvey, 'ELDO', 24 January 1966.

limit on British withdrawal from ELDO of March 1966. It appeared that FO control of the decision had been lost.⁸²

As with the decision to go ahead with Black Arrow, decision-making practices were again contravened. In political theory, Cabinet decisions are irreversible.⁸³ For officials and Ministers, however, this is no concrete rule. Officials did not suggest that the Cabinet decision be reversed in such open terms, however, F.K. Roberts, at the FO, suggested to Garvey that Ministers should be ‘persuaded to “take a new look”’ at the decision to withdraw.⁸⁴ Garvey himself described the Cabinet’s conclusion as a ‘procedural decision [which] does not, ipso facto settle the point.’⁸⁵ How then does a Minister reverse, delay or modify a Cabinet decision without their consent? As the original proposal had been made in a Cabinet committee controlled by the Chancellor of the Exchequer (the Committee on Public Expenditure), Garvey proposed that the Foreign Secretary take the decision to the Defence and Overseas Policy Committee (OPD). It was hoped that ‘since time was short and the points in dispute had been exhaustively examined by officials; the paper could go direct to Ministers before the next meeting of the ELDO Council without passing through a top level official committee.’⁸⁶

Focused on matters of Defence, the OPD was usually chaired by the Prime Minister and was not necessarily the appropriate space for a discussion on British membership of a large civil science organisation. However, due to Wilson’s absence

⁸² FO 371/189509, T.W. Garvey, ‘ELDO’, 24 January 1966; R. Crossman, *The Diaries of a Cabinet Minister, Vol 1: Minister of Housing, 1964-66*, (London, 1975), p. 530

⁸³ B. Smith, *Policy-Making in British Government: An analysis of Power and Rationality*, (London, 1976).

⁸⁴ FO 371/189509, F.K. Roberts to T.W. Garvey, 02 February 1966.

⁸⁵ FO 371/189509, T.W. Garvey, ‘ELDO’, 24 January 1966.

⁸⁶ FO 371/189509, T.W. Garvey to Sir C. O’Neill, ‘ELDO’, 24 January 1966.

overseas, the Foreign Secretary was given the chair, and with it control of the agenda and discussion within the meeting. As such Stewart was able to (and did) devote a significant proportion of the discussion to the impossibility of avoiding political ramifications if Britain announced its withdrawal from ELDO.⁸⁷

Stewart was greatly assisted in his arguments by events at the ELDO Council meeting held in December 1965. As part of the original Cabinet decision to withdraw in December 1965, the British delegate had been instructed to propose that the ELDO budget should only be approved to release funds until the ELDO Council meeting in March (at which the point the UK would announce its withdrawal). The 'immediate and violent reaction' this provoked from the member nations and Secretariat was further enhanced by a warning from the Australian delegate that in the absence of a firm guarantee that his Government's costs would be recoverable, no further work at Woomera would be permitted after 31st December, 1965.⁸⁸ Faced with the prospect that nearly 500 British scientists would be forced to return home from Woomera, the British delegate was authorised by Stewart to approve the budget for the whole of 1966. For the first time armed with evidence, Stewart warned his colleagues in the OPD that 'The reactions of the European representatives at the ELDO Council meeting in December suggests that Her Majesty's Government may have under-estimated the importance attached by other European governments to the continuation of ELDO.'⁸⁹ The OPD

⁸⁷ CAB 148/25, O.P.D. (66), 10th Meeting, 04 February 1966; CAB 148/27, O.P.D. (66) 26, Defence and Overseas Policy Committee, 'Europe Space Policy and ELDO: Memorandum by the Secretary of State for Foreign Affairs', 31 January 1966.

⁸⁸ CAB 148/27, O.P.D. (66) 26, Defence and Overseas Policy Committee, 'Europe Space Policy and ELDO: Memorandum by the Secretary of State for Foreign Affairs', 31 January 1966.

⁸⁹ CAB 148/27, O.P.D. (66) 26, Defence and Overseas Policy Committee, 'Europe Space Policy and ELDO: Memorandum by the Secretary of State for Foreign Affairs', 31 January 1966.

recommended that Cabinet be asked for a second time to approve continued UK membership of ELDO.

In attempting to discuss matters already decided by Cabinet, Stewart was attempting to force Cabinet to re-consider its decision in the face of the united opposition of the OPD which was an important and long-established committee in charge of defence relations. Although OPD had no remit to comment on a civil space programme, and Stewart was not even regularly in the Chair, he was able to use his influence to ensure that ELDO was discussed. In doing so, he was attempting to utilise his Ministerial contacts in much the same way that Thorneycroft built alliances with Heath and Sandys to maintain support in the Cabinet for the formation of ELDO, or the way in which Amery enrolled the help of Neave to highlight back-bench interest in Black Arrow (see 1.2 and 1.6). By achieving the support of an alliance of important actors with different expertise, Stewart hoped to illustrate that Ministers' decisions on ELDO had far-reaching consequences beyond his own personal and departmental interests, lending greater weight to his judgement of the situation.

The Foreign Secretary's attempt to return the decision to a full Cabinet meeting shows the extent to which he could attempt to change a policy which had already been made. Stewart was, however, ultimately unsuccessful. The compromise arrived at in the OPD, in the face of strident opposition from the Chief Secretary to the Treasury, was that Ministers should consider whether withdrawal from ELDO was too contradictory. They concluded that the Cabinet's stipulation that withdrawal take 'due regard to the need to minimise the political damage' was an

impossible stricture.⁹⁰ In their opinion, withdrawal from ELDO would severely damage Anglo-European relations no matter the strategy pursued, and therefore the only feasible option was to remain in ELDO. However, this decision necessitated the scheduling of further time for discussion in the full Cabinet.

For an item to be placed on the Cabinet agenda for approval or discussion, it must be placed there by the Cabinet Secretaries. Theakston has shown that Cabinet Secretaries have enormous official and unofficial power in the exercise of this role and in their close contact with the Prime Minister.⁹¹ Burke Trend – the Cabinet Secretary at the time – noticed the Foreign Secretary’s ploy immediately. Writing to the Prime Minister, he noted that whilst the Foreign Secretary wished for the decision to be reversed ‘Other Departments, at official level, apart from the Ministry of Aviation, take the view that the European implications of ELDO are being over-played...’⁹² Wilson, who was already set against ELDO, agreed that Cabinet should not have to discuss the matter again, something which certainly pleased Crossman who was afraid he would be asked to chair the meeting and couldn’t stand the idea of ‘collecting numbers of important, valuable people round a table for no good purpose’.⁹³ With no discussion in Cabinet and in spite of Stewart’s best efforts, Wilson instructed Stewart to send the aide memoire which Treasury officials had drafted to the other European nations informing them of Britain’s intent to withdraw.

⁹⁰ CAB 148/25, O.P.D. (66), 10th Meeting, 04 February 1966; CAB 128/39, CC(65) 71st Conclusions, 16 December 1965.

⁹¹ K. Theakston, *Leadership in Whitehall*, (Basingstoke, 1999), p.102.

⁹² CAB 164/7, B. Trend to Prime Minister, 02 February 1966.

⁹³ R. Crossman, *The Diaries of a Cabinet Minister, Vol 2: Lord President of the Council and Leader of the House of Commons 1966-68*, (London, 1976), p. 103.

The aide memoire which was sent did little to improve Anglo-European relations. Whilst the government accepted that ELDO had been started by its predecessors, it warned that ELDO's 'subsequent financial and technical difficulties are now such as to cause Her Majesty's Government great concern', and 'accordingly view[ed] the prospect of committing further European resources to these projects with the greatest reserve.'⁹⁴ Although other ELDO members also perceived the difficulties of ELDO's organisational problems, Britain's European partners were shocked and angered by this unexpected *démarche*.⁹⁵ In receipt of a storm of European criticism, Stewart attempted to persuade Wilson to change his mind and overrule the Cabinet before the start of the ELDO Council meeting. Again unsuccessful Stewart told his officials that it was best to 'let the storm break' and try again 'when the general arguments will have more prospect of success.'⁹⁶

The 'storm' which Stewart predicted, and which FO officials had been warning their colleagues about since the new government took office, broke quickly. The complaint that British policy towards ELDO was inconsistent with its wider European policy was made by the European and Australian delegations to ELDO (and their respective governments). A greater inconsistency which nations struggled to accept was that Britain had announced withdrawal from an organisation which the previous government (and the Prime Minister, Macmillan and Minister for Aviation, Peter Thorneycroft in particular) had spent nearly two years persuading them to

⁹⁴ CAB 164/7, Foreign Office to Paris, 11 February 1966.

⁹⁵ Krige & de Maria, 'The Reorientation of ELDO's Programme', pp. 110-3.

⁹⁶ FO 371/189515, N.M Fenn to Mr. Buxton, 06 June 1966.

join (see 1.3-5). In particular, French and Australian diplomats reminded their British counterparts that they ‘had been persuaded by Mr. Thorneycroft to go into ELDO against their better judgment...’ and that ELDO ‘had in fact been the fruit of a discussion between Mr. Macmillan and General de Gaulle...’⁹⁷

The Australian delegation noted that this was not the first instance in recent months where British and Australian policy had differed. Recent announcements of moves by the British to withdraw troops from East of Suez (leaving Australia without the ‘protection’ of British armed forces) served only to highlight a growing gap between British and Australian priorities.⁹⁸ The British decision to attempt withdrawal from ELDO was ‘considered shocking and even immoral.’⁹⁹ Australia remained steadfast members of ELDO, supporting the continued development of the launcher, and the continued supply of British parts (at cost to Britain) even if the UK successfully withdrew. Changing priorities on the part of Australia (as it sought a

⁹⁷ CAB 164/7, Canberra to Commonwealth Relations Office, 16 February 1966; CAB 164/7, Sir P. Reilly to Foreign Office, 16 February 1966.

⁹⁸ E. Longinotti, ‘Britain’s Withdrawal from East of Suez: From Economic Determinism to Political Choice’, *Contemporary British History*, 29(3), (July, 2015); A. Benvenuti, ‘Shifting Priorities: Australia’s Defence Ties to Britain in the Aftermath of Empire’, *History Compass*, 2(1), (2004); S. Dockrill, ‘Britain’s power and influence’; S.R. Ashton, W. Roger Louis (eds), *East of Suez and the Commonwealth 1964-1971*, (London, 2004); A. Benvenuti, ‘The British are “Taking to the Boat”: Australian Attempts to Forestall Britain’s Military Disengagement from Southeast Asia, 1965-1966’, *Diplomacy & Statecraft*, 20(1), (2009); J. Kristensen, “‘In Essence still a British Country”: Britain’s withdrawal from East of Suez’, *The Australian journal of politics and history*, 51(1), 2005; D. McDougall, ‘Australia and the British Military Withdrawal from East of Suez’, *Australian journal of international affairs*, 51 (2), (1997); S. Dockrill, *Britain’s Retreat from East of Suez: The Choice Between Europe and the World?*, (Basingstoke, 2002); J. Pickering, *Britain’s Withdrawal from East of Suez*, (Basingstoke, 1998).

⁹⁹ National Archives of Australia, A1838 692/4/2 Part 19, Paris to Canberra, 09 June 1966; National Archives of Australia, A1838 692/4/2 Part 19, Paris to Canberra, 02 June 1966

new role in Australasia) and the UK combined to lessen the strategic (if not emotional) importance of the Anglo-Australian relationship.¹⁰⁰

Criticism of the British position was not limited to member states. The ELDO Secretary General Count Carrobio embarked on a diplomatic initiative of his own. Carrobio suggested that European nations should act to reduce the level of Britain's contribution to allow her to remain in the organisation at a lower annual cost, but this met with little success. To the horror of FO officials, Carrobio wondered in a telegram to London, whether the British might appreciate another solution: '...if Her Majesty's Government were having particular difficulty with their budget this year or next, some means might be considered by which other members of the organisation got together to pay the British contribution, thus in effect making Her Majesty's Government an interest free loan.'¹⁰¹ The embarrassing suggestion that the British economy was in such a parlous state that it could not afford to pay what was a relatively small sum of money was one which the FO were unable to countenance and did not discuss with other departments.¹⁰² In spite of the vocal criticism of other ELDO members, the Cabinet were still in favour of withdrawal, believing ELDO to be a waste of money. Stewart's best chance of reversing the decision at this late stage was to persuade the Prime Minister.

As Ministers had debated whether or not withdrawal was an option various departmental officials had offered their own interpretation of whether such a move

¹⁰⁰ S. Ward, 'Sir Alexander Downer and the embers of British Australia', in C. Bridge, F. Bongiorno and D. Lee (eds.), *The High Commissioners: Australia's Representatives in the United Kingdom, 1910-2010*, (Barton, 2010).

¹⁰¹ FO 371/189512, Paris to Foreign Office, 29 April 1966.

¹⁰² FO 371/189512, Handwritten note, undated and unsigned on, Paris to Foreign Office, 29 April 1966.

was possible under the terms of the ELDO Convention. J.A.C. Gutteridge, the Secretary to the FO Legal Advisers, had first advised the RSP in 1964 that the only provision for withdrawal was under Article 23 of the ELDO Convention which stated that: 'After the Convention has been in force for five years any Member State may denounce it by giving notice... A Member State may not withdraw from the Organisation before the end of any programme in which it has agreed to participate.'¹⁰³ Estimates by officials about the terms under which Britain could withdraw under those conditions ranged from withdrawal in 1965, 1969, or whenever the organisation had spent the £70 million first estimated by the British delegate in 1961.¹⁰⁴ As ELDO expenditure had begun in 1960 with continuing work on Blue Streak, stretching the terms of the Convention suggested that an argument could be made for withdrawal in 1965. If such arguments were unsuccessful, Collins (Gutteridge's superior) suggested that withdrawal would be possible in 1969; five years after the Convention had been signed.¹⁰⁵ Gutteridge, however, argued that as research on the primary programme was still on-going the five year limit did not apply – there could be no legal withdrawal from ELDO until the primary programme was complete.

However, Ministers had never asked for a legal opinion in Cabinet (in spite of the well-known legal difficulties preventing British withdrawal from Concorde), and

¹⁰³ FO 371/178071, J.A.C. Gutteridge, 'Space policy – Possible withdrawal from ELDO', 16 December 1964.

¹⁰⁴ CAB 130/231, Misc. 63/1st Meeting, Space Policy Review, 19 May 1965; CAB 134/2459, R.S.P.(64) 2nd Meeting, Space Policy Review Committee, 10 November 1964; CAB 134/1456, C.C.C.(65)1, Combined Communications-Electronics Committee, 'Report of the Space Policy Review Committee', 13 January 1965.

¹⁰⁵ CAB 130/231, Misc. 63/1st Meeting, Space Policy Review, 19 May 1965.

Stewart had never established with the Foreign Office solicitors if withdrawal would be legal or not.¹⁰⁶ Given that the first programme was still underway (and was not scheduled to finish before 1970), British withdrawal was, under the terms of the Convention, completely illegal. Gutteridge had therefore counselled that to withdraw without reference to the Convention would drastically affect Britain's broader diplomatic relations more broadly, as 'The United Kingdom would have deliberately chosen to act in disregard of obligations it had undertaken as a Member of an international organisation.'¹⁰⁷ If the UK went ahead with its withdrawal from ELDO, the ELDO Secretary General warned that the United Kingdom government would still be liable for their contribution at its present level to the end of the programme, and the French government threatened to take up action against the UK at the International Court.¹⁰⁸ It was at this point that the Prime Minister finally became personally involved in the policy-making process.

Before June 1966, Harold Wilson was notably absent from the decision-making process about ELDO, and Stewart struggled to arrange personal meetings with him outside of Cabinet.¹⁰⁹ Although the Prime Minister had received a number of concerned memoranda from his Minister of Aviation and Foreign Secretary, Wilson had refused to reopen discussion on the decision to withdraw from ELDO. A meeting with Wilson after the crisis died down provides some evidence as to why withdrawal from ELDO had not occupied Wilson's time: 'The Prime Minister said

¹⁰⁶ Crossman, *Diaries*, p. 530.

¹⁰⁷ FO 371/178071, J.A.C. Gutteridge, 'Space policy – Possible withdrawal from ELDO', 16 December 1964.

¹⁰⁸ FO 371/189514, T.W. Garvey to Sir C. O'Neill, 03 June 1966.

¹⁰⁹ FO 371/189513, T.W. Garvey to Sir C. O'Neill, 23 May 1966

that he was not particularly concerned about bodies such as ESRO or ELDO which were to some extent relics of the past.¹¹⁰ Wilson's concern was however, piqued by the large amount of diplomatic pressure exerted by ELDO member states and an outcry in the press that drew Wilson's attention to the issue (see Figure 6).

The combined press and diplomatic outcry led the Prime Minister intervene, asking "Are we treaty bound: has the Attorney been consulted?".¹¹¹ Unsurprisingly the Attorney General, Lord Elwyn Jones, (who could only provide advice at the behest of the Cabinet) had not been consulted. He quickly advised Ministers that although France did not have a case to take the UK to the International Court, 'if we try to get out, we risk being taken to arbitration, cannot refuse to be taken, and may lose our case... The possible cost of losing our case ranges from £30 m. to £50 m. or even considerably more...'¹¹² The Attorney General's advice supported the FO case for the UK's continued membership and warned that the British could end up paying more in penalty charges for leaving than they could face in membership fees.

Prompted by an almost impossible legal position, Wilson allowed a softening in the British delegation's negotiating position.

¹¹⁰ CAB 164/46, 'Page 3. of record of Sir Solly Zuckerman's talk with the Prime Minister on 17 March 1967', 17 March 1967.

¹¹¹ FO 371/189514, M. Palliser to N.M. Fenn, 06 June 1966.

¹¹² FO 371/189514, C. O'Neill to Private Secretary, 'E.L.D.O.', 08 June 1966.

Pay up for Eldo French will tell Britain

From **ANGUS MACPHERSON**

PARIS, Wednesday

FRANCE will insist that Britain does not get off lightly if she withdraws from ELDO, the European space rocket club.

Britain to quit rocket club

By **ANGUS MACPHERSON**, Daily Mail Air Correspondent

BRITAIN is to pull out of Europe's space rocket club ELDO — the European Launcher Development Organisation. This could

more than two years later. Britain at present pays 40 per cent of the ELDO bill, equal to £12 million a year.

It is regarded as a waste of money by most members of the

British action causes anger

From Our Own Correspondent
PARIS, Saturday.

The British decision has provoked a storm of indignation here. It has also created a strong measure of confusion in E.L.D.O. A spokesman said:

"After closer study of the document we are in a state of doubt. We don't see how Britain can opt out of her present commitments.

Britain condemned in Europe for ELDO withdrawal

BY OUR OWN REPORTER

The Foreign Secretary, Mr Stewart, said yesterday that Britain's partners in the European Launcher Development Organisation would be "greatly disappointed" by her decision to withdraw from the project.

Reports from Paris, however, suggest that Mr Fred Mulley, Minister of Aviation, may be greeted with

ROW OVER 'QUIT ELDO' DECISION

By **Dr. ANTHONY MICHAELIS**

Daily Telegraph Science Correspondent

BRITAIN has told Italy and France that she is withdrawing from the European Launcher Development Organisation (ELDO), Europe's joint space venture.

Notes announcing the decision were delivered to the Italian and French Governments, two of Britain's partners in the project. An Italian spokesman said the decision had been received with "preoccupation and perplexity."

The decision coming at a moment when countries were asking Britain to co-operate closer with Europe was, to say the least, surprising.

Tories prepare big attack on Eldo withdrawal

By Our Political Reporter

The Government will face a bitter row over the decision to withdraw from the European Launcher Development Organisation (ELDO) when Parliament resumes next week after the Whitsun recess.

Following official confirmation of the ELDO withdrawal in...

Figure 6: Press comment on the decision to withdraw ¹¹³

¹¹³ A. Macpherson, 'Pay up for ELDO, French will tell Britain', *Daily Mail*, 04 June 1966; Anon., 'British action causes anger', *Daily Telegraph*, 08 June, 1966; Anon., 'Britain condemned in Europe for ELDO withdrawal', *The Guardian*, 06 June 1966; A. Michaelis, 'Row over 'Quit ELDO' decision', *Daily Telegraph*, 04 June 1966; Anon., 'Tories prepare big attack on Eldo Withdrawal', *The Financial Times*, 06 June 1966.

The changes prompted a rush in the Foreign Office. The British delegation to ELDO (including the Minister of Aviation) were already on their way to Brussels. The FO were forced to cable the Brussels embassy that changes in the British position should be expected as the 'Prime Minister is arranging a meeting of Ministers tomorrow, Tuesday, at 5 P.M. to consider new situation.... John Harris is flying out to Brussels this evening to explain situation to you in greater detail.'¹¹⁴ The Cabinet meeting on the 7th of June decided that in light of the potential legal and financial penalties involved, Mulley should seek to reduce the UK financial contribution to ELDO, and to establish budgetary ceilings of the total amount that ELDO could spend in each financial year. This rapid softening of the British position was relatively successful, and after listening to Mulley's reports on the Council meeting it was agreed that he should 'accept the package which he had negotiated [and] that he should if necessary accept 27% and a ceiling on the U.K. contribution of £44 m...'¹¹⁵ By accepting a reduced contribution, Mulley had successfully avoided a legal challenge. Yet the rapid way in which policy was made has led to confusion in historical accounts of the events.

In his work on the history of the European Space Agency Krige suggests that the British attempt to withdraw in this period was nothing more than a ploy to wrangle a reduced contribution.¹¹⁶ However Ministers had been intending to withdraw for some time, and the suggestion that Mulley's announcement of withdrawal was a ruse was fostered in the press by Mulley, keen to show himself a clever

¹¹⁴ FO 371/189514, Foreign Office to Brussels, 06 June 1966.

¹¹⁵ FO 371/189515, T.W. Garvey to C.C.C. Tickell, 01 July 1966.

¹¹⁶ J. Krige, 'The Launch of ELDO', in J. Krige and A. Russo (eds.), *A History of the European Space Agency 1958-1987: Volume 1 The story of ESRO and ELDO 1958-1973*, (Noordwijk, 2000);

negotiator.¹¹⁷ Wilson decided to change the negotiating position of the British delegation from one of outright withdrawal. Faced with an embarrassing legal challenge, the united opposition of every nation in the organisation, unfavourable press comment, and most importantly, the prospect of paying more in legal fees for leaving than staying, made the option of withdrawal politically impossible.

In this section I have shown how Ministers rejected the assumptions on which Stewart's advice was based upon, and how, in turn their decision damaged wider Anglo-European relations. Although Ministers expected to be able to withdraw from ELDO, this expectation was based on the avoidance of civil service advice. After advice was requested (and received) from the Attorney General concerning the legality of British withdrawal Wilson intervened personally to re-shape the British approach at the ELDO conference. While Wilson's intervention altered the content of Mulley's statement at the conference it did not alter Minister's views on ELDO which continued to shape British approaches throughout Wilson's second government. Although Stewart was the Cabinet member with the most expertise in foreign relations, his lack of allies within Cabinet meant his warnings about damage to Anglo-European relations went un-heeded. Without allies, Stewart struggled to shape or direct policy which had already been decided.

¹¹⁷ E. Sewell, 'Ministers deny any plan to quit ELDO', *Daily Mail*, 14 June 1966.

2.6: Conclusion

In this chapter we have seen the impact and value of individual civil servants in policy making. The development of policy on Black Arrow highlights the rising prominence of economics in government decision-making (discussed in further detail in chapter 3), and the difficult economic situation which the Wilson government faced after 1964. As has been seen, Wilson's eagerness to solve the problems he identified in the previous government of engaging in projects for their prestige value rather than their economic value motivated MoA and FO officials to defend their positions. Whereas Ministers passed judgement on Black Arrow to officials, attempts to take decisions without reference to the opinion officials led to an embarrassing U-turn in policy on ELDO.

In the case of Black Arrow Goodson was able to test his arguments for retaining the launcher in a variety of Committees, and ultimately re-named the programme in an attempt to change the way in which it was debated. By linking the Black Arrow launcher programme firmly to all national space activities, reducing the expense of the programme, and discounting other options should the programme be cancelled Goodson's arguments attacked those of his opponents head on. Goodson's rebranding had a lasting impact on the debate surrounding Black Arrow at Ministerial level, appearing in Cabinet submissions for the next five years. It is no surprise that he and his colleagues found success in their attempts to direct and frame the debate around the programme (as they had successfully limited the options from which Ministers could choose). Meanwhile, McAdam Clark and his

colleagues in the SRD at the FO found it much more difficult to do so with policy towards ELDO.

In spite of McAdam Clark and his colleagues making a case based on their expertise, they (unlike Goodson) did not attack arguments made for withdrawing from ELDO and did not convince Ministers to change their minds on British participation. After failing initially to convince Ministers, McAdam Clark then failed to recognise the need to change the debate and limit the options available to Ministers, and instead resorted to Machiavellian attempts to overturn the Cabinet's decision. These attempts did little more than irritate Ministers such as Richard Crossman and left them even less receptive to Stewart's claims that withdrawal from ELDO would damage Anglo-European relations. While Ministers in the Macmillan government were prepared to believe that the formation of ELDO might well have benefits for Anglo-European relations, Ministers in the Wilson government were unwilling to believe that withdrawal from ELDO could not be countenanced because it would irreparably damage them. Ministers felt that ELDO was a bad organisation whose spiralling costs could not be justified, and that European members should be persuaded of this fact. Such attempts continued into the second Wilson government (explained in 3.6), but even at this early stage, the economic difficulties of the project weighed more heavily than impacts on Anglo-European relations.

This chapter has shown two ends of a spectrum – civil service domination and control of policy making (when discussion between officials is allowed to continue until consensus is reached or events intervene) – and the dangers of policy-making

without reference to civil service advice. In the case of Black Arrow Goodson and Bullock clearly monopolised the discussion, taking the opportunity to frame and test arguments before (successfully) convincing Ministers of a certain option; whilst in the case of ELDO, Wilson and his Cabinet who had already made up their mind, chose not to accept advice from the Foreign Secretary which did little to satisfy their concerns that ELDO was a dysfunctional organisation and a waste of British resources. The policy produced by these two paths of decision-making was very different. While the complex debate at official level on Black Arrow prompted Ministers to wait for hopefully conclusive advice and guidance, Ministers' formation of policy on ELDO prompted officials (and Stewart) to subvert decision-making practices after decisions had already been made.

Chapter 3: White Heat in practice: Wilson and the rise of economics in decision-making

3.1: Introduction

As the Wilson government was returned to power in 1966 with an increased majority from four to 96, it was clear that Wilson had been given the extra time requested to implement his policies. Whilst the last chapter reflected on the importance of civil servants in framing debates in Wilson's first government, his second, from 1966 to 1970 certainly benefitted from the experiences of the first. Again, economic concerns took centre stage, due to increasing pressure on the pound and a balance of payments crisis, leading to eventual devaluation in 1967.¹ Established in 1964, MinTech has been seen variously as a failed experiment, rhetorical tool, and a re-creation of the Ministry of Supply.² In *Warfare State* David Edgerton suggests that the main concern of MinTech was to examine 'the whole issue of the relations of innovation to national economic development.'³ For Edgerton, White Heat rhetoric had 'lost its political salience' by 1966 and was 'an ending rather than the beginning of an overweening enthusiasm for national

¹ J. Tomlinson, *The Politics of Decline: Understanding Post-war Britain*, (Harlow, 2000).

² P. Hennessy, *Whitehall*, (London, 1990), p. 431; J.W. Young, 'Technological Cooperation in Wilson's Strategy for EEC Entry', in O.J. Daddow (ed.), *Harold Wilson and European Integration: Britain's second application to join the EEC*, (London, 2003); D. Edgerton, *Warfare State: Britain, 1920-1970*, (Cambridge, 2006), pp. 266; 251; G. Ortolano, *The Two Cultures Controversy: Science, Literature and Cultural Politics in Postwar Britain*, (Cambridge, 2009); R. Coopey, 'The white heat of scientific revolution', *Contemporary Record*, 5(1), (1991); R. Coopey, 'Ministry of Technology 1964-70', *Contemporary Record*, 5(1), (1991); 3; R. Coopey, 'Restructuring Civil and Military Science and Technology: the Ministry of Technology in the 1960s' in R. Coopey, G. Spinardi and M. Utley (eds), *Defence Science and Technology: Adjusting to Change* (London, 1993).

³ Edgerton, *Warfare State*, p. 251.

technology'.⁴ In 1967 MinTech and the MoA merged, and this merger drastically changed the policy-making environment. Not only were SAB and RAE now smaller parts of a much larger Ministry, but the arguments of officials needed to meet MinTech's remit to provide through the planning of science and technology tangible benefits for society. In this chapter I will show that in MinTech's absorption of MoA programmes, and in Benn's attempts to direct policy towards ELDO, White Heat was more than the rhetoric Edgerton supposes.

This chapter will examine the way in which Ministers and officials sought to recast the conduct of British science and technology whilst simultaneously dealing with the economic austerity caused by the devaluation of the pound in November 1967. For space policy, these concerns were paramount, as the Treasury, and the Department of Economic Affairs (DEA, established 1964) began to influence the decision-making process on both Black Arrow and ELDO. Black Arrow had been a major constituent of the MoA's budget prior to merger with MinTech in 1967, and exploring its development will allow us to understand whether and how a 'transformation of views' affected the way in which programmes were directed in the period. Whilst Edgerton argues that White Heat rhetoric was far from the minds of British Ministers and officials, I show that the language of the White Heat continued to be employed by Ministers as they sought to persuade European partners in ELDO that economic decision-making dictated the end of the collaboration.

⁴ Edgerton, *Warfare State*, pp. 263-4.

3.2 Assessing the value of science?

Although Edgerton notes that the creation of MinTech, and the discussion of the rhetoric of White Heat in government caused a 'great transformation of views about British national science and technology... with a recognition that R&D was not, and had not been, deficient in Britain', there is little explanation of what this meant for the conduct of British science and technology.⁵ In this section we will examine what this 'transformation of views' meant for the Black Arrow programme. As Treasury and DEA influence grew throughout 1967-9 we shall see how this changing policy-making environment altered the way in which decisions about Black Arrow were made, and the arguments which officials made to counter this growing influence.

Although the attempt to establish economic 'Criteria for the assessment of civil science' had failed by 1966 (see 2.2), this was not the only forum which Wilson directed towards achieving similar ends. For officials it was clear that 'the Prime Minister wanted our scientific and technological resources to be allocated more effectively than in the past.'⁶ The various ways in which Wilson attempted to tackle these issues were central to his plans to tackle the economic difficulties which the UK faced, and the perception of decline on which he and senior figures in the Labour Party had based the 1964 and 1966 general election campaigns.⁷ The Central Advisory Council for Scientific Policy was established to 'review the ways in which our scarce scientific and technological resources were being used, and the ways in

⁵ Edgerton, *Warfare State*, p. 264.

⁶ CAB 130/337, MISC 167(67) 1st Meeting, Priorities in Science and Technology, 21 September 1967.

⁷ Tomlinson, *Politics of Decline*, p.37; Fielding, *Labour and Cultural Change*; G. O'Hara, *From Dreams to Disillusionment: Economic and social planning in 1960s Britain*, (Basingstoke, 2007).

which it might be necessary to redeploy them for the greatest economic benefit.⁸

The main concern was that the resources in question (scientists, engineers and valuable materials) were being directed to work on projects of little economic or societal value.

The Black Arrow programme, which had been defined by Goodson between 1964 and 1966 as providing government and industry with expert advice through first-hand experience, was criticised for absorbing highly skilled manpower.⁹ The realignment of government research and development implied by the discussions focused on what was termed 'needs-directed' research (research which stemmed from a particular 'customer' demand which could not be satisfied outside of government procurement) and ensuring quantifiable economic or social benefits to government spending on science and technology.¹⁰ Whilst SAB officials such as Goodson had previously argued the case for Black Arrow by pointing to the spin-off which could accrue, the infancy of the industry, and the need to have an 'insurance' against future developments in the field, these subjective factors were no longer as important in the continued debate about what government research and development was for. Instead SAB arguments changed to reflect the rhetoric of Wilson's second government and establish the 'customer needs' that Black Arrow met.

Goodson had successfully adapted his arguments to the increasingly austere priorities of the first Wilson government, and was well prepared to continue to do

⁸ CAB 134/2584, AC(67) 1st Meeting, Central Advisory Council for Science and Technology, 26 January 1967.

⁹ T 334/141, J.L. Carr to H.S. Lee, 06 February 1969.

¹⁰ T 334/28, P.L. Daniel to Mr. L. Pliatzky, 15 September 1967.

so even as his Ministry merged with MinTech in March 1967. The merger of MinTech and MoA, changed the decision-making process drastically. Not only was the SAB now one of the smallest branches of a very large Ministry, but it was also competing for the funds of a much larger and complex budget.¹¹ However, the merger of the two Ministries was not solely bad news for officials in SAB. As part of MinTech, they were now able to access new sources of expertise in their battle to keep the Black Arrow programme alive.

In late 1965 the Atomic Energy Authority had established a Programmes Analysis Unit (PAU), a small team of economists to assess new projects.¹² Based in Harwell, the Unit occupied a strange position within MinTech, outside the control of the Ministry's Chief Economist, and separate from the Economics Division (ES4). Officials in the SAB, and particularly Goodson, were aware of the increasing importance of economics as a decision-making tool, and decided to include officials from the PAU and ES4 in their review of Black Arrow. Although there were concerns that the PAU staff were 'still investigating techniques', Goodson was sure that involving economists in the department was the right move to make:

I think you already know my view that whilst we are bringing in PAU and Economics Division on the Black Arrow review, this is mainly for tactical reasons and the degree to which our new consultants are able effectively to help on this exercise is very much an open question. The value of these arrangements will be more for the rather longer term and will I hope put us

¹¹Edgerton, *Warfare State*, pp. 266; 251; Sir R. Clarke, *New Trends In Government*, (London, 1971), pp.2-3.

¹²D. Medford, 'The new thaumaturgy of governmental research and development', *Futures*, 1(6), (1969), pp. 510-526.

in a better position in regard to economic aspects of our work and hence less vulnerable to the views of the economic Departments than perhaps we may have felt ourselves to be in the past.¹³

By encouraging the economic 'experts' in the PAU and ES4 to review work on Black Arrow, Goodson hoped that Treasury and DEA opposition to the continuance of Black Arrow could be lessened by weakening their position as Ministers' sole economic advisers.

Goodson's attempts to forge alliances across his new Ministry highlight the importance of Black Arrow to the SAB. If British membership of ELDO was withdrawn, as Ministers wished, then the Black Arrow programme represented the only large scale space project led in SAB (projects such as Skylark which were for the benefit of University-based scientists were run from the Department of Education and Science). Not only could SAB close if Black Arrow and ELDO were cancelled, but the end of work on both projects could mean the closure of the Space Department of the RAE. Seeking to protect their role as experts on space policy, SAB officials honed internal arguments for the continuance of Black Arrow as a necessary part of MinTech's work, which represented an economic use of scarce resources. By highlighting the way in which completing the Black Arrow programme met MinTech's wider aims of supporting the growth of private industry, Goodson was attempting to ensure Black Arrow was considered an important part of the new Ministry's work. Whereas Goodson and Bullock's previous alliances with MinTech

¹³ AVIA 92/128, A.S./S.A.B to SAB1, 08 November 1967.

had been inter-departmental they were aware of the need to build an alliance of supportive actors within their own department.

Although the idea to use the in-house expertise in the PAU had come from Goodson, the working relationship between economists in PAU and the administrators in SAB was not easy. Although Bullock, and the Head of the Economics Section (ES.4) J. Boreham had agreed that SAB would receive a report from PAU, no committee was established to share information. Instead officials in PAU could only write requests for data which was not always forthcoming. PAU official S. Merrett wrote to the Boreham to complain that 'I wrote to Neate [Under Secretary at SAB] and amongst other points reminded him of the pressing need for data – any data!.. I would like to make the point that if S.A.B. continues to excel itself in incompetence in this way, the liaison... is not likely to be fruitful.'¹⁴ Whilst Merrett was trying to highlight the fact that officials in PAU had received no information about Black Arrow at all (and were not entirely aware of what the project entailed), officials in SAB thought that PAU were requesting specifically economic information (which they did not have). This can be seen in Neate's later reply to Merrett, which apologised for the lack of information and the misunderstanding.¹⁵ The lack of economists in government will be discussed in further detail later in this chapter, however, the role of internal economists' assessments created a deep tension between Bullock, Goodson, Boreham and Merrett about their roles in the decision-making process.

¹⁴ AVIA 111/5, S. Merrett to Mr. Boreham, 28 November 1967. [Emphasis in original.]

¹⁵ AVIA 92/129, R.A. Neate to S. Merrett, 06 December 1967.

Merrett's attempt at an economic analysis was not as favourable as previous internal reviews of Black Arrow. The analysis drew attention to the fact that whilst keeping the cost in line with the Treasury ceilings for expenditure, the decisions taken in 1965 and early 1966 to reduce the number of firings, and rockets produced, meant a higher potential for cost increases. Manufacturing one Black Arrow launcher per year meant significant increases in the costs of individual parts, and maintaining a rate of only one test firing a year meant a large proportion of 'down time' for the testing staff. Merrett recommended that as the programme stood 'the development of the launcher vehicle should be discontinued, but that further research might give grounds for defending work on satellites and satellite technology, possibly at a markedly higher rate of activity, and therefore a higher budget.'¹⁶ Given the criticism of Lewis' decision to reduce the number of firings, Bullock felt that to release Merrett's analysis to Ministers was 'quite wrong'. His effort to ensure that Ministers were presented with a 'comprehensive picture' was merely an attempt to prevent Ministers from receiving a negative assessment of Black Arrow, and highlights the power which officials could exercise through their presentation (and sometimes their withholding) of information.

In this section, I have shown how, in the face of the increasing focus on the economics of scientific projects, officials in SAB responded to protect their status as expert advisers. Although allowing departmental economists to review Black Arrow raised the risk that the programme would be found to be uneconomic, this was seen to be a necessary risk in order to counter attacks on the programme from the

¹⁶ AVIA 111/5, S. Merrett, 'Economic Aspects of the Black Arrow Programme', 13 December 1967.

Treasury and DEA. Not only do these actions highlight the importance of economics in this government but they also highlight the extent to which the Treasury and DEA were viewed by SAB officials as important economic advisers to Ministers. In spite of these efforts to protect the programme from attack by other departments, it was relations with the Establishment managing the design of Black Arrow, the RAE which would come close to ruining SAB's attempts to build a reputation for economic competence.

3.3: Research establishments and central government: a tense relationship?

It was important for the project that relations between MinTech and RAE (the two main administrative groups leading Black Arrow) were friendly and constructive. The way in which project management and design management were split between SAB and RAE effectively meant that whilst SAB controlled expenditure, it was RAE which decided how and when it was spent. These differing roles, however, led to differing priorities for officials in both groups, especially as officials in RAE were entirely dependent on officials in SAB for information. Based in Farnborough, some 40 miles from the centre of decision-making in Whitehall, the RAE had been established to provide a centre for aeronautical study and to design aeroplanes for the nascent Royal Air Force.¹⁷ Although a vital part of the development of British aerospace projects, the bureaucratic politics of the relationship between central

¹⁷ P.J. Cooper, *Farnborough: 100 years of British Aviation*, (Hinckley, 2006); R. Turnhill and A. Reed, *Farnborough the story of RAE*, (London, 1980).

government in Whitehall and peripheral research establishments has never been examined in any detail.

This section will highlight the difficulties and challenges faced by the RAE in maintaining accurate and effective communications with the officials and Ministers in Whitehall who would decide the future of the projects on which they worked. Such difficulties prevented a close alliance between SAB and RAE in defence of a project which was under constant attack from other departments. For officials in SAB, there were concerns that the joint management of the Black Arrow programme was 'beyond Headquarters resources and incompatible with R.A.E. and Space Department's concentration on advanced technology.'¹⁸ One of the ways in which this asymmetric relationship between SAB and RAE manifested itself was the division in attendance at meetings; staff at RAE were not encouraged to attend interdepartmental meetings by MoA officials who believed that 'the time of working scientists from research establishments is not spent profitably on committee work in Whitehall...'¹⁹ The lack of contact between RAE officials and staff from other departments meant that RAE's only source of information about what was happening in Whitehall was through MinTech staff. The effects of this controlled flow of information led to a number of problems in the relationship between RAE and MinTech.

With limited consultation between RAE and MinTech, differences in view between the staff of the two institutions were common. As MinTech's budget came under greater pressure throughout 1966 and 1967, Merrett's economic analysis (which

¹⁸ AVIA 92/128, J.G. Lewis to DCL, 10 October 1967.

¹⁹ CAB 165/73, F.H. Allen to Mr. Rogers, 28 October 1965.

had only been circulated to staff in MinTech) shaped the views of the SAB officials. Officials such as Goodson and Neate, who had defended Black Arrow in countless interdepartmental meetings, began to question the value of the programme, and the Director of SAB J.G. Lewis reflected the differing priorities of RAE and SAB directly. Lewis, who was in overall control of SAB suggested that 'The programme need not contain a national launcher development...' and should instead be focused on the production of saleable communications satellites.²⁰ Indeed, Lewis went on to outline the form that such a programme might take, and suggest the number and kinds of staff who would be involved. At the same time as Lewis was considering removing the Black Arrow launcher from the programme RAE officials led by E.G.C. Burt (Head of the Space Department at RAE) were more concerned with the practicalities of the programme. Poor communication of changing opinions at SAB and a lack of common ground created difficulties for both sides as the debate over Black Arrow's future continued.

The major consideration for staff at RAE was the relocation of Black Arrow firings. As UK use of the UK-Australian joint facilities at Woomera would come to an end from 1971, RAE officials began to search for a new base for launches. Suitable sites in Britain were suggested, including RAF bases on the Hebrides, a short test range on the coast of Wales at Aberporth, the north-west coast of Northern Ireland, the RAE rocket engine test-site at Spadeadam in Cumbria and the coast of northern Norfolk.²¹ Whilst Aberporth and the sites in the Hebrides were ruled out because of the development of heavy roads, large ports, or airports which would be required

²⁰ AVIA 92/128, J.G. Lewis, 'An Alternative to the Black Arrow National Space Programme', 10 October 1967.

²¹ AVIA 92/127, J. Jepson, 'Black Arrow and Skylark Alternative Launch Sites, 12 October 1966.

to even break ground on the site, Spadeadam could only offer launches to the North West over the Irish Sea (limiting the weight of the payload which could be injected into orbit). The proposed sites in Northern Ireland and northern Norfolk were rather dubiously deemed to be politically unacceptable choices due to the political turmoil in Northern Ireland, and overflight of the newly discovered North Sea oil and gas fields from northern Norfolk (although no politician was consulted to ascertain how much these risks were politically unacceptable). Meanwhile, foreign alternatives could be ruled out for various reasons. The French spaceport at Korou (in French Guiana) and the use of American sites were excluded partly due to the cost of transport and facilities but mostly due to the fact that payment would have to be made in dollars (a scarce resource at the time).²² Informal contacts between staff at RAE and colleagues in Canada suggested that the British might be able to use a space research facility owned by McGill University in Barbados. Concerned at University funding cuts, staff at McGill were prepared to charge favourable rates, and to accept payment in sterling.²³

With other options seemingly excluded, Burt felt no qualms about suggesting that 'the Barbados range should be selected as the ultimate range for Black Arrow launches.'²⁴ For Goodson, Bullock and Lewis in SAB, however, such a suggestion was politically unacceptable (as it would be difficult to convince Ministers that sending scientists to Barbados for six months of the year could be cheaper or more efficient than sending them to Norfolk). The suggestion was never included in their briefing papers to MinTech Ministers. The focus of RAE staff on the practicalities of the

²² AVIA 92/127, J. Jepson, 'Black Arrow and Skylark Alternative Launch Sites, 12 October 1966.

²³ AVIA 92/129, E.G.C. Burt to J.G. Lewis, 10 November 1967.

²⁴ AVIA 111/5, R.H.W. Bullock to Mr Boreham, 29 December 1967.

programme, and their lack of knowledge about the political situation led them to make suggestions at inopportune times and encouraged staff at SAB to believe that their advice was not relevant to their concerns.

This was typified by Lewis' insistence that Merrett's analysis be circulated to RAE staff along with his position paper suggesting that 'an alternative programme, user orientated, without a U.K. launcher should be considered.'²⁵ SAB officials, especially Lewis were determined that as the largest item of expenditure Black Arrow should not impinge on the rest of the Branch's budget, and argued that there was no further room for expansion. With no other source of advice, and aware that further reductions in cost were the aim of SAB staff, J.E. Twinn (Burt's successor as Head of Space Division at RAE) began to examine ways to further reduce expenditure on a programme which had already been heavily curtailed.²⁶ For Twinn and the RAE, a programme run on a shoestring was better than no programme at all – without Black Arrow it was likely that his Space Department would close.

The reductions arrived at by Twinn and his colleagues were severe. With constant reference to the cost of the programme RAE officials sought further reductions in the number of launchers and satellites to be produced which left even less room for any kind of failure than earlier reductions. By this time the first launch test was scheduled for 1969 (when original estimates had predicted this could happen in 1967), after the first launch the programme now called for immediate launch of fully equipped satellites (instead of two test launches), and the reduced funds

²⁵ AVIA 92/129, 'Supplementary Brief for the C.S.C. Meeting on the 13th February 1968', 13 February 1968.

²⁶ T 334/141, L. Pliatzky, 'Note for Record', 16 August 1968.

available meant that once the launch programme began only one launcher and one satellite could be produced per year (instead of a planned three per year).²⁷ While this ensured that jobs were retained in RAE and across industry, it reduced the programme to its bare minimum, or as Millard has termed it a 'minimalist project' with a 'minimalist level of funding'.²⁸ Although this was not a problem initially, as the programme moved to its first launches in 1970 and 1971 the limits to such a tight programme would become clear (see Chapter 4).

Reliant on an unforthcoming MinTech for information, funds and representation on the interdepartmental committees in which the future of the Black Arrow programme would be decided, Twinn was frequently frustrated by the attitude and actions of the Ministry which was meant to be representing his department's interests. Attempts to further the development of Black Arrow, to ensure its continuation, and to provide various options for future launch sites were ignored by staff at MinTech, who deemed that these were administrative decisions which should have been the responsibility of SAB. Far from the official position whereby research establishments exist to advise Ministries, which in return defend the interests of the Establishment (by ensuring the required budgetary allocations), RAE was not relied upon for advice and was not defended in Whitehall discussions by MinTech. Although there were obvious divisions amongst the SAB staff about whether or not the Black Arrow launcher was necessary, there was no attempt to discuss these divergent views with staff at RAE in 1967 or 1968. As we shall see RAE

²⁷ AVIA 92/127, 'Brief for consideration by Cabinet of P.E.S.C. proposals', 07 November 1966; AVIA 92/133, J.E. Twinn to J.G. Lewis, 29 August 1968; CAB 134/2545, T.(O)(65)19 (Final), Official Committee on Technology, 'Space Policy Review', 08 December 1965..

²⁸ D. Millard, *The Black Arrow Rocket: A history of a satellite launch vehicle and its engine*, (London, 2001), pp. 53-4.

were not brought into that discussion even when the project was cancelled in 1971 (see chapter 4). Thus, RAE's distance from the decision-making process enforced by staff at Mintech shows that the RAE's position was similar to that of the many private companies which provided research and development services to MinTech: they were treated as a service supplier, rather than a provider of policy advice. In this period as economic considerations became paramount for staff at MinTech, questions were raised about the direction of UK civil science and technology as a whole. Far from being the Ministerial defenders of the interests of the RAE, staff at MinTech often viewed RAE suggestions (such as the development of a testing range in Barbados) as divorced from political reality – something which their decision to exclude RAE from the Whitehall policy-making process ensured.

The difficulties between SAB and RAE weakened the alliance of actors which were prepared to defend the programme. As SAB staff were the Whitehall-based defenders of the programme the increasing number of staff members who personally felt that the launcher should be abandoned in favour of an increased focus on satellites began to affect their professional defence of the programme in Whitehall committees. The growing tensions between RAE and SAB damaged the ability of officials who were dependent on Black Arrow's existence for their jobs, to defend the programme against continued attack from officials in the Treasury and DEA who viewed the project as a waste of scarce resources. While SAB officials had been vital in ensuring that Black Arrow had continued, and in identifying ways in which Black Arrow met the aims of their new department – MinTech – their growing personal views about the programme led to the programme being

drastically reduced, and weakened arguments for its retention. Having examined the relationship between RAE and SAB I will now turn to show how the conflict between the opinions of SAB officials and the advice they gave was capitalised on by officials in other departments to challenge the existence of the project and push again for its cancellation.

3.4: Assessing the economic value of science, again?

The 'further review' which Ministers demanded was intended to focus on the economics of Black Arrow – to determine whether the national economy benefitted more from its continuance or cancellation. In this section I will show how civil servants attempted to do what Bishop termed 'a calculation in imponderables' to meet Ministerial instruction and provide a rational account of Black Arrow.²⁹ I argue that whilst the 'White Heat' of the revolution that the government was attempting to create would be symbolised by scientific and technological projects, they would not be the 'prestige projects' of previous governments. Ministers wished that decisions about them would be made rationally and dispassionately with recourse to economics. While science and technology would shape the future, economics would determine its direction.

The attempt to ascertain the economic value of Black Arrow led to the first ever effort to perform a cost-benefit analysis of a large technology programme in the United Kingdom. Authors such as Thomas, Power, Tiratsoo and Tomlinson have noted the increase in attempts to rationalise government policies (and policy-

²⁹ CAB 21/3467, F.A. Bishop to H. Macmillan, 'Blue Streak', 05 July 1960.

making) in the post-war period.³⁰ However, Henderson has characterised the 1960's as period in which decision-making directed by economics was still in its infancy, and assumes that due to a lack of economists, cost-benefit techniques were not utilised in government.³¹ In this section I show that the difficulties faced in conducting this first analysis of a large technology programme go some way to explaining this assumption.

The report was initially set to be conducted internally in MinTech by Merrett in PAU and various members of staff in ES4; but again, Merrett and ES4 ran up against the problems they had experienced a year before. From a heavy initial focus on quantitative assessment ('the unavoidable starting point is to forecast the growth of demand for this equipment...'), the report quickly became bogged down by the fact that the decision being made was a political one with qualitative judgements, ('What criteria should we employ in judging when the cost-effectiveness criterion should be over-ruled?').³² The group began to question which components could already be purchased from other countries (in particular, the US). This again led them to entanglement in political qualitative discussion querying whether 'If we reject autonomy, in which areas do we allow the "gap" to remain?' and whether if 'we only accept a programme which does not duplicate work in the U.S.A. and U.S.S.R.?' then 'we would probably do nothing at all.'³³ The difficulty that Merrett faced in coming to an economic conclusion represented what Bishop had called the

³⁰ W. Thomas, *Rational Action: The Sciences of Policy in Britain and America, 1940-1960*, (Cambridge, Massachusetts, 2015); M. Power, *The Audit Explosion*, (London, 1994); N. Tiratsoo, J. Tomlinson, *Industrial Efficiency and State Intervention: Labour 1939-1951*, (Basingstoke, 1993).

³¹ D. Henderson, *Innocence and Design : The influence of Economic Ideas on Policy*, (Oxford, 1986).

³² AVIA 92/137, D. Anderson, S.R. Merrett, 'Summary of the ES4/PAU Economic Review of U.K. Space Policy', 30 May 1968; AVIA 92/137, D. Anderson, S.R. Merrett, P.M.S. Jones, W. Llewelyn, 'Economic Review of U.K. Space Policy', 30 May 1968.

³³ AVIA 92/133, S. Merrett, 'Satellite theme re-orientation', 12 July 1968.

‘imponderables’ of the making a decision based on economics (see 2.1). Unlike Bishop’s discussion of those ‘imponderables’ Merrett’s aim was to quantify them, rather than passing them to Ministers for political judgement.

While the Cabinet had turned to economic assessment to provide the data for a decision to be taken on long-term economic, rather than political grounds, they had hoped that (theoretically) impartial civil servants would be able to delineate the political and economic arguments, and provide a data-based assessment. However, it proved entirely impossible to do so. Decision-making relying on economics still required limits to be set as to how much money, effort or time was an acceptable commitment – something which was fundamentally a political judgement. However the Cabinet, and particularly Harold Wilson and George Brown, the First Secretary of State and Minister of Economic Affairs drove efforts to formalise this rational approach to policy-making. With Merrett’s second report eagerly awaited by the Prime Minister its conclusions were of great importance for the programme.

The only copy of Merrett’s report, which challenged the idea of a British-made launcher, and suggested that satellite production would be a more rational use of resources was effectively embargoed by Bullock in his office.³⁴ However, Brown and Wilson, who had awaited the report’s outcome, suggested that if MinTech were unable to agree an economic analysis then it should allow officials in Brown’s department, the DEA to undertake an analysis based on ‘American techniques’.³⁵ Precisely what these ‘American techniques’ should be was unknown to officials,

³⁴ T 224/2250, H.S. Lee, ‘Note for Record: Black Arrow’, 31 March 1970.

³⁵ T 316/55, ‘Black Arrow: Economic Review of Space Activities: Note of discussion on 21st May, 1969, between Messrs. Bullock, Boreham and Neate, Mintech, Mrs. James, DEA, and Mr. Lee, Treasury,’ 21 May 1969.

although it was thought that Wilson and Brown were referring to the techniques of out-put budgeting and cost-benefit analysis which had shaped American military spending since the early 1960s.³⁶

Cost-benefit analysis is, put simply, an assessment of whether a project or investment is the most efficient way to meet certain 'output criteria', through posing alternatives, and also through testing whether, 'a compensating expenditure in another project/area can produce the same output criteria'.³⁷ Unlike other economic theories, cost-benefit analysis does not rely heavily on a detailed knowledge of the economics at work as it allows for decision-makers to insert 'postulated values' where none can be generated from data. Output budgeting was developed in the US and heavily favoured by John F. Kennedy's Secretary of State for Defense Robert McNamara.³⁸ Focused on gaining a wider picture of the effectiveness of expenditure, budget is allocated according to the extent to which it meets various policy goals (e.g. increasing national security) rather than based on the amount which the project requires. As Kirby and Cox note output budgeting is based on the assertion that money can be saved by forcing 'heads of departments to spell out objectives and to devise programmes to achieve them, and this should allow them to relate ends to means in a comprehensive way, and review the budget as a whole as programmes compete for funds.'³⁹ McNamara's policies had led to a

³⁶ S.C. Young, *Power and the Purse: Defense Budgeting and American Politics, 1947-1972*, (Unpublished Thesis, University of California, 2010).

³⁷ A. Mason and A. Towse (eds), *The Ideas and Influence of Alan Williams: Be Reasonable – Do it My Way!*, (Oxford, 2007).

³⁸ Young, *Power and the Purse*; K.R. Tidman, *The Operations Evaluation Group: a History of Naval Operations*, (Annapolis, 1984); A. Wolfe, *Competing with the Soviets: Science, Technology and the State in Cold War America*, (Baltimore, 2013).

³⁹ S. Kirby and A. Cox, 'Defence Budgeting and Accountability: Britain and the United States', *Review of International Studies*, 9 (3), (July, 1983), pp. 173-4.

shake-up of US defence spending which was seen as revolutionary and, importantly, successful.⁴⁰ Wilson and Brown suggested ‘American techniques’ in the hope of achieving a similar shake up of funding priorities in Britain.

Even in recent secondary literature, the Department of Economic Affairs (DEA) is described as an irrelevant department.⁴¹ Introduced in 1964 (and often rumoured to have been offered to George Brown in the back of a taxi), the DEA was in charge of implementing the National Plan and was meant to challenge the Treasury’s monopoly on the provision of economic advice.⁴² While the DEA’s remit to deliver the National Plan was intended to force long-term economic thinking (deciding whether expensive investments such as electrification of railways, or increased expenditure in adult education would be beneficial in the long-term), the Treasury were noted for their short-term approach – attempting to balance yearly budgets.⁴³ Criticisms of the DEA’s irrelevance stem from the fact that the economic crises of 1964-7 prevented Ministers from following the National Plan, and reduced their interest in engaging in long-term expenditure (due to the volatile short-term situation). By 1970, when it was wound-up, the DEA was viewed as an unsuccessful experiment, which had failed to challenge Treasury authority.⁴⁴ I will now show, however, that the DEA did play an important role, even if its views did not differ

⁴⁰ P.M. Jackson, ‘Governance by numbers: what have learned over the past 30 years?’, *Public Money & Management*, 31(1).

⁴¹ A. Blick, ‘Harold Wilson, Labour and the Machinery of Government’, *Contemporary British History*, 20 (3), (2006); R.A. Chapman, *The Treasury and Public Policy-Making*, (London, 1997).

⁴² H. Irving, ‘The birth of a politician: Harold Wilson and the bonfires of controls, 1948-9’, *Twentieth Century British History*, 25(1), (March, 2014); C. Clifford and A. McMillan, ‘The Department of Economic Affairs’, *Contemporary British History*, 11(2), (1997); C. Clifford, ‘The Rise and Fall of the Department of Economic Affairs 1964-69: British government and indicative planning’, *Contemporary British History*, 11 (2), (1997).

⁴³ Chapman, *The Treasury and Public Policy-Making*.

⁴⁴ Clifford, ‘Rise and Fall of the Department of Economic Affairs’.

significantly from those of the Treasury. Indeed bureaucratic political theory would suggest that it is obvious that officials in the DEA and Treasury would find common cause in their attacks on the project (as the theory suggests that actors will 'stand where they sit' – in this case on economic issues). In the case of Black Arrow officials in the DEA and Treasury were of one mind and worked closely together.

The cost-benefit analysis of Black Arrow was led by G.T. Banks in the DEA who devised a simple questionnaire which would avoid many of the qualitative judgements that had stumped Merrett. Given the fact that cost-benefit analysis relied on postulated values as much as it did hard economic data, it was hoped that departments would be able to respond quickly to the cost-benefit questionnaire that Banks sent out (see Figure 7). The questionnaire asked various departments (including MinTech, the Post Office, the Meteorological Office, the Ministry of Defence, Board of Trade and Department of Education and Science) to specify how the Black Arrow programme was relevant to their departmental interests and to give figures (known or postulated) for how much their involvement cost (in money or staff's time), and the extent to which they believed there was a market for the services which Black Arrow provide (and an estimate of how much money might be made selling those services in that market).⁴⁵

Unfortunately the replies did not contain any numbers – most departments sent long qualitative answers which talked of 'potentially large markets' with no estimate of how large those markets might be, who might constitute them and how much they might be willing to spend. Indeed, 'With the exception of that from the

⁴⁵ T 316/55, G.T. Banks, 'Economic Appraisal of current space activities: Draft proformat for departmental analysis', 26 June 1969.

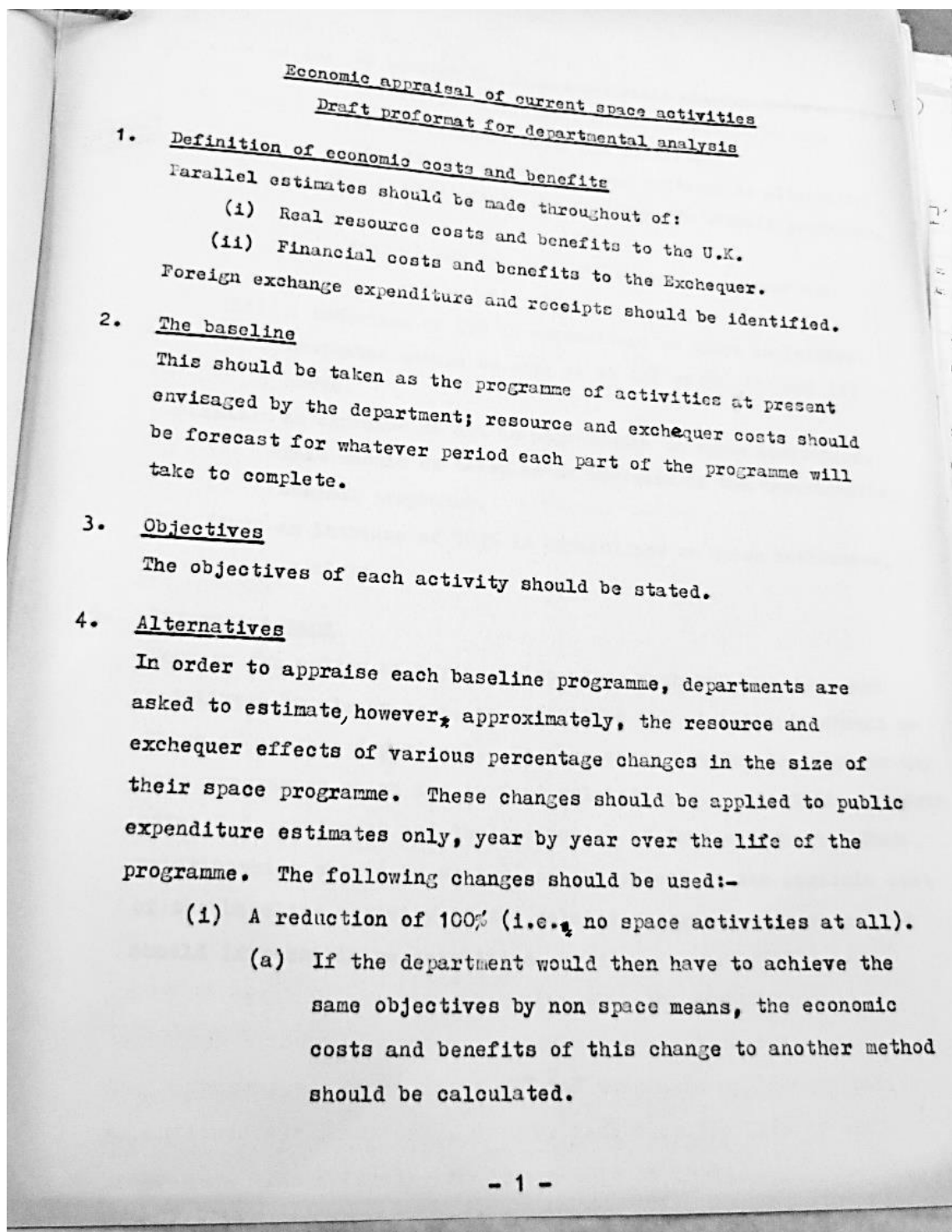


Figure 7: The first page of the DEA questionnaire⁴⁶

⁴⁶ T 316/55, G.T. Banks, 'Economic Appraisal of current space activities: Draft proformat for departmental analysis', 26 June 1969.

Board of Trade, the replies are devoid of economic analysis, and particularly the kind of analysis that would enable Ministers to appraise the costs and benefits of any course of action other than that currently being pursued...⁴⁷ In an attempt to rally the departments to utilise the advice of their own departmental economists and acquire the postulated values necessary for the analysis, Banks held an interdepartmental meeting, at which it was discovered that departments were lacking qualified economists: 'It transpired that Mr Merrett of MinTech had resigned, Mr Heigham of DES had been ill, the Post Office have no economist and MOD[Ministry of Defence] did not know that they had one.'⁴⁸ Mintech created further problems by embargoing Merrett's previous work on Black Arrow. Lee, who work with Myers in the Treasury, heard from 'sources in Mintech' (most probably Neate) that Banks' draft reports were deemed to be 'quite impossible, revolting, obscene, not fit for Treasury eyes'.⁴⁹ Whether or not the report was locked in Bullock's office, Banks was unable to obtain any values from some departments, something most officials seemed uninterested in rectifying. It is therefore unsurprising that the first attempt at a cost-benefit analysis was unsuccessful, and the failure of the supposedly objective and rational approach proposed served to highlight further the importance of officials making decisions about the importance of economic and political priorities. The total failure of cost-benefit analysis in this

⁴⁷ T 316/55, A. Williams, 'Memorandum on Papers Submitted to the Cabinet Communications-Electronics and Space Committee Working Group on the Economic Balance of U.K. Space Activities', 11 November 1969.

⁴⁸ T 316/55, Mrs G.T. Banks to Mr Bridgeman, 11 November 1969.

⁴⁹ T 224/2250, H.S. Lee, 'Note for Record: Black Arrow', 31 March 1970.

case hints at the reason economists such as Henderson believe cost-benefit analyses were not a feature of government decision-making until the late 1970s.⁵⁰

Although Wilson and Brown had hoped for a shake-up of British R&D spending, this effort failed. The lack of any significant economic data meant that Banks was not sure that the ‘rapidly botched up figures... represent a “reasonable economic appraisal”’, and that she had ‘stretched them beyond what they will bear!’⁵¹ The final data produced was, Banks felt, more ‘an essay on how an analysis might be done but was not done in this case.’⁵² Indeed, so little had been achieved that Cabinet had postponed their decision in March to allow for the completion of the analysis. However the results of the cost-benefit analysis were based on so little information as to make the report embarrassing. Lee suggested a small constitutional impropriety may be necessary to ‘bury’ the cost-benefit exercise.

As the 1970 General Election approached, Lee hoped to take advantage of the unwritten conventions surrounding civil service advice to Ministers in order to prevent new governments from unearthing the controversies of the old: ‘In the event of the return of a Tory Administration constitutional propriety would require its suppression. If a Labour Administration got back in, it might still be argued that it was unnecessary, if not positively improper, to offer them all the workings of their predecessor.’⁵³ The fact that Lee suggested that all trace of the exercise could be hidden from any new Minister (regardless of their political party) shows not only

⁵⁰ Henderson, *Innocence and Design*, pp. 20-7.

⁵¹ T 316/55, Mrs G.T. Banks to H.S. Lee, 24 November 1969; T 316/81, Mrs G.T. Banks to Mr Bridgeman, 27 January 1970.

⁵² T 316/81, Mrs G.T. Banks to Mr Bridgeman, 27 January 1970.

⁵³ T 316/121, H.S. Lee to Mr Bridgeman, 17 June 1970.

how unsuccessful the analysis had been, but also how officials are vital in preserving a record of decisions already taken. The election, new Conservative government, and subsequent abolishment of the DEA meant that the 'unhappy exercise' could be buried without controversy, and was never discussed with Conservative Ministers.

In this section I have shown how although Wilson and Brown led efforts to establish a rational economic approach to decision-making which could be applied to other large scale technology projects, the difficulties faced by officials in obtaining accurate information prevented a successful analysis from occurring. While this was not due solely to a lack of officials' proficiency in economic assessment, it was greatly hampered by the stalling techniques of Bullock who attempted to ensure that Ministers saw no negative appraisal of Black Arrow. Bullock's intervention in the policy-making process did not mean that the idea of economically appraising projects came to an end. I will show in Chapter 4 how economic analysis continued to gain importance in the government direction of scientific and technological research and development.

3.5: Intra-Departmental conflict and the defence of Black Arrow

The conflict of views between RAE and SAB about the continuation of Black Arrow had produced tension between the two institutions. However, Lewis' increasing belief that the launcher element of the Black Arrow programme should be replaced with further funding for satellite research also led to a conflict of opinion *within* SAB. For the defence of Black Arrow, the key official was Bullock, who represented the Branch on interdepartmental committee. I suggest that Latour's finding that the French Aramis programme was continued only as long as it was actively defended

can be applied to other projects, but question the necessity of alliances for the maintenance of programmes.⁵⁴ In this section I show how Bullock personally directed policy on Black Arrow without reference to the rest of his Branch, and explore the problems raised by declining SAB support for Black Arrow.

For those in SAB who felt that an independent launcher was unnecessary, Twinn's plans for yet more austerity provided further evidence that the project should be replaced. Earlier reductions in the contingency fund and number of launches made per year meant that the programme was already cut to the bone (see 2.2 and 2.3).⁵⁵

One of the greatest concerns was that 'the rate of firing of Black Arrow will be too low to achieve what could be, by international standards, a very low unit cost for the rocket...'⁵⁶ The only way around this problem would be to drastically increase the funds available for the project, something which SAB officials could not agree upon given the other options available.

Lewis' suggestion that the programme should be re-shaped around satellites was not plucked out of thin air. Satellites had increased rapidly in their technological capabilities throughout the 1960s from early satellites which could handle a single call or television channel to multi-call and multi-channel satellites.⁵⁷ Their increased abilities combined to make the production of communications satellites in particular more economic; the cost of a communications satellite became

⁵⁴ B. Latour (translated by C. Porter), *Aramis: or the love of technology*, (Cambridge, 1996).

⁵⁵ Millard, *The Black Arrow Rocket*, pp. 53-4.

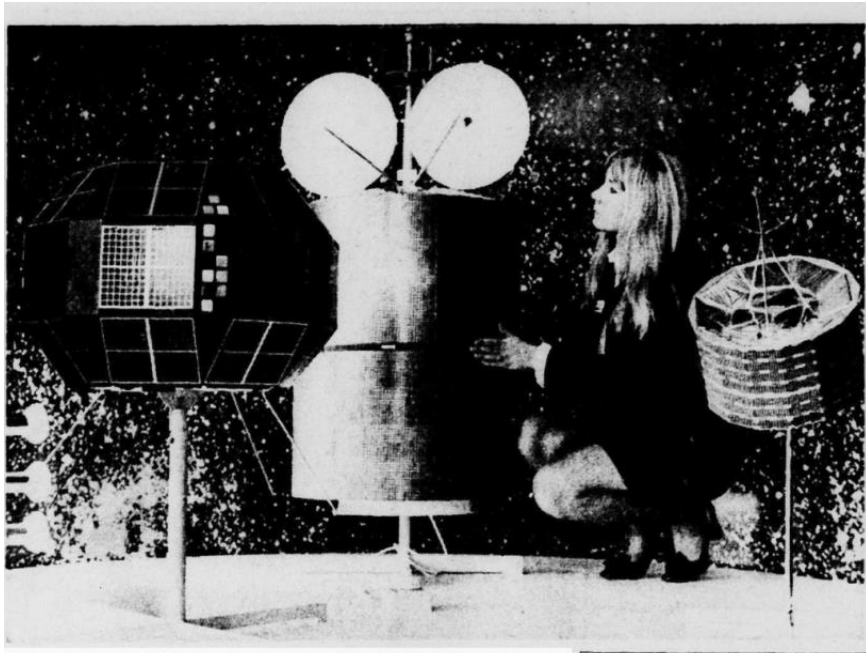
⁵⁶ AVIA 111/5, P.M.S. Jones, 'A review of the Black Arrow Programme: (revised 24.1.68.)', 24 January 1968.

⁵⁷ M. Riordan and L. Hoddesdon, *Crystal Fire: The Birth of the Information Age*, (Princeton, 2001); M. Thatcher, *The Politics of Telecommunications: National Institutions, Convergence and Change in Britain and France*, (Oxford, 1993); M. Godwin, 'Britnik': How America made and destroyed Britain's first satellite', in S. Naylor, and J.R. Rose, *New Spaces of Exploration: Geographies of Discovery in the twentieth century*, (London, 2010).

commensurate with the costs of trans-Atlantic cabling. Increasing press reportage of both the growing capabilities and economics of satellites for telecommunications highlighted the large leaps being made (see Figure 8). Indeed, industry had begun to invest in producing their own satellites without waiting for results from the 'supporting' Black Arrow programme. By refocussing on satellites Lewis was attempting to secure work at RAE by linking it more strongly to customer's demands.

Indeed, Lewis was not the only member of staff who was openly of the opinion that the Black Arrow programme was unviable. In talks with Merrett as he was completing his economic review, R.A. Neate and I. Manley (Under Secretaries in SAB), had disclosed their opinion that Black Arrow was "messaging about in space" ... because the Ministers did not have the courage to drop-out of the space field completely...⁵⁸ Given that Ministers had not yet read any full review of Black Arrow (even though they had been pressing for one since 1964 – see 2.2 and 2.3) the view that Ministers were dodging a decision on Black Arrow seems strange. However, as it was Bullock (and not Neate or Manley) who had stalled for time and defended Black Arrow in the various committees examining the project it is possible that they were unaware of his impact.

⁵⁸ AVIA 111/5, S. Merrett, 'Note for Record', 07 November 1967.



Satellites to be built in Britain

By our Air Correspondent
Two of the new series of communications satellites to be launched in the 1970s will be built in Britain. The British Aircraft Corporation, as principal sub-contractor to the

SCIENCE TODAY BY ANTHONY TUCKER

You cannot adapt a major technological programme rapidly enough to accommodate all the advances which accrue during the development phase.

The economics of space programmes



Communications satellites

A FINANCIAL TIMES SURVEY

Messages by the million

By MICHAEL DONNE, Radio Correspondent

THEir development is under way in the U.S. and Europe. The British Black Knight satellite, which will be launched in 1970, will be the first of a series of satellites to be built in Britain. The British Aircraft Corporation is the principal sub-contractor to the U.S. and Europe. The British Black Knight satellite, which will be launched in 1970, will be the first of a series of satellites to be built in Britain. The British Aircraft Corporation is the principal sub-contractor to the U.S. and Europe.

Figure 8: The growing capability of satellites ⁵⁹

⁵⁹ Anon., 'Scale models of satellites', *The Daily Telegraph*, 26 November 1967; Anon., 'Satellites to be built in Britain', *The Guardian*, 25 October 1968; 'A. Tucker, 'The economics of space programmes', *The Guardian*, 04 April 1967; M. Donne, 'Communications satellites A Financial Time Survey: Messages by the million', *The Financial Times*, 05 February 1968.

Goodson and Bullock had previously based their arguments for the continuance of Black Arrow on the inherent value of the space technology being constructed (see Chapter 2). However, the further reductions in the Black Arrow programme meant that focus shifted to rely more heavily on arguments of Black Arrow as an insurance policy against future developments by other nations. Bullock, who seems to have believed the programme was still necessary began to stress that 'The alternative is to opt out of this field, entirely and probably permanently, a policy which in our view is not compatible with our claim to be a leading technological power in the world.'⁶⁰ As Bullock was now the only member of SAB willing to support Black Arrow his use of 'our' presented an inaccurate picture. By stating the official position of SAB civil servants, rather than highlighting the debate within the Branch about the continuance of the launcher, Bullock was relying on alliance of officials which no longer existed.

To counter Bullock's implication that officials in SAB still supported Black Arrow, Neate regularly contacted officials in the Treasury such as P.G. Myers (a junior official), informing him of the conflict in SAB between 'those who favour continuing development... and those who think it more sensible to buy American.'⁶¹ Myers guessed that Neate's main purpose in these informal chats was 'to frustrate, rather than advance, the designs of his own enthusiasts.'⁶² Neate's efforts to inform Treasury officials of the conflict within SAB over the future of the Black Arrow launcher reflected the difference between his and Bullock's relative position in civil service hierarchies. As the SAB representative on departmental committees, Bullock

⁶⁰ AVIA 92/129, R.H.W. Bullock to P.S./Minister, 07 February 1968.

⁶¹ T 334/141, P.G. Myers to Mr. Pliatzky, 30 July 1968.

⁶² T 334/141, P.G. Myers to Mr. Pliatzky, 30 July 1968.

argued on behalf of the whole SAB. While Bullock could state that ‘The Ministry of Technology accordingly continues to believe that a modest national programme of space technology, primarily on satellites, should be pursued...’ Neate could make no such claims.⁶³ By informing the Treasury of the changing opinion of himself, Manley and Lewis, Neate was highlighting that SAB might not fight cancellation of the project as vigorously as it had in the past.

The conflict between the head of SAB (Lewis), junior officials such as Neate and Goodson and Bullock (who was junior only to Lewis) highlights the importance of a unified alliance of actors in defending a project and also the quirks of bureaucratic positions. While Lewis was the Head of SAB, his time was deemed important enough that he attended few inter-departmental meetings. Meanwhile, Goodson, Neate and Manley were too junior. Bullock, as Principal Financial Officer was mid-level between the Undersecretaries and head of Branch, and attended most of the inter-departmental meetings on behalf of the department. This position meant that Bullock spoke as the voice of the Branch as a whole, and meant that his view on Black Arrow (that it should be continued) was also SAB’s view, and thence MinTech’s view. However, Neate’s indiscretion to Myers about the conflict within SAB, ensured that other departments were aware that Bullock was not speaking on behalf of MinTech, or even on behalf of the entirety of his Branch of MinTech. Knowledge of the internal conflict in SAB drastically weakened Bullock’s position.

For officials in the Treasury, an opportunity to challenge the project came with the publication of the annual review of the programme, its expenditure to date and

⁶³ CAB 134/2649, CSC(69)5, Communications-Electronics and Space Committee, ‘Review of National Space Technology Programme (BLACK ARROW): Note by Ministry of Technology’, 17 January 1969.

predicted expansion. After deciding that the project should be renewed for the financial year 1967-8, Cabinet had demanded that Black Arrow should be subject to a yearly review, the outcome of which would decide whether the programme should be renewed (see 2.3). However, while conflict in SAB was damaging Bullock's position as the sole defender of Black Arrow, changing government policy and economic crisis provided the pretext for a drastic re-working of Bullock's arguments.

In his Guildhall speech of 1966 at the annual Lord Mayor's Banquet, Harold Wilson had announced that the UK would seek to develop a fourth European Community (if it was permitted to enter the organisation). With a focus on high technology, the European Technology Community (ETC) was aimed at fostering business links between European nations, and much was publicly made by Ministers of Britain's lead in such fields and the benefits that British membership would bring the European Communities (the ETC will be discussed in greater detail later in 3.6).⁶⁴ Bullock modified his arguments for retaining Black Arrow to suit the changing context, suggesting that cancelling it would 'handicap us internationally, particularly in view of our claims for technological leadership in connection with our approach to Europe.'⁶⁵ The modification of Bullock's arguments to highlight Black Arrow's place in assisting Wilson's initiative on the ETC was aimed at forming an alliance with Foreign Office officials. T.W. Garvey in the FO's SRD was convinced that 'Account should be taken of this political argument... particularly at a time when we are pressing the members of the EEC to recognise the advantages they would gain if

⁶⁴ Young, 'Technological Cooperation in Wilson's Strategy for EEC Entry'.

⁶⁵ CAB 134/2647, CSC(68) 1st Meeting, Communications-Electronics and Space Committee, 13 February 1968.

the UK made available to the community its advanced technological capability.’⁶⁶

Bullock’s adaptability in defending the programme and attempts to enrol officials from the FO show how even though most of the staff in the Branch did not personally want the programme to continue, Bullock’s possession of the departmental ‘voice’ in inter-departmental meetings dictated SAB’s position on Black Arrow.

Bullock’s review also sought to attack the economic grounds on which Treasury attacks were based. Devaluation of the pound by 15% in November 1967 was decided only after other alternatives had been tried.⁶⁷ Although devaluation of sterling had a wide-ranging impact on the wider economy, devaluation was actually beneficial for Bullock’s argument. Decreasing the value of sterling by 15% devaluation made the purchase of American launchers 15% more expensive in real terms overnight. As the only other alternative for launching the kind of satellites then being produced was an American Scout rocket, Bullock noted in meetings that the Treasury could hardly now countenance purchasing such an expensive alternative.⁶⁸ Ministers approved Black Arrow for a further year ‘but again there were provisos. The launcher element in the programme... was to be further discussed at official level within six months.’⁶⁹ Bullock alone had managed to ensure that the project was retained for a further 12 months through the creation of

⁶⁶ AVIA 92/129, ‘Review of Black Arrow and other space programmes (Report by Officials), 23 February 1968.

⁶⁷ S. Newton, ‘The Sterling Devaluation of 1967, The International Economy and Post-War Social Democracy’, *The English Historical Review*, 515, (2010); Young, *Labour Governments*, p. 2; Parr, ‘Gone Native’, p. 89; Parr, *Wilson and Britain’s World Role*, p. 5.

⁶⁸ CAB 134/2647, CSC(68) 1st Meeting, Communications-Electronics and Space Committee, 13 February 1968.

⁶⁹ AVIA 92/133, I.T. Manley, ‘The commitments to review the “Black Arrow” programme, 23 May 1968.

alliances with other departments, and Bullock's elaboration of economic and foreign policy arguments for continuing the programme.

In this section we have seen how changing personal opinions on the necessity of Black Arrow affected the arguments made by officials. Although a growing number of staff in SAB held the personal view that Black Arrow should be replaced with American launchers, they were unable to express this view officially. Neate, seeking to highlight the conflict, contacted officials in the Treasury known to favour the cancellation of Black Arrow. However, Bullock's status as spokesperson of SAB allowed him to monopolise the discussion, continuing to utilise changing government policy and economic events to ensure that Black Arrow was retained. Although Black Arrow would be retained for a further two years, it is this weakening in SAB which led to its ultimate cancellation. As officials' desire to see the programme completed weakened, Treasury and DEA officials were able to increase their influence on the direction of reviews of the project (and hence, policy decisions).

3.6: Technological foreign policy: Tony Benn, ELDO and the ETC

Whilst decision-making on Black Arrow was delayed by the debates of officials, decision-making on ELDO was much more dynamic. Owing to the critical press and parliamentary comment on British policy towards ELDO, decisions were closely directed by Ministers and largely out of the hands of civil servants and officials. While domestic policy on Black Arrow became bogged down in complex bureaucratic arguments, Ministerial interest in pursuing British membership of the European Communities meant that policy-making on ELDO was much more

dynamic. Ministerial ideas about Anglo-European policy on science and technology seemed to go through a major shift in late 1966. Although still pushing for an end to ELDO, Ministers became open to the idea of utilising British science and technology as a key part of the negotiations (something which had been stressed by the Foreign Secretary throughout 1965-6). In spite of the fact the second British application to the European Communities was quickly vetoed by the French President Charles de Gaulle in 1967, Wilson kept the British application 'on the table' at the European Commission, and continued development of the proposed ETC. As Young, and Schrafstetter and Twigge have noted, Wilson's proposal of an ETC was not the elaboration of a unique idea, merely an expansion of Belgian and Italian proposals.⁷⁰ Suggestions for some kind of formal European collaboration on technology more broadly had been discussed for a number of months.⁷¹ Where the British proposal did differ however, was in its focus on industrial amalgamations rather than state collaboration as the force behind joint European technology projects. Although the ETC may have been popular in the press and in public, the main aim of the ETC had the potential to cause problems for Anglo-European relations.⁷²

Young suggests 'a consistent line in Wilson's policy' was 'That the ETC should be held out as a kind of carrot to tempt the EEC into letting Britain inside... But on closer examination, the carrot turned into a hologram: an impressive image, impossible to grasp.'⁷³ Through a close examination of the development of the ETC

⁷⁰ Young, 'Technological Cooperation', p.96; S. Schrafstetter and S. Twigge, 'Spinning into Europe: Britain, West Germany and the Netherlands Uranium Enrichment and the Development of the Gas Centrifuge, 1964-1970', *Contemporary European History*, 11(2), (2002).

⁷¹ Young, 'Technological Cooperation', p. 96.

⁷² Wilson, *Personal Record*, p. 243.

⁷³ Young, 'Technological Cooperation', p. 111.

and its relationship to cooperation with ELDO, I will argue that far from being a ploy, the ETC plans, and policy towards ELDO which followed, represented an attempt by Tony Benn to reshape the conduct of large-scale science and technology collaborations in western Europe. In doing so, I suggest that Benn was trying to export what he saw as the values of White Heat to Europe, and expand his role as Minister of Technology to cover all facets of government science and technology.

Wilson's proposals sought to ensure that the European Communities (with Britain as a member) would become self-sufficient in all necessary technologies, 'neither dependent on imports nor dominated from outside', but proposed that this would be achieved through the 'creation of competitive indigenous European industries' rather than through multi-national or multi-company collaborations.⁷⁴ The creation of such large industries was perceived to be vital, not only to provide for Europe's technological needs at the time, but to ensure the continual development of industry into the future. The main motivation for the proposal was to shift the risks of large scale collaboration from government to private industry: no longer would technological projects be individually designed compromises between governments all aiming to meet their own 'defence or prestige interests... where nationalism is most prominent'.⁷⁵ In short the aim was to replace collaborations between governments (each with their own national interests) with large European companies which would act based on solely commercial grounds. However, the challenge was not so much in achieving agreement with European nations that this

⁷⁴ CAB 134/3309, ST(67) 4, Ministerial Committee on Science and Technology, 'European Space Co-operation', 03 July 1967.

⁷⁵ T 334/28, P.L. Daniel to Mr. L. Pliatzky, 15 September 1967; CAB 134/2805, EUR(T)(67) 8, Working Group on European Technological Collaboration, 'European Technological Community: Paper by the Ministry of Technology', 14 September 1967.

should be the way forward, but in achieving agreement that this form of collaboration should replace existing commitments.

Although Wilson had developed the proposals for the ETC in close collaboration with Solly Zuckerman, it was Tony Benn who sought to develop the proposals into a viable organisation and to persuade European nations to agree to the ETC's formation. Benn seems to have used his leadership on proposals for the ETC to attempt to create a unique role for himself in the structure of government.

Although most Ministers have clearly defined remits stemming from historical precedent, MinTech did not (indeed the first Minister Frank Cousins had written his own brief on his first weekend in the role as none had been prepared in advance).⁷⁶

The flexibility over what MinTech was, and what it was meant to achieve made the department's remit quite fluid, something represented by its slow expansion to cover nearly all facets of government science; and something which its new Minister Tony Benn was eager to exploit.⁷⁷

Speaking to his European colleagues Benn attempted to set out his role, and to manage expectations about what MinTech was able, and was willing, to do:

Three and a half years ago the Ministry of Technology, as a new Government Department was set up charged with responsibility for using technology as a means of strengthening our industrial position... There were some people in Britain who expected that this new Ministry would engage in a number of

⁷⁶ Coopey, 'Ministry of Technology 1964-70'.

⁷⁷ J. Adams, *Tony Benn: a Biography*, (London, 2011); D. Powell, *Tony Benn a Political Life*, (London, 2001).

large, high-cost and prestigious research projects which the Government would finance... But in the event things have not worked out like that at all.⁷⁸

Benn's assertion that the White Heat of government science would be directed towards the strengthening of Britain's economic position, rather than science research for its own sake was meant as an example for European nations to follow. With the development of the ETC proposals Benn hoped to influence the way in which European governments (as well as the British government) set about managing science and technology.

Young notes that throughout 1968 Benn gained more and more control over the elaboration of the ETC proposals, and began to hold his own separate briefings on foreign policy within MinTech.⁷⁹ Benn's attempts to direct policy on the ETC were supported by his senior civil servants who saw the opportunity for MinTech to lead a huge pan-European effort to rationalise industry. In shaping his proposals for the ETC, Benn attempted not only to ensure a pre-eminent position for himself and his department, but also to ensure that he and not Foreign Secretary Michael Stewart would direct European policy matters which touched on technology. Benn proposed that the ETC would cover areas of high technology in Europe which required development but in which there was already some European (yet mostly British) experience.⁸⁰ However those industries (aeronautics, computing, nuclear power and space research) were ones in which inter-governmental collaboration was already occurring, and it became clear to the Foreign Secretary, Michael Stewart, that

⁷⁸ FCO 55/167, 'Draft of the Speech for the Minister of Technology to Deliver at the W.E.U. on 31st May, 1968', 20 May 1968.

⁷⁹ Young, *Labour Governments*, p.17.

⁸⁰ Young, 'Technological Collaboration'.

Benn's proposals had been understood by European nations as a framework for future collaborations rather than a replacement for current arrangements.⁸¹ As such further British attempts to change current organisations to reflect this focus on commercialism and economics came as a surprise.

It had been decided by Cabinet as early as June 1966 to withdraw from ELDO, and later to reduce cooperation with ESRO and the European Atomic Energy Community (Euratom) and to pull out of the arrangements for the development of a European telecommunications satellite through the Council Européenne des Télécommunications par Satellites (CETS).⁸² However, no announcement had been made 'because it was thought that such a decision might be harmful to our Common Market bid.'⁸³ As a series of Ministerial conferences on ELDO, ESRO and CETS approached in April 1968, Benn suggested that an early elaboration of the ETC proposals might distract European nations from the bad news of Britain's withdrawal from organisations which were 'relics of the past'.⁸⁴ A majority of Ministers agreed that the ETC plans were the best way to approach all collaborations – so much so that 'there was no need to be apologetic...'⁸⁵ Benn designed a timetable whereby he would call a European-wide conference on the plans for a Technological Community to be held before the ELDO, ESRO and CETS

⁸¹ CAB 164/47, Sir P. Reilly to Foreign Office, 04 July 1967.

⁸² CAB 128/41, CC(66) 26th Conclusions, 09 June 1966.

⁸³ CAB 134/2805, EUR(M)(68) 3, Ministerial Committee on Approach to Europe, 'Preparations for the 1968 European Space Conference', 01 April 1968; AVIA 92/129, R.A. Neate to R.L.R. Nicholson, 28 November 1967.

⁸⁴ CAB 134/2647, CSC(68) 3rd Meeting, Communications-Electronics and Space Committee, 28 March 1968.

⁸⁵ CAB 134/2647, CSC(68) 3rd Meeting, Communications-Electronics and Space Committee, 28 March 1968.

Ministerial conferences, and begin discussions on their replacement with the ETC, providing the justification for British announcements of withdrawal.

As Young notes, the Foreign Secretary and his officials were supportive of the aims of the ETC as proof that the UK was now a committed European power.⁸⁶ However, Benn did not develop the ETC proposals quickly enough, and it soon became apparent that the ETC proposals generated enough discussion amongst European nations that the location, timing and members of a founding conference would not be agreed until after the announcement of British withdrawal from ELDO at the space conferences in April 1968. The Foreign Secretary's support for Benn's timetable rapidly waned and Stewart warned that to announce British withdrawal from the three organisations at three conferences in a row, and then propose the ETC a month later would, 'allow ourselves to be condemned to the worst possible presentation of our very unpopular decisions...'⁸⁷ Although it was recognised that the previous decision to withdraw from ELDO had caused great damage to Anglo-European relations, and that the ETC plans would now not be ready to 'distract' European nations from the government's decision to withdraw from existing collaborations, UK withdrawal from ELDO still progressed.

As discussions about the ETC continued, Benn sought an even larger public role for himself, pushing to be given control of all publicity and press releases concerning British space research, and even suggested that he should communicate British

⁸⁶ Young, 'Technological Cooperation', p.111.

⁸⁷ CAB 134/2647, CSC(68) 3rd Meeting, Communications-Electronics and Space Committee, 28 March 1968.

space and science policy to European Ministers instead of Stewart.⁸⁸ In doing so, Benn was effectively attempting to create his own foreign policy without reference to the FO, and suggested strongly that he at MinTech, rather than Stewart should be in charge of technological cooperation with other nations, distinguishing collaboration like ELDO as primarily technological instead of primarily diplomatic.

Benn suggested that his Ministry's reshaping of British science and technology should be copied by European nations, and re-shape European collaborations: 'our approach... stems directly from our own experience in handling the same problems at home and is part of a completely consistent analysis of what we believe [is] the central problem posed by technology for all of us in Europe.'⁸⁹ However, rather than solely elaborating the new industrial collaboration proposed, Benn used his messages to (and meetings with) European leaders to challenge the basis of current collaboration. Suggesting that European collaboration should focus on developing technologies in which it could compete with the US (nuclear reactors, computers, aircraft production and car manufacture) Benn wrote '...it can be argued that space is an area where the gap between European and American technology is so formidable that the necessary resources could better be devoted to other areas of technological endeavour.'⁹⁰ The suggestion that Europe should develop a computer industry able to compete with US must have seemed a little contradictory (particularly since UK governments had spent a large amount of time and money

⁸⁸ FCO 55/165, P.A. Rhodes to Mr. Arbuthnott, 09 April 1968; FCO 55/165, C.J. Audland to Lord Chalfont, 'Ministerial Committee on the Approach to Europe, 4th April, 1968: Item 2: European Space Policy', 03 April 1968.

⁸⁹ FCO 55/167, 'Draft of the Speech for the Minister of Technology to Deliver at the W.E.U. on 31st May, 1968', 20 May 1968.

⁹⁰ CAB 134/2648, CSC(68)24, Communications-Electronics and Space Committee, 'European Space Activities: Note by the Ministry of Technology', 04 October 1968.

convincing European nations to create a European space industry). Benn's meetings with foreign Ministers occurred regularly, and with no oversight from the FO. The fact that he and not Stewart was arranging and taking part in these meetings with foreign Ministers highlighted the extent to which Benn was carving out a foreign policy role of his own, extending his Ministerial remit, and ability to influence policy.

In this expanded role as Minister of Technology at home and abroad, Benn made a statement to the House about Britain's future in ELDO. He announced that as the ETC proposals had been sent to the European nations for their consideration Britain no longer believed that Europe should attempt to develop its own launcher capability, as long as it was done 'regardless of cost and benefit'.⁹¹ The day after Benn's statement to the House, he travelled to a European Council meeting where he was roundly criticised by his European counterparts. The French Minister thought that Benn's statements were 'wrong as well as inexpedient' and de Gaulle was reported to have been 'disappointed that [his] misgivings had been all too justified'.⁹² Paul Gore-Booth, Head of the Diplomatic Service, believed that Benn had hoped 'something more sensible would come out of the convulsion created, though in his view, some kind of convulsion had been necessary first'.⁹³ By suggesting that only an 'economic' launcher be pursued Benn was agitating for the end of ELDO. The three full launches of the rocket which had taken place had all failed, and even the ELDO Secretariat admitted that the launcher could not compete

⁹¹ FCO 55/166, C.J. Audland, 'United Kingdom decisions on space', 23 April 1968; House of Commons Debates, 'European Space Policy', 23 April 1968, Vol. 76, Column 42.

⁹² FCO 55/166, Paris to Foreign Office, 26 April 1968.

⁹³ FCO 55/167, P.H. Gore Booth to Mr. Garvey, 10 May 1968.

with freely available American alternatives.⁹⁴ However, Benn's unhappy experience at the European Council seems to have changed his mind about the value of a convulsion, and upon returning to the UK he suggested that policy towards ELDO should be re-examined.⁹⁵ Benn's foray into foreign affairs had trespassed on the traditional remit of the Foreign Secretary, who scrutinised the European reaction with care.

The reactions to Benn's announcement provided an opportunity for Stewart to reassert control over Anglo-European policy. Stewart believed that Benn had comprehensively failed to explain his decisions on ELDO adequately as 'None even of the well-disposed members of the Six has been able to understand our decisions, or to accept their correctness...'⁹⁶ Whilst Ministers (except Stewart) had believed that ELDO policy could be separated from UK policy towards the European Communities (see 2.5), it was obvious to Stewart that Benn's contradictory and negative statements about ELDO meant that 'it was not surprising if the other countries said that they thought the United Kingdom would be an unreliable member of the European Economic Community (EEC).'⁹⁷ Stewart accused Benn of having 'soft pedalled' the ETC proposals in order to avoid developing them fully, and stated that he would only be willing to announce withdrawal from ELDO once the ETC proposals had been fully elaborated: 'This approach would demonstrate that we were doing our best to co-operate, and rejection of our proposal by the

⁹⁴ AVIA 92/137, D. Anderson, S.R. Merrett, P.M.S. Jones, W. Llewelyn, 'Economic Review of U.K. Space Policy', 30 May 1968.

⁹⁵ FCO 55/167, F.B. Wheeler to Mr. Audland, 04 June 1968.

⁹⁶ CAB 134/3310, ST(68)10, Ministerial Committee on Science and Technology, 'European Space Activities: Memorandum by the Minister of State for Foreign Affairs', 28 October 1968.

⁹⁷ CAB 134/2648, CSC(68) 13th Meeting, Communications-Electronics and Space Committee, 03 December 1968.

Europeans would be far preferable to our continual rejection of their proposals.’⁹⁸

This attempt to prompt European nations to have to respond to positive British proposals for action (rather than ones for withdrawal) sought to reshape a policy to ELDO based on the FO’s commitment to improving Anglo-European relations. By setting out the conditions in which he would step in to smooth relations damaged by Benn, Stewart was attempting to ensure that Benn had learnt not to trespass on areas in which he had little expertise.

In this section we have seen how Benn’s flexible role as Minister of Technology, and the fluid remit of MinTech led to his monopolisation of policy-making on the ETC.

Benn’s attempts to promote commercialised scientific and technological collaborations across Europe, however, failed to prove engaging for European nations more concerned with Benn’s approaches to existing organisations such as ELDO. While for Young, the ETC proposals may have been only a ‘hologram’ of little substance in Wilson’s policy towards Europe, I have shown how, for Benn, the ETC policies were key to his attempt to expand his role to include foreign affairs. Benn’s inability to maintain this role weakened his grasp on Anglo-European policy.

Stewart’s decision to await the ‘convulsion’ caused by Benn’s handling of Anglo-European relations shows the way in which he awaited evidence before attempting to challenge Benn’s position. It also shows that Stewart had learnt from previous experience. As shown in Chapter 2 Section 5, Stewart fought Ministers’ decision to withdraw from ELDO, but after attempts to change their minds had been unsuccessful, used the storm of following criticism to ensure that withdrawal was

⁹⁸ CAB 134/2647, CSC(68) 11th Meeting, Communications-Electronics and Space Committee, 05 November 1968.

not pursued at the ELDO conference. This Ministerial conflict for supremacy over control of Anglo-European relations highlights the importance with which Ministers guard their departments' interests. While for Benn, attempts to monopolise decision-making on European technological matters represented an expansion of role, for Stewart, Benn's attempts represented a challenge to his role as the arbiter of foreign policy affairs. It must be noted, however, that whilst Stewart was now more firmly in charge of the ETC proposals, this did not mean that the Cabinet had changed their minds over the decision to withdraw from ELDO.

3.7: Finally withdrawing from ELDO?

As has already been noted (see 2.4) ELDO was not an efficient or effective organisation. By mid-1968 there had been seven launches of ELDO's Europa launcher, (five of the British first stage on its own or with mock-ups which had been successful, and two with live French second stages which had failed).⁹⁹ Continued failure of the launcher meant that the costs of the programme escalated above planned expenditure. Under the terms of the Convention, a conference had to be called to ascertain whether nations would agree to a reduced programme in order to limit expenditure.¹⁰⁰

The debate caused by the UK's attempt to withdraw in 1966, and Benn's comments on the economic viability of the project led to greater political involvement by

⁹⁹ J. Krige, 'The Long Struggle to Adopt a Balanced European Space Programme', in J. Krige and A. Russo (eds.), *A History of the European Space Agency 1958-1987: Volume 1 The story of ESRO and ELDO 1958-1973*, (Noordwijk, 2000); AVIA 92/137, D. Anderson, S.R. Merrett, P.M.S. Jones, W. Llewelyn, 'Economic Review of U.K. Space Policy', 30 May 1968.

¹⁰⁰ FCO 55/135, 'ELDO Ministerial Conference, 11/12th July, Brief for the Minister of State, Ministry of Technology', 03 July 1968.

European Ministers and the establishment of a Ministerial level European Space Conference. Intended to direct future European space activities, and to seek rationalisation of the various European collaborations conducting space research, the Conference met yearly, and prompted the ELDO Secretariat to plan a future programme of launcher and satellite research which would be able to be scaled up or down depending on the available funds. The plans, which were submitted to the ELDO Council by the German delegation, called for a “common charge” for membership, and for nations to then choose whether the remainder of their contribution should be spent on launcher production or scientific space research through satellites. The elaboration of this plan for future research which would begin in 1971 after the planned date for the completion of the first programme would commit nations to slightly higher expenditure (although it was accepted that only four: Belgium, France, Italy and West Germany, would continue work on an independent launcher).¹⁰¹ Whilst for Stewart, accepting the ‘German plan’ could have signified a major positive shift in British foreign policy, for the rest of the Cabinet, it was the unmissable opportunity they had been looking for to extricate Britain from ELDO.¹⁰²

The Solicitor General’s advice on withdrawal was immediately sought (along with advice from the FO solicitors), and the UK’s position was prepared over late 1968 well in advance of the 1969 ELDO Council. For the Solicitor General, the German proposals ‘could be regarded as a further programme’ meaning that the UK would be ‘free to declare she was not interested in this new programme and would

¹⁰¹ Krige, ‘The Long Struggle to Adopt a Balanced European Space Programme’, p. 352.

¹⁰² CAB 165/679, Michael Stewart to Prime Minister, 08 November 1968; CAB 134/2647, CSC(68) 8th Meeting, Communications-Electronics and Space Committee, 18 October 1968.

therefore not participate in it.’¹⁰³ Whilst the government would be able to ensure that it committed no further expenditure to ELDO from the end of 1969, Cabinet was convinced by the necessity of immediate savings, and sought to withdraw from future programmes, and to further reduce the UK contribution by at least a further £5 million (although ideally by a further £7 million). Ministers (except Stewart) believed that ‘it would be preferable to spread the smaller contribution we proposed to make to ELDO over the years up to 1971, rather than to make one terminal contribution of £10 million in 1969.’¹⁰⁴ These two aims were, however, contradictory under the terms of the ELDO Convention. The Solicitor General warned that although British withdrawal from ELDO would survive scrutiny in the ELDO arbitration procedure and a challenge at the International Court, there was a risk that such proceedings could result in the UK being ‘obliged to pay the full sum in to the International Court for them to hold for the duration of the proceedings.’¹⁰⁵ Ministers however, remained convinced that withdrawal and a reduction in the UK contribution could both be obtained, and as the Council met, Benn contacted his European counterparts to inform them that the UK would not be willing to contribute to further expenditure.¹⁰⁶

As discussed in 2.5, the Cabinet had been set on British withdrawal from ELDO since at least 1965. In his diaries, Richard Crossman noted how every time attempts to withdraw were postponed or reversed on legal advice Ministers became ‘all the

¹⁰³ CAB 134/3310, ST(68) 5th Meeting, Ministerial Committee on Science and Technology, 10 December 1968.

¹⁰⁴ CAB 134/3310, ST(68) 5th Meeting, Ministerial Committee on Science and Technology, 10 December 1968; R. Crossman, *The Diaries of a Cabinet Minister, Vol 2*, p. 776.

¹⁰⁵ CAB 134/3310, ST(68) 5th Meeting, Ministerial Committee on Science and Technology, 10 December 1968.

¹⁰⁶ CAB 134/2649, CSC(69)9(Final), Communications-Electronics and Space Committee, ‘The United Kingdom Space Policy: 1969 Review’, 02 April 1969.

more determined to cut back on ELDO.¹⁰⁷ As such Ministers were eager to pursue British withdrawal the moment it seemed legally feasible. Even though Ministers were unable to extricate the government from the other major European technological collaboration (Concorde) they hoped to finally end British membership of what they perceived to be a waste of valuable resources.

The 1969 Council meeting was a surprisingly calm one for the British delegation. Benn's pre-meeting warning had prepared European delegations to discuss the British decision constructively, and had also allowed other nations to express their issues with the German plan. The 1969 ELDO budget stalled as neither the Italian nor UK delegations would vote in its favour, and it could not be passed with both delegations abstaining. Unlike in 1966 where the UK delegation had been forced to rapidly change track and play a full part in proceedings, it was now much more concerned to appear constructive in 1969. However, this concern did not prevent other nations from using the Council procedure to express their anger at the British decision, as the British delegate reported:

The UK duly made its formal declaration... that the organisation had now embarked on a further programme, in which the UK was not interested and to which it was under no legal obligation to contribute. Nevertheless, the UK was willing, in order to help its partners, to contribute £10M to ELDO Budgets in 1969/71 (instead of the expected £17M)... No indication of willingness to consider this being shown by the others, the UK then said that if necessary it was prepared to pay its full 27% for 1969... On this basis the

¹⁰⁷ R. Crossman, *The Diaries of a Cabinet Minister, Vol 1: Minister of Housing, 1964-66*, (London, 1975), p. 530.

UK was willing to vote for the 1969 Budget... [After our declaration, however, no] country other than the UK was prepared to vote for the 1969 Budget...¹⁰⁸

After lengthy debate, the Council decided to accept a further reduction in the UK contribution of £6 million, with the total £11 million payable between 1969 and 1971 (with a greater proportion falling in 1970-1). The Council adopted a further reduced plan for the ELDO launcher (known as T/9) which would reduce the number of firings and capability of the launcher still further.¹⁰⁹

From 1969 onwards, there was more recognition amongst Cabinet Ministers that Europe only had a space industry because of the UK's efforts to form ELDO, and that withdrawal from ELDO could not be decoupled from the UK's attempts to enter the European Communities.¹¹⁰ Indeed, at the beginning of 1970 it seemed that Wilson was prepared to restart negotiations with the European Commission (perhaps as a consequence of de Gaulle's resignation, Pompidou's friendliness, and the recovering economy). This time Ministers agreed that 'our standing as a technological partner still tends to be judged in terms of our attitude to international projects, and especially those in the space field. It will thus be important to harmonise our attitude in the ESC [European Space Conference] discussions with our general approach to the EEC negotiations.'¹¹¹ The negotiations

¹⁰⁸ CAB 134/2649, CSC(69) 1st Meeting, Communications-Electronics and Space Committee, 09 January 1969.

¹⁰⁹ J. Krige, A. Russo, with L. Sebesta, *Europe in Space 1960-1973*, (Noordwijk, 1994), p.81.

¹¹⁰ CAB 134/3311, ST(70), Ministerial Committee on Science and Technology, 'Offer by the United States of European Participation in the Post-Apollo Space Programme', 08 May 1970; Young, *Labour Governments*, pp.225-6.

¹¹¹ CAB 134/3311, ST(70), Ministerial Committee on Science and Technology, 'Offer by the United States of European Participation in the Post-Apollo Space Programme', 08 May 1970.

were, this time, central to British policy to the extent that negotiations with the United States on a proposed post-Apollo programme were deferred in order to prepare a united response with European nations. By the time of the general election in 1970, policy on ELDO had shifted from one of withdrawal to one of apparent cooperation.

In this section I have shown how Stewart shifted the UK's approach from the purely negative one of 1964-8. Stewart's consistently accurate prediction of the reactions of European delegations and insistence that British withdrawal should be part of more positive engagement with the problems of European space research were heeded, increasing his abilities to direct policy. Meanwhile Benn's attempts at foreign policy had certainly caused a convulsion, but did little to change European opinions on the need for an independent launcher and did much to damage his attempts to form the ETC. In the next chapter we will see how British policy towards ELDO developed under the 'pro-European' Heath government.

3.8: Conclusion

In this chapter we have seen how increasing attempts to ensure that research and development conducted at home and abroad was economically viable shaped decision-making over the course of the second Wilson government. Attempts by SAB to increase their economic competence (through alliances with ES4 and PAU), raised concern that Black Arrow would be found to be uneconomic. However, Goodson and Bullock believed that such an alliance was necessary to counter the growing power of the DEA and Treasury. The formation of such an alliance allowed

MinTech to undertake economic reviews on Black Arrow without reference to the DEA and Treasury until Ministers decided to utilise DEA expertise.

In the case of Black Arrow the personal differences of opinion of members of SAB (and their importance) shows the influence of individual civil servants on the policy-making process (whether through discussing personal opinions with other departments, or through locking reports in their offices). British policy towards ELDO was again heavily influenced by Ministers, this time by Tony Benn who attempted to direct and shape a technological foreign policy role for himself. Benn's failure to successfully engage with European colleagues highlights his lack of knowledge in foreign affairs, whilst Stewart's approach (of waiting for Benn to fail) highlights his caution in challenging a Minister who had the support of Cabinet.

Through an examination of the role of Research Establishments I have shown that geographical distance allowed staff at the RAE such as Burt and Twinn to be cut off from information about policy in Whitehall. This analysis of RAE and SAB relations has highlighted that this isolation (enforced by SAB officials) led to growing distance between the views of the staff of the two organisations. Burt and Twinn's continued insistence that Black Arrow should be kept took little note of political machinations in Whitehall. The conflict between RAE and SAB, and the conflict within SAB itself, programme seriously weakened the alliance of actors willing to defend Black Arrow, something which is vital in explaining the project's cancellation in Chapter 4.

Although authors such as Young and Parr have highlighted the seriousness with which Wilson treated his application to the European Communities, European

nations clearly did not consider the UK a serious applicant whilst policy towards ELDO and other collaborative science and technology projects was so inconsistent.¹¹² However, it was not Wilson who pursued such a negative policy, but Benn. Benn's attempt to export the values of white heat developed within MinTech failed, as European nations reacted with dismay at the UK's second attempt to withdraw from ELDO, and its insistence upon economic viability. Benn's attempts to take control over policy towards ELDO by designating it as technological rather than diplomatic policy highlights the importance of following individuals within the policy-making process rather than assuming that the Prime Minister directed policy. Indeed, although the Wilson *government* followed a policy towards European collaboration which was ambiguous at best, it was Wilson and Stewart who attempted to soften the UK's position, and engage in a positive policy towards to European nations. Although Wilson and his government did not pursue a wholly pro-European policy, this chapter has shown that the UK's negative position towards ELDO between 1966 and 1970 largely stemmed from decisions made by Tony Benn. While Wilson himself may have pursued British membership of the European Communities seriously, I have shown how Ministerial direction of policy towards ELDO tarnished the reputation of the government's Anglo-European policy as a whole.

¹¹² Young, 'Technological Cooperation'; Parr, *Harold Wilson and Britain's World Role, 1964-1967*, p.9; Parr, 'Gone Native: The Foreign Office and H Wilson's Policy Towards the EEC', p.87.

Chapter 4: The Heath government and British space research policy 1970-3.

4.1: Introduction:

The vast majority of Conservatives did not think that Edward Heath would become Prime Minister on 19th June 1970. Polls before the election had put the Labour Party in a comfortable lead, and few had expected the electoral swing which gave the Conservatives a majority of 31.¹ This is not to suggest that the Conservative Party entered government unprepared in 1970. Heath's Cabinet were experienced in government, a large majority had previously served as Cabinet Ministers, and the Foreign Secretary Sir Alec Douglas-Home had briefly been Prime Minister between 1963-4. Whilst in opposition the Party had developed a comprehensive alternative programme of government, and Heath in particular was determined to undertake a 'quiet revolution' in the way decisions were made. The Selsdon Park proposals, which emphasised a commitment to fewer state interventions in the economy were vital in providing the Conservatives with an 'identity' amongst the electorate and differentiating their approach from that of the Wilson government.² The creation of 'super-departments' by merging MinTech (an already large department) with the Board of Trade to form the Department of Trade and Industry (DTI) was intended to

¹ M. Abrams, 'The Opinion Polls and the 1970 British General Election', *The Public Opinion Quarterly*, 34(2), 1970; M. Laing, *Edward Heath: Prime Minister*, (London, 1972).

² M.D. Kandiah, 'The Heath Government', *Contemporary Record*, 9(1), (1995), pp. 189-191; S. Ball and A. Seldon (eds), *The Heath Government 1970-1974: A Reappraisal*, (London, 1996); E. H. Green, 'Thatcherism: An historical perspective', *Transactions of the Royal Historical Society*, 9, (1999); M. Pitchford, *The Conservative Party and the extreme right, 1945-1975*, (Manchester, 2012).

mark Wilson's new Ministry as a gimmick, and re-focus the new Ministry on establishing commercial opportunities rather than undertaking large amounts of research. However, in spite of Heath's developed positions, the realities of governing during a series of major crises in the British and global economies quickly derailed his plans.³ The implementation of his 'quiet revolution' of the conduct of government was instead replaced, with U-turns over key policies representing the abandonment of the manifesto on which it had been elected.⁴ The one key manifesto promise fulfilled by Heath's government was the UK's final accession to the European Communities, something which was 'was nothing less than a personal crusade' for Heath.⁵

This chapter will first analyse the extent to which Heath's 'quiet revolution' represented the new type of government it was supposed to create. As we saw in Chapters 2 and 3, the Wilson governments had spent a large amount of time attempting to ascertain the economic value of the research and development which government was undertaking. The continuity provided by civil service advice led to the persistence of the tools established by the Wilson governments, and represented the extension of previous reforms rather than a new development in the formation of policy. The chapter will also focus on the continuities and differences in the Heath government's approach to science policy, which

³ Ball and Seldon (eds), *The Heath Government*; P. Cowley, and M. Bailey, 'Peasants Uprising or Religious War? Re-Examining the 1975 Conservative Leadership Contest', *British Journal of Political Science*, 30(4), (2000).

⁴ J. Bruce-Gardyne, *Whatever happened to the Quiet Revolution?: the story of a brave experiment in government*, (London, 1974); Cowley and Bailey, 'Peasants Uprising'; A. Gamble, *The Conservative Nation*, (London, 2014); M. Holmes, *The failure of the Heath Government*, (Basingstoke, 1997).

⁵ D. Gowland and A. Turner, *Reluctant Europeans: Britain and European Integration 1945-1998*, (Harlow, 2000), p.168; C. Lord, *British Entry to the European Community under the Heath Government of 1970-4*, (Aldershot, 1993).

contemporary scientists and later historians of science often viewed as ‘ideological and destructive.’⁶ Whilst authors such as Agar, Calver and Parker view the Rothschild report as a radical departure from previous government policy, scientists such as Sir Harrie Massey believed that ‘These questions though very important, did not affect the prosecution of space science...’⁷ In this chapter I show that the recycling of advice by officials meant that Heath’s reforms made little difference to the way in which scientific decisions were made.

In this period the carefully constructed alliances which had kept the Black Arrow programme in being were fully broken down, and the reorganisation of government departments significantly changed the ability of officials and Ministers to act as they had under the Wilson administration. As with the election of the previous government (see 2.2), the new rhetoric of the Heath government allowed civil servants to promote or defend policy options in a new way, and to make new arguments in policy debates.

Although the new government was committed to assessing the economic value of scientific projects, it was the changing opinions and recommendations of key officials in the Space Administration Branch (SAB) which led to the cancellation of Black Arrow, rather than a decision by Ministers. Like Wilson, however, Heath also

⁶ E. Roland Dobbs, ‘The Organisation and Control of Scientific Research by the United Kingdom Government’, *Higher Education*, 1 (3), (August, 1972); R. Williams, ‘Some Political Aspects of the Rothschild Affair’, *Science Studies*, 3 (1), (January 1973); T. Wilkie, *British Science Policy Since 1945*, (Oxford, 1991), p. 81; J. Agar, ‘Thatcher, Scientist’, *Notes and Records of the Royal Society*, 65(3), (2011).

⁷ Agar, ‘Thatcher, Scientist’; M. Parker, ‘The Rothschild Report (1971) and the purpose of government-funded R&D – a personal account’, *Palgrave Communications* 2, (2016); N. Calver and M. Parker, ‘The Logic of Scientific Unity? Medawar, The Royal Society and the Rothschild Controversy 1971-72’, *Notes and Records*, (2016); N. Calver, *Popper: Hero of British Science*, (Unpublished Thesis, University of Kent, 2014); Sir H. Massey, and M.O. Robbins, *History of British Space Science*, (2nd edition, Cambridge, 2009), p.216.

took direct charge of the policy making process, blocking the decision to cancel until he could be assured that it would not negatively affect Anglo-European relations.

Turning to discuss the Heath government's approach to ELDO, the chapter will analyse the extent to which Heath's policy represented a distinctly pro-European stance. Decisions over whether to pay the ELDO Common Charge (for launching facilities), the extent to which the UK should take part in collaborative research in NASA's post-Apollo programme and whether other changes meant that the UK could finally withdraw from ELDO all tested Heath's commitment to improving Anglo-European relations. This chapter will show that, as with science policy, Heath's policy towards ELDO was based on recycled advice from officials who had advised the Wilson government. Although for Heath, the improvement of Anglo-European relations may have been a 'personal crusade' the recycled advice of officials mean that Heath's policy on ELDO was remarkably similar to that of the previous government in its opinions. ELDO was portrayed by officials as outdated, over budget and ineffective. In spite of much more Cabinet debate about the impact on Anglo-European relations, the Heath government largely followed the same policy as that of Wilson's: announcing withdrawal, and upon being challenged with arbitration by the French government, renouncing it. In fact the major difference between the Wilson and Heath governments were the personal aims and roles of the Ministers for Technology and Aerospace and Shipping (Tony Benn and Michael Heseltine respectively). Whilst Benn had actively sought a 'convulsion' in ELDO in the hope of creating something new, Heseltine actively sought to create a replacement organisation before announcing withdrawal.

Heseltine, in seeking to make his mark in his first major Ministerial position, determined Britain's responses to the formation of the successor organisation to ELDO, and successfully pursued a constructive policy which was acceptable to other Cabinet members with little reference to Heath. While Heath, and his Cabinet frequently referred to themselves and their decisions as 'pro-European', the government's approach to ELDO does not support the assertions of historians such as Gowland and Turner that for Heath, good Anglo-European relations were a 'personal crusade' whose prioritisation was primary.⁸ Much like the Cabinets of the Wilson governments, Ministers seem to have decided that Anglo-European relations would not be affected by policy on ELDO, in spite of much evidence highlighting that European nations considered British approaches to ELDO to be representative of their commitment to pursuing membership of the European Community. This chapter shows that without the intervention of Heseltine, Heath's ELDO policy would have been little different from that pursued by Tony Benn in the Wilson government. By drawing on this comparison, I argue that whilst Heath was 'pro-European' this did not mean that he was on a 'crusade' which dominated all other concerns.

⁸ Gowland and Turner, *Reluctant Europeans*, p.168; J.W. Young, 'Britain and the EEC, 1956-73: An Overview', in B. Brivati, and H. Jones, *From Reconstruction to Integration: Britain and Europe Since 1945*, (London, 1993), p.109; N.J. Crowson, *The Conservative party and European Integration since 1945: At the heart of Europe?*, (Abingdon, 2007), p.37

4.2: New government with old advice?

The Heath government began, much like Wilson's 1964 government, promising great change. Heath's new government would take long-term decisions (rather than hunting for headlines). Instead of making rapid decisions based on an assessment of political gain, Heath was determined that he wanted 'to see a fresh approach to the taking of decisions. The Government should seek the best advice and listen carefully to it. It should not rush into decisions, it should use up-to-date techniques for assessing the situation, it should be deliberate and thorough.'⁹ As we shall see, decision-making under Heath was just as focused on the domestic political and economic situation as Wilson's and largely followed 'Wilsonian' policies towards ELDO. For example, Heath's assertions that the most 'up-to-date-techniques' should be used involved the continued application of cost-benefit analysis as an 'objective tool' in policy-making.¹⁰ Whilst for Heath this may have seemed a novel method of countering the perceived short-termism of Wilson's government, civil servants would advise the use of tools developed under Wilson's instruction to ensure projects were economically assessed before decisions were made (see Chapters 2 and 3).

Of the changes made by Heath upon entering office, the creation of the first 'think tank', the Central Policy Review Staff (CPRS), and its recommendations for changes in the conduct of government science are perceived by historians as the most

⁹ Conservative Party, *1970 Conservative Party General Election Manifesto: A Better Tomorrow*, (London, 1970).

¹⁰ Bruce-Gardyne, *Whatever happened to the Quiet Revolution?*; Holmes, *The failure of the Heath Government*.

drastic.¹¹ Unlike Wilson's attempts to discover the value of individual projects (which became mired in complex economics), the CPRS questioned whether all of the 'more than £1,000 million a year' spent on research and development was necessary; 'the Government are clearly not in the business to promote R and D as an end in itself...'¹² The report which followed over a year of investigations concluded that research and development must be 'controlled and directed within 'certain limits' by 'applying the customer-contractor system to all applied R&D...'¹³ Its report, known as the Rothschild Report, published in 1971 established a shift away from funding through large independent research councils, moving funding to departments, who would ensure that the research conducted was necessary to the functions of the department. In establishing the idea of the 'customer-contractor' principle, the Report suggested that departments in turn would only engage in research which was economically worthwhile and would not otherwise be undertaken by industry.¹⁴

Although historians such as Agar see the Rothschild reforms as a purely top-down policy shift imposed by the government's new think tank, I argue that the Report's conclusions can also be viewed as development of previous policy in a new context by officials.¹⁵ Although the central concept of 'customers' and 'contractors' was new, the idea that departments should only conduct research which satisfied 'user

¹¹ Wilkie, *Science Policy*; Agar, 'Thatcher, Scientist'.

¹² CAB 165/1025, Lord Privy Seal, 'Draft: Ministerial Committee on Science and Technology: Work of the Committee', 16 October 1970.

¹³ CAB 134/3450, SCT(71)18, Ministerial Committee on Science and Technology, 'Government Research and development: Note by the Central Policy Review Staff', 01 October 1971.

¹⁴ HMSO, *A Framework for Government Research and Development*, (London, 1971).

¹⁵ Agar, 'Thatcher, Scientist'.

requirements' was not (see 3.2).¹⁶ Examining the development of governmental policies towards research in the period before the Rothschild Report shows the influence of the civil service in providing continuity in government policy, and calls into question claims of the Report's importance in changing the way research was funded.

In the case of Black Arrow officials re-used a large quantity of information which had been under consideration at various committees right up until the 'day before the General Election'.¹⁷ Whilst officials were aware that they could not share the reasoning behind papers generated under the previous government, Lingard, an Assistant Secretary in the SAB, was happy for papers to be reissued as briefings to incoming Ministers as they provided only technical information.¹⁸ This recycling of information, whilst beneficial to Ministers, also allowed officials the chance to reassess the information that they provided in the light of policy announced by the incoming government (after, or before their election), and to provide continuity of policy by highlighting relevant contexts to new Ministers. As such, the changing of governments provided officials with the opportunity of drastically reframing an issue, or an approach to a policy which had been successful (or unsuccessful) under a previous administration by adopting the language of the new one (see 3.2).

The long running Official Committee on Science and Technology, which contained officials from every large department believed that the new government's

¹⁶ CAB 165/1025, O. Simpson to Lord Privy Seal, 08 December 1972; AVIA 92/129, D. Anderson, 'Review of Black Arrow and Other Space Activities', 05 January 1968.

¹⁷ AVIA 92/137, R. Lingard, 'National Space Technology Programme: Brief on Paper 243/5', 24 August 1970.

¹⁸ AVIA 92/137, R. Lingard, 'National Space Technology Programme: Brief on Paper 243/5', 24 August 1970.

intentions to make ‘a substantial reduction in public expenditure’ could threaten research and development budgets.¹⁹ Aware of their important role in providing information about policy under the previous government, officials were adamant that their report ‘should underline that R and D expenditure had been decreasing overall in real terms.’²⁰ The potential for a reduction across all of the researching departments represented (MinTech, the Ministry of Defence, Education and Science, and Post Office) led to an alliance amongst officials that hoped that research and development budgets could be protected, suggesting that departments would not be able to provide Ministers with the best advice possible if funding was cut.²¹

Goodson, who had spear-headed the defence of Black Arrow under the previous government, was again quick to adapt his language to suit the rhetoric of the new administration. Even though Black Arrow had not been proven to have a directly beneficial impact on the economy Goodson’s arguments in the Official Committee on Science and Technology changed to insist that ‘such a programme is an indispensable basis for the Ministry of Technology’s function of adviser to other Government Departments on actual and potential uses of space...’²² Ensuring the use of language in keeping with the new government’s customer-contractor principle, Goodson stressed that various private contractors had invested heavily in capital facilities to support Black Arrow, and had ‘spent substantial sums on studies of specific customer requirements...’ something which they would only have done

¹⁹ CAB 134/3194, C243/5, Meeting of Officials on Science and Technology, 07 July 1970.

²⁰ CAB 134/3194, C243/5, Meeting of Officials on Science and Technology, 07 July 1970.

²¹ CAB 134/3194, C243/5, Meeting of Officials on Science and Technology, 07 July 1970.

²² CAB 134/3194, C243/5, Meeting of Officials on Science and Technology, ‘National Space Technology Programme: Draft Submission to Ministers’, 02 July 1970.

had they had sufficient, 'belief in the eventual prospects of space business...'²³ Such early establishment of a case to support Black Arrow, in the language of the new government suggests that Goodson (and others) felt that the project was at risk. The fact that officials had access to information which Ministers did not, allowed officials to shape policy at earliest stages, and changes to the rhetoric of the arguments made provided a hollow reflection of the new policy initiatives of Ministers.

4.3: Personality and politics in the cancellation of Black Arrow.

Although recent work by Wevill highlights that senior civil servants were able to shape policy, I show that it is often the junior officials who were able to dedicate the time required to frame and hone arguments which would go on to be adopted by Ministers (see especially 3.2).²⁴ Given the small number of officials in SAB, and the fact that officials from the Branch had a relatively flat hierarchy (having only Assistant Secretaries and the Branch Head) junior officials were able to represent policy at official committees (usually reserved for higher ranking officials). The work of SAB, of liaising with RAE and other branches of MinTech, also meant that the Branch was less hierarchical than other departments where processes determined a strict hierarchy of rank and role. For example the Foreign Office's remit led to strict control over contact between different ranks of official (and particularly over who was able to send telegrams to stations abroad), meaning that advice was usually fed

²³ CAB 134/3194, C243/5, Meeting of Officials on Science and Technology, 'National Space Technology Programme: Draft Submission to Ministers', 02 July 1970.

²⁴ R. Wevill, *Diplomacy: Roger Makins and the Anglo-American Relationship*, (Farnham, 2014).

up a hierarchical chain.²⁵ This section will focus on the role of Goodson, the member of the SAB who persuaded other SAB officials to support the cancellation of Black Arrow. By doing so I highlight the value of understanding the individual priorities and motives at an official level, which show a considered decision to begin research elsewhere, rather than solely end research on launchers.

The formal recommendations of MinTech officials to Ministers to maintain the Black Arrow programme did not change immediately after the 1970 election, and the change was certainly not prompted by Ministers. In early meetings to brief the new government, MinTech arguments about Black Arrow mirrored their previous attempts to safeguard the future of the project, highlighting that their ability to provide advice to the other departments would be seriously limited by the cancellation of the programme. Goodson also stressed that Black Arrow had been reviewed many times over the course of the previous government, and that it was 'neither appropriate nor practicable to seek quantifiable economic justification for an applied research programme.'²⁶ Such a beginning might lead us to conclude that officials in SAB were now firmly behind the programme even though, under the previous government, they had refused additional funds for it (see Chapter 3).

The conflict between views within the department and the advice given by the department (outlined in 3.4) had led to a weakening in the case for Black Arrow.

The Head of SAB, J.G. Lewis, Goodson and junior officials Neate and Manley had

²⁵ Wevill, *Diplomacy*. It is also possible to note this hierarchy in the files of the departments, contrasting the way in which drafts from all levels were passed to Cabinet in SAB compared to the Foreign office, where officials wrote their comments on the outside of folders, rather than on the drafts themselves, for example: AVIA 92/282; FCO 55/167.

²⁶ CAB 134/3194, C243/5, Meeting of Officials on Science and Technology, 'National Space Technology Programme: Draft Submission to Ministers', 02 July 1970.

begun to suggest that the Black Arrow launcher should be replaced with American alternatives, and that greater funds should be spent instead on satellite research. Meanwhile, Burt (Head of the Space Department at the RAE), and Bullock thought that the launcher was a necessary component of the programme, and that to remove the launcher would weaken the case for continued satellite research. These conflicting views were rendered unsustainable by three major changes. Firstly, Lewis, and E.G.C. Burt who had had such an acrimonious relationship both retired and were replaced by Goodson and Twinn (respectively) who had much more cordial relations. Twinn and Goodson's more friendly relations prevented the breakdown of communication between RAE and SAB highlighted in Chapter 3. With more cordial relations, Goodson and Twinn were able to discuss plans to reallocate funds from launcher to satellite research and Goodson was able to reassure Twinn that cancellation of the launcher did not mean closure of the Space Department.²⁷

Secondly, under the 'quiet revolution' of the Heath government, MinTech, which was viewed as 'gimmicky' was broken up and it was announced that SAB was to be transferred into the newly created (and much smaller) Ministry of Aviation Supply (MAS) which was in turn subsumed by the Department of Trade and Industry (DTI). This shift was no mere name change, and threatened programmes which had suited MinTech's remit.²⁸ The main aim of Black Arrow had been to test components to support the development of industry, something which didn't fit clearly with the DTI's remit. The DTI was not intended to support industry by conducting large amounts of pure or applied research (as MinTech had been), and under the 'new'

²⁷ AVIA 92/301, M.A.S./SPC(71)7, Space Policy Committee, 'National Space Technology Programme: Assessment of Lord Penney's Report (Note by Head Space), 18 February 1971.

²⁸ Bruce-Gardyne, *Quiet Revolution?*, p.14.

regime of the Rothschild Report every department was meant to ensure that any research undertaken was 'in line with modern requirements and that unnecessary activities are eliminated.'²⁹ Although Black Arrow had been under financial pressure in MinTech, this only increased in DTI, as it became apparent that Black Arrow was one of the largest single projects being developed.

Thirdly, the second launch of Black Arrow (R2) in September 1970, ended in failure due to a problem with a fuel pump which meant that the satellite payload had not reached the required altitude.³⁰ Here, we see the importance of technology as an actor. The programme had been reduced so often (see Chapters 2 &3) and had such a limited number of firings that there was little room for error. If the launch had been a success, scientists and engineers would have spent the year before the next launch analysing the data gathered and making improvements to satellite and launcher design. As the launch had failed, those staff had little to do once the cause of the accident was determined (a faulty fuel valve – discovered within a month) except to wait a year for another launcher to be produced. These changes upset the delicate balancing act between the views of officials in SAB, and the desire of RAE officials to maintain the project.

Based on the failure of the R2 launch, Goodson initiated yet another review of the Black Arrow programme. This time, however, the review would be conducted by an impartial external expert who officials at the RAE would not be able to challenge easily. Goodson requested that Lord Penney (former Chairman of the Atomic Energy

²⁹ CAB 134/3193, SCT(70)8, Ministerial Committee on Science and Technology, 'Work of the Committee: Memorandum by the Lord Privy Seal', 21 October 1970.

³⁰ CAB 134/3367, CSC(71)13, Communications-Electronics and Space Committee, 'National Space Technology Programme: Note by Ministry of Aviation Supply', 14 April 1971.

Authority and by that time Rector of Imperial College, London) be invited to conduct the review.³¹ Penney was one of Churchill's 'Atomic Knights' who had been at the forefront of the civil and military nuclear programmes as head of the Atomic Energy Authority's Atomic Weapons Research Establishment until 1959. Penney had been asked to conduct reports internally before – notably into the causes of the 1957 fire at a Windscale plutonium production plant.³² Penney was asked by Goodson to complete the review as quickly as possible, and Goodson was hoping to capitalise on the failure of the launcher to highlight the problems with the programme. RAE staff were not invited to comment on the review or its terms until after the review had begun, and only the department heads of the private companies involved were informed that a review was taking place (and even then, only because Goodson realised that there was no other way for Penney to access their records).³³ Penney's review attempted to bring SAB's research in line with the demands of its new department by analysing whether Black Arrow was truly necessary research which was in line with 'modern requirements'.

The review was completed by the end of November, and recommended the cancellation of the Black Arrow launcher programme. Like Lewis, Merrett, Neate and Manley before him, Penney concluded that the money spent on the launcher programme would be better spent on the development of communications satellites. Although Penney recognised that a lot had been achieved within very tight financial limits, his report suggested that it was in turn these limits which

³¹ AVIA 92/282, R.A. Lingard to PS/CGWL, 20 October 1970.

³² UKAEA, *A revised transcript of the proceedings of the Board of Inquiry into the fire at Windscale Pile No.1, October 1957*, (London, 1989); L. Arnold, *Windscale, 1957: Anatomy of a Nuclear Accident*, (Basingstoke, 1992).

³³ AVIA 92/282, R.A. Lingard to PS/CGWL, 20 October 1970.

made the programme unsustainable: 'The current programme gives us too few Black Arrows to establish the vehicle as a proven launcher in a reasonable timescale, and too many to meet our requirement for satellite launches [under the financial limits imposed]... and there is no easy way out of the dilemma.'³⁴ Due to the number of times which Black Arrow had been cut back, the number of launchers being produced was at an absolute minimum. This absolute minimum, however, was self-reinforcing, and created a situation whereby there would only ever be one satellite and one launcher ready at any given time. Due to the cost of the launcher, strict financial limits meant only one satellite could be built per year, which in turn placed a limit on how often a launcher was required. Although it would have been more economic to produce four launchers a year, (to ensure high productivity and cheaper parts manufacture), there would have been no definite customer for the launchers. In an effort to ensure the programme was financially austere, officials had in effect hamstrung the programme to producing one launcher and one satellite per year, no matter the circumstances.

For Penney it was hard to justify the costs of the launcher (which stood at £9 million per annum as opposed to £2 million for satellite development) especially as the launcher itself represented 'an intentionally small step forward in the state of the art.'³⁵ Whilst the decision had been taken to reduce the number of firings and amount of technological development purely to maintain the development of the Black Arrow launcher, Penney did not place blame on officials in SAB or RAE. Although he alluded to the difficulties between SAB and RAE by suggesting that

³⁴ AVIA 92/283, Lord Penney, 'Review of the Black Arrow Launcher 1970, November 1970.

³⁵ AVIA 92/283, Lord Penney, 'Review of the Black Arrow Launcher 1970, November 1970.

having joint authority shared between SAB and RAE had added unnecessary complexity, Penney accepted that 'The disappointing performance of Black Arrow launcher R2 in September 1970 was not due to poor project management, bad fundamental design or low-grade effort. We knew we were taking a gamble in trying to make do with so few test launches, and the gamble went against us.'³⁶ Penney concluded that, having lost the gamble the UK should switch from Black Arrow to American launchers. Pre-empting the inevitable warning from RAE scientists that to do so would involve sharing too much information on British-designed satellites with NASA, Penney stated that 'It is easy to exaggerate the value to a competitor of a set of drawings, but the valuable know-how is nearly always in the detailed manufacturing process known only to the Company making the item.'³⁷ Indeed, the money saved by purchasing rides on American launchers would provide greater funds for British companies to develop satellite designs and compete effectively with the large American effort. It is important to note that Penney was not talking about *abandoning* the ability to launch satellites (although that is what the decision represented), but of using resources to their best effect (language which would have suited the previous Wilson government as much as it suited Heath's).

Penney's report was used by Goodson to recommend the cancellation of Black Arrow to Ministers. However, it was first necessary to convince staff in the RAE that cancellation would not mean the end of the Space Department as a whole. At a meeting between SAB and RAE staff to consider the impact of Penney's report,

³⁶ AVIA 92/283, Lord Penney, 'Review of the Black Arrow Launcher 1970, November 1970.

³⁷ AVIA 92/283, Lord Penney, 'Review of the Black Arrow Launcher 1970, November 1970.

Goodson raised the question of tactics and timing, noting that there was shortly to be a third launch of Black Arrow and that 'If the decision were announced before the X3/R3 launch, the effect on the morale of the Black Arrow teams might prejudice the success of the trial; if it were delayed until after the X3/R3 launch, and the launch was a success, the decision would be far harder to present to the public.'³⁸ Whenever the announcement was made, Goodson still felt that it was necessary to ensure good relations with RAE were maintained. As the major beneficiary of work on Black Arrow, the Head of the Space Department Twinn did not feel that Penney had taken the amount of time necessary to come to a balanced opinion. Presenting the launcher as a necessary insurance policy, Twinn suggested that Britain would lose trade in the coming 'communications explosion' if it did not possess its own launcher and still stressed that 'unless US assurances on launcher availability were cast-iron, then abandonment of a national launcher could pose considerable difficulties for the UK.'³⁹ Twinn stuck to the tried (and thoroughly tested) arguments to defend the launcher. Adapting to the rhetoric of Heath's government and the elaboration of user-requirements and the customer-contractor principle, Twinn sought the views of the private companies involved in constructing Black Arrow who (for rather obvious reasons) favoured the continuance of a programme which gave them guaranteed income: 'HSD [Hawker Siddeley Dynamics] consider that it is essential for Britain to retain its launcher independence – and preferably to increase it – in order to demonstrate the all-round national capability which they believe is of great assistance in attracting

³⁸ AVIA 92/300, MAS/SPC(71)2nd Meeting, Ministry of Aviation Supply, Space Policy Committee, 18 January 1971.

³⁹ AVIA 92/300, MAS/SPC(71)8th Meeting, Ministry of Aviation Supply, Space Policy Committee, 06 April 1971.

customers and satellites.’⁴⁰ Twinn even contacted the Ministry of Defence, hoping that the Chiefs of Staff could be persuaded to provide some support for the continued development of independent technology.

Discovering Twinn’s initiative, Lingard in SAB felt that whilst the Chiefs of Staff were unlikely to have strong opinions on a civil science project, it was already too late ‘I have the impression the machine has taken over!’⁴¹ For Lingard, policy decisions seem to have a kind of momentum, with decisions being up for debate until a certain point in the process at which they are ‘made’. While it has been clear throughout that decisions are rarely set in stone (even once approved by a Cabinet), Lingard’s turn of phrase is interesting, both in the sense that it highlights the power of officials in decision-making, but also because it seeks to obscure the large role played by him and other SAB officials in directing policy decisions about Black Arrow.

While Twinn in the RAE challenged the assumptions of Penney’s report, officials like Goodson and Lingard in SAB used them actively to promote a change in policy on the Black Arrow programme in line with their personal opinions (see 3.4). Penney’s report suggested that construction of a launcher was ineffective and that resources could be better used in the development of satellites. Goodson used the language of Heath’s government to support its cancellation as he had done under the Wilson government (see Chapter 3). Due to the tight financial limits imposed by the Treasury, Goodson stated that ‘The present Black Arrow launcher and satellite

⁴⁰ AVIA 92/301, M.A.S./SPC(71)7, Space Policy Committee, ‘National Space Technology Programme: Assessment of Lord Penney’s Report (Note by Head Space), 18 February 1971.

⁴¹ AVIA 92/179, R.A. Lingard to AS/Space, 18 March 1971.

programmes are mutually inhibiting... If the UK is to remain active and effective in the field of Space Technology it is essential to increase the level of financial investment.⁴² Aware that the government had been elected promising to reduce spending, and that the focus was on ensuring that any research which did not have a customer was eliminated, Goodson's suggestion that Black Arrow be dropped in favour of increasing expenditure on satellite development safeguarded the ability of SAB to offer expert advice to government.⁴³ In doing so Goodson had utilised government rhetoric to justify a decision that he and Neate had personally believed to be right since at least 1968.

If Black Arrow was to be cancelled, then the decision would be passed next via a number of official committees to Ministers. The interdepartmental Communications Electronics and Space Committee had been established to ensure liaison between SAB as constructors of launchers and satellites and the potential users of those satellites (such as the Ministry of Defence, Meteorological Office and the Post Office) and was the first step in getting the decision approved by Ministers. Goodson noted that the bulk of Penney's advice had been accepted by SAB and RAE officials (who were not there to complain about this misrepresentation of their views) and recommended that Black Arrow should be cancelled.⁴⁴ Goodson was keen to ensure that the failure of the launcher was not seen to be a major consideration in the decision to cancel it, and that the 'problems encountered on

⁴² DSIR 23/38286, A.R.C. 32 564, Aeronautical Research Council: Propulsion Committee, 'Eight Report of the Rockets Sub-Committee: Black Arrow – State of the Art Review', 26 February 1971.

⁴³ CAB 134/3193, SCT(70)8, Ministerial Committee on Science and Technology, 'Work of the Committee: Memorandum by the Lord Privy Seal', 21 October 1970.

⁴⁴ CAB 134/3367, CSC(71)13, Communications-Electronics and Space Committee, 'National Space Technology Programme: Note by Ministry of Aviation Supply', 14 April 1971.

the early launches could not be attributed to shortcomings in effort, project management or basic design' (i.e. were not the fault of mismanagement by SAB).⁴⁵

For Hill and Barnett the cancellation of projects like Black Arrow is emblematic of Britain's declining fortunes; yet again, the UK had been forced to accept the realities of its economic poverty and cancel a promising research project before it could pay off.⁴⁶ However, in committee, there was no discussion reflecting such concern about Britain's image as world power. In fact, cancellation of Black Arrow was presented in a positive way. Goodson was sure to maintain that there was no 'appreciable technical loss' and that in any case, an active choice was being made to pursue more relevant satellite research. Since 1968 Goodson had argued that Black Arrow should be retained as an insurance against a future in which it was necessary for Britain to maintain its own launcher to compete in satellite production. By 1971 Goodson suggested that if satellite telecommunications was to be the major sector of growth then resources would be better allocated away from launcher development, and focused on satellites to ensure that Britain could 'win a significant part of the new commercial market in satellite systems.'⁴⁷ He argued that the Black Arrow launcher should be replaced with extra funding for satellite research, promoting design-work and re-tooling in industry. Goodson was highlighting that the decision to cancel Black Arrow was a choice between

⁴⁵ CAB 134/3367, CSC(71)13, Communications-Electronics and Space Committee, 'National Space Technology Programme: Note by Ministry of Aviation Supply', 14 April 1971.

⁴⁶ C.N. Hill, *A Vertical Empire: the history of the UK rocket and space programme, 1950-1971*, (London, 2001); D. Millard, *Black Arrow Rocket: A History of a Satellite Launch Vehicle and its Engines*, (London, 2001).

⁴⁷ CAB 134/3367, CSC(71)13, Communications-Electronics and Space Committee, 'National Space Technology Programme: Note by Ministry of Aviation Supply', 14 April 1971.

technological stasis and technological advance, represented by the growing communications satellite market.

Although initial satellites such as Ariel, Telstar and Sputnik had few functions and were mostly state or commercial prestige or marketing tools, the miniaturisation of components in the late 1960s had increased satellites' abilities.⁴⁸ Solly Zuckerman, the Government Chief Scientific Adviser, warned that the Ministry of Defence's position throughout the 1960s – that satellites were more suited to the budgets of their American and Soviet counterparts - was no longer accurate: 'we had been mistaken in our earlier assessment of the technical and social implications of satellite-communications, and we were now virtually alone in our failure to acknowledge the overwhelming importance that they would have within a few years.'⁴⁹ In the Communications Electronics and Space Committee, the Meteorological Office and Post Office were eager to see satellites developed for remote sensing, and to replace trans-oceanic cables with satellite communications. The Committee agreed enthusiastically that the launcher programme be terminated as soon as the next launch had occurred, and that no further work should take place.⁵⁰

Here, the cancellation of Black Arrow was not one forced on to the government by the economic impoverishment of British decline. Although for some, Black Arrow

⁴⁸ M. Godwin, 'Britnik': How America made and destroyed Britain's first satellite', in S. Naylor, and J.R. Rose, *New Spaces of Exploration: Geographies of Discovery in the twentieth century*, (London, 2010); M. Riordan and L. Hoddesdon, *Crystal Fire: The Birth of the Information Age*, (Princeton, 2001); M. Thatcher, *The Politics of Telecommunications: National Institutions, Convergence and Change in Britain and France*, (Oxford, 1993);

⁴⁹ CAB 134/3309, ST(67) 3rd Meeting, Ministerial Committee on Science and Technology, 05 July 1967.

⁵⁰ CAB 134/3367, CSC(71)13, Communications-Electronics and Space Committee, 'National Space Technology Programme: Note by Ministry of Aviation Supply', 14 April 1971.

had represented a commitment to a prestige project which Britain could not afford, its immediate replacement with a greater concentration on satellite development shows that a lack of money was not the central issue.⁵¹ Instead of being forced by a lack of funds to end a promising project Goodson was focused on the opportunity to re-utilise funds tied up in Black Arrow on a more promising project. As such the cancellation of Black Arrow should be seen as further evidence of Edgerton's assertion that the British state was 'becoming more powerful rather than declining', and not evidence of the decline which authors such as Hill, Wood and Barnett suppose.⁵²

Having successfully convinced officials that refocussing research on satellites would be beneficial to their interests (in utilising satellite communications), it was easy for Goodson to convince the Minister of Aerospace to report these views at a Ministerial level. The Minister, Frederick Corfield, accepted Goodson's advice, choosing to add his name to a draft memorandum prepared by Goodson without comment. At a meeting of the Ministerial Committee on Science and Technology on 24 May, Corfield read out Goodson's memorandum which repeated that an active choice was being made to engage the UK in the emerging market for satellite technology and recommended the termination of research immediately.⁵³ No dissenting voices were raised, there was no discussion, and with approval from Heath in the Chair, Corfield was authorised to cancel Black Arrow.

⁵¹ D. Wood, *Project Cancelled: A searching criticism of the abandonment of Britain's advanced aircraft projects*, (London, 1976); C. Barnett, *The Lost Victory: British Dreams, British Realities, 1945-50*, (Basingstoke, 1996); Hill, *A Vertical Empire*.

⁵² D. Edgerton, *Warfare State: Britain, 1920-1970*, (Cambridge, 2006), pp. 172-7.

⁵³ CAB 134/3450, SCT(71) 1st Meeting, Ministerial Committee on Science and Technology, 24 May 1971.

Yet this standard progression of policy through 'the machine' as Lingard put it was dramatically interrupted by Heath himself. Within a month, Heath had embargoed the decision (which he had approved as Chair of the committee), instructing officials and Ministers to stop work on cancelling contracts and to avoid any mention of the cancellation until further notice. The embargo represented his concern that the decision to purchase rides on American launchers would damage relations with France who had recently offered collaboration on their Diamant launcher. Heath's attempts to intervene in this case seem to have been shaped by concern about damage to the Anglo-European relationship as Ministers were again negotiating British entry. However Ministers were initially confused by Heath's intervention, as Goodson's memoranda and meeting on 24th May had discussed the informality of the French proposals, and agreed that as Diamant was significantly underpowered and over budget (compared with Black Arrow) the proposals should be politely rejected.⁵⁴ Heath's embargo clearly shows the limits of Prime Ministerial attention to the memoranda Ministers write, but also the ability of a Prime Minister to bring to a halt policy in which they perceive a close interest. Heath's personal interest in ensuring close Anglo-French relations, as negotiations to enter the European Communities continued, prompted this over-cautious reaction halting the policy-making process in its tracks. Although the effect on Anglo-European relations was likely to be negligible, Heath's responses conform to the assessment by Donoghue – that as Prime Ministerial time and attention is limited, interventions by Prime

⁵⁴ CAB 134/3450, SCT(71) 1st Meeting, Ministerial Committee on Science and Technology, 24 May 1971.

Ministers are ill-judged and half-hearted 'interference' rather than helpful or useful.⁵⁵

Heath's intervention required careful thought by Ministers, and Holmes was correct to identify dissent as close to treason as Ministers worked for over a month to coordinate a united response which would 'lift the embargo placed by the Prime Minister on the cancellation of Black Arrow and its announcement...'⁵⁶ Corfield chose to raise the matter in a personal meeting with the Prime Minister in the House of Commons rather than through the machinery of Cabinet. In the meeting Corfield, the Lord Chancellor (former Minister for Science, Quintin Hogg) and Lord Privy Seal (George Jellicoe) reminded Heath that the Committee on Science and Technology had already 'approved the proposals by the Minister for Aerospace that the Black Arrow programme should be stopped' and reassured him that the French were expecting their proposals to be rejected. The Ministers pressed further, claiming that 'the announcement of the decision would not cause great surprise.'⁵⁷ Heath's eventual agreement to the cancellation was noted twice in the minutes of the meeting, and within three days the Minister for Aerospace responded to a written question announcing the cancellation publicly.⁵⁸ While Heath's personal intervention only affected the final few months of his government's decisions on Black Arrow, he paid much closer attention to the development of British policy

⁵⁵ B. Donoghue, *Prime Minister: The Conduct of Policy Under Harold Wilson and James Callaghan*, (London, 1987), p. 6.

⁵⁶ CAB 164/859, 'Draft Minute from Dr Simpson to the Lord Privy Seal', 07 July 1971.

⁵⁷ CAB 164/859, 'Black Arrow and European Collaboration in Science and Technology: Note of a Meeting held in the Prime Minister's Room at the House of Commons at 5.15 p.m. on Monday, 26 July, 1971', 26 July 1971.

⁵⁸ CAB 164/859, 'Black Arrow and European Collaboration in Science and Technology: Note of a Meeting held in the Prime Minister's Room at the House of Commons at 5.15 p.m. on Monday, 26 July, 1971', 26 July 1971.

towards ELDO, which directly affected his personal interests in Anglo-European policy.

In this section, I have shown how Goodson commissioned a report by an external expert to legitimise his opinions about the Black Arrow programme. The cancellation of Black Arrow was not, for civil servants or Ministers an admission or acceptance of decline. Instead the replacement of the launcher programme with a greater focus on satellite research was an active and positive choice to give the UK a chance of entering a new (and growing) market. While discussion in the press mainly focused on the end of the programme, Berry in *The Telegraph* focused instead on shifting focus to satellite development (see Figure 8). The process of decision-making, although accepted by Ministers, was halted by Heath's intervention – displaying his primary concern with Anglo –European policy. As it had been decided that an independent launcher was not necessary for the UK it will be interesting to see whether a similar decision concerning ELDO highlights a similar commitment by Heath to guarantee good Anglo-European relations.

Britain will cancel Black Arrow space programme

By Kenneth Owen
Technology Correspondent

About 40 engineers will be made
redundant immediately, and it is

**Britain
scraps
its
shoestring
rockets**

By GARTH BURDEN
BRITAIN'S shoestring

Black Arrow space programme to be dropped

Britain withdrew from the space race yesterday. After six years and £11.5 millions spent, the Black Arrow space programme is scrapped. One launching is left. After that, Britain will have to rely on others to help to put anything into orbit. The end of

SATELLITE SCHEME AT £26m

By ADRIAN BERRY
Political Staff

BRITAIN is moving full ahead in its plan to establish during this decade commercial synchronous space satellites which

Figure 9: The cancellation of Black Arrow in the press⁵⁹

⁵⁹ K. Owen, 'Britain will cancel Black Arrow space Programme', 30 July 1971; G. Burden, 'Britain Scraps its shoestring rockets', *Daily Mail*, 30 July 1971; Anon, 'Black Arrow Space Programme to be dropped', *The Guardian*, 30 July 1971; A. Berry, 'Satellite Scheme at £26m', *The Daily Telegraph*, 30 July 1971.

4.3: Heath, the European crusader?

As I have shown, Heath's quiet revolution on the domestic scene did little to change the conduct of this project. Given the problems with the ELDO launcher in finding a customer (due to the fact it had not yet been launched successfully), policy on ELDO contained a tension between economic rationality and Heath's personal interests in Anglo-European policy. This section will highlight Heath's policy towards ELDO as negotiations began about its replacement. As we shall see, Heath's policy was surprisingly similar to that of Harold Wilson, a Prime Minister much less noted for his commitment to good European relations.⁶⁰ Although I do not challenge Heath's commitment to joining the European Communities I show that Heath's 'pro-Europeanism' did not override all other concerns.

In this period with a committed European as Prime Minister, historians such as Wilkes suggest that Britain completed the 'turn to Europe' which had begun with the first application to join the European Communities in 1961 (see Chapter 1).⁶¹ Indeed, with Black Arrow we have seen how the presentation of British policy concerned Heath enough to embargo a decision he had already sanctioned, worrying about the reaction of Europeans about the decision to purchase rides on American rockets. However, the major criticism levelled at the British by General de Gaulle as he vetoed the first application had been that British ties to America were

⁶⁰ H. Parr, *Britain's Policy Towards the European Community: Harold Wilson and Britain's World Role, 1964-1967*, (2006, Abingdon).

⁶¹ G. Wilkes, 'The Commonwealth in British European Policy: Politics and Sentiment 1956-63', in A. May (ed.), *Britain, the Commonwealth and Europe: The Commonwealth and Britain's applications to join the European Communities*, (Basingstoke, 2001); S. Ward, 'Sir Alexander Downer and the embers of British Australia', in C. Bridge, F. Bongiorno and D. Lee (eds.), *The High Commissioners: Australia's Representatives in the United Kingdom, 1910-2010*, (Barton, 2010), p.14; A. Benvenuti, *Anglo-Australian Relations and the 'Turn to Europe', 1961-1972*, (London, 2008).

too close (exemplified by the Nassau Agreement sanctioning the sale of American Polaris submarine launched ballistic missiles to Britain, but not to France). The complex balancing act of Britain's foreign relations posed problems for Heath very early on with a choice between benefitting Anglo-American and Anglo European efforts in space research.

From its very first days in office the Heath government set out to make sure that European countries were aware that Britain was now a committed European power determined to achieve entry to the Communities. At the first meeting of the Ministerial Committee on Science and Technology, the new Minister of Technology Geoffrey Rippon noted that as the government 'attached more importance to participation in the European space organisations than had their predecessors... a new policy should be worked out now even though there were some areas where final decisions could not be taken yet.'⁶² Rippon, who with Heath, Amery and others had been a force for modernisation in the Macmillan and Douglas-Home governments, was also a committed pro-European and was aware of Heath's determination to create a pro-European policy.⁶³ Unfortunately for Rippon, he was not able to formulate his own positive space policy in Europe. The upset caused in Europe by the 'convulsions' created by Benn over British membership of ELDO, had led to a crisis in European space research (see Chapter 3). Ministerial direction in ELDO was lacking as acrimonious Ministerial discussions about continuing research

⁶² CAB 134/3193, SCT(70) 1st Meeting, Ministerial Committee on Science and Technology, 20 July 1970.

⁶³ A. Sharr and S. Thornton, *Demolishing Whitehall: Leslie Martin, Harold Wilson and the Architecture of White Heat*, (Farnham, 2013); S. Mitchell, *The Brief and Turbulent life of Modernising Conservatism*, (Newcastle, 2006).

programmes developed. As ELDO stalled due to lack of direction, the United States offered comprehensive cooperation on its “post-Apollo” programme.

Having successfully completed manned moon landings scientists at NASA had been concerned about their future funding, and were also concerned about the direction of future research.⁶⁴ As European space collaboration had fragmented into a number of overlapping groups (in various states of ‘convulsion’) NASA, through President Nixon, offered collaboration with all western European nations on their post-Apollo programme. Suggesting that European nations could complete research into small satellites and a ‘re-usable tug’ (i.e. shuttle) not only offered European nations the chance to move on from the acrimonious debates of the 1960s but also presented a challenge for the newly elected Heath government.⁶⁵

Ministers were conscious that ‘the Europeans will be looking at our policies as an important first test of our “Europeanness”’, and also aware that ‘the Americans will be drawing conclusions about our general attitude towards co-operation with them.’⁶⁶ Compared with Wilson, Rossbach suggests that Heath was focused on delivering close Anglo-American as well as close Anglo-European relations.⁶⁷

However, officials had undertaken detailed studies in collaboration with contacts in

⁶⁴ J. Krige, A. Long, A. Maharaj and A.L. Callahan, *NASA in the World: Fifty Years of International Collaboration in Space*, (Basingstoke, 2013).

⁶⁵ L. Sebesta, ‘US-European Cooperation in the Post-Apollo Programme: Setting the stage’, in J. Krige and A. Russo (eds.), *A History of the European Space Agency 1958-1987: Volume 1 The story of ESRO and ELDO 1958-1973*, (Noordwijk, 2000).

⁶⁶ CAB 134/3193, SCT(70)2, Ministerial Committee on Science and Technology, ‘The European Space Conference’, 16 July 1970.

⁶⁷ N.H. Rossbach, *Heath, Nixon and the Rebirth of the Special Relationship: Britain, the US and the EC, 1969-74*, (Basingstoke, 2009).

NASA and European agencies and warned Ministers that the cost of developing the 're-usable tug' had been drastically underestimated.⁶⁸ So, although Ministers were aware that European nations were expressing interest in the American proposals and that there were 'strong political arguments that a positive response to the American offer would aid our Common Market negotiations', they were concerned that 'we already had heavy commitments to aviation projects [Concorde] which were justified in part on grounds of European politics, and there was a limit to what we could afford.'⁶⁹ Such prioritisation of financial stringency is associated with the Wilson government (see chapter 3), but not generally with Heath's government, supposedly bent on achieving British accession. Clearly Heath's pro-Europeanism had hard financial limits, and I shall now turn to examine how these limits affected the policy options chosen.

Aiming for the abandonment of a European-made launcher (and as with Black Arrow, a concentration instead on satellites) Sir Alec Douglas-Home felt that 'it should be possible to negotiate an acceptable deal with the US', noting that, 'the Germans have indicated privately that they are ready to abandon an independent European launcher capability as soon as this [deal] is achieved.'⁷⁰ The Minister of Technology John Davies thought that if the government opted into the post-Apollo programme then they would 'be able to ally ourselves with the Germans in

⁶⁸ CAB 134/3358, EURM(N)(70) 5, Ministerial Committee on The Approach to Europe: Sub-Committee on Negotiations, 'Offer by the United States of European Participation in the Post-Apollo Space Programme', 13 May 1970.

⁶⁹ CAB 134/3193, SCT(70) 1st Meeting, Ministerial Committee on Science and Technology, 20 July 1970.

⁷⁰ CAB 134/3193, SCT(70)2, Ministerial Committee on Science and Technology, 'The European Space Conference', 16 July 1970.

attempting to kill of the European launcher, thus isolating the French.⁷¹ Efforts to engage in such a ploy were halted by officials who felt that Ministers should ‘reach agreement on a joint response at a Ministerial European Space Conference...’ and, after interdepartmental meetings informed Ministers that ‘No Department was willing to act as sponsor for the post-Apollo programme...’⁷² Goodson, representing the DTI, had refused to sponsor the project, aware that the cost of the shuttle was likely to escalate, and concerned that he had worked to re-focus research on Black Arrow from launchers to satellites and did not wish to see SAB’s work focused back on launchers again so soon.⁷³ Without support from the department with the most interest (and most knowledge) of space activities, no other department was willing to take the risk of being saddled with what could be a large, and constantly growing programme which would be outside of their control. Although officials might have accepted a national programme, the experience of ELDO showed how difficult it was to manage the expenditure of international collaborations. Even if a department had been willing to sponsor the programme, the major challenge for the Cabinet was to formulate a policy for the European Space Conference in June. Although there were difficulties with the post-Apollo proposals which prevented Ministers from accepting them, the Cabinet was prepared to risk Anglo–European relations by pressuring Germany to kill off ELDO once and for all.

The post-Apollo proposals had come at a difficult time for European space collaboration as well; the 1970 European Space Conference had been postponed

⁷¹ CAB 134/2652, CSC(70) 40 Revise, Communications-Electronics and Space Committee, ‘European Space Conference: Note by the Ministry of Technology’, 13 October 1970.

⁷² CAB 168/75, A. H. Cottrell to Lord Privy Seal, ‘Forthcoming Issues in Space Affairs’, 09 April 1971; CAB 165/1025, O. Simpson to Lord Privy Seal, 20 October 1970.

⁷³ CAB 165/1025, O. Simpson to Lord Privy Seal, 20 October 1970.

due to the British general election and was scheduled for late June to give the new government time to study plans for a united European space organisation unifying ELDO, ESRO, CETS, and the Franco-German communications satellite project *Symphonie*. The planned replacement organisation would undertake two programmes in which nations would participate; one programme producing a European launcher, and the other undertaking a programme of scientific research utilising satellites (aimed ultimately at creating a European satellite communications network and the 'Eurovision' television network).⁷⁴ This was aimed at resolving the duplication, and difficulties preventing ELDO and ESRO working effectively (none of ESRO's experiments were large enough to warrant utilising a Europa launcher). Heath's approach to the conference proposals can be taken as a test of the new government's approach to Anglo-European relations more generally.

Foreign Secretary Sir Alec Douglas-Home echoed his Labour predecessor Michael Stewart by insisting that it was vital that British took a positive approach; although some European nations might have felt that the Wilson government's decision to withdraw from ELDO in favour of satellite research had been right, 'the manner in which it was taken still rankle[d].'⁷⁵ As formal negotiations for British entry to the European Communities would begin in July, straight after the European Space Conference, it was essential, from Douglas-Home's perspective, for the British to be seen to be good Europeans in all fields of Anglo-European relations. Given the

⁷⁴ J. Krige and A. Russo (eds.), *A History of the European Space Agency 1958-1987: Volume 2 The story of ESA 1973-1987*, (Noordwijk, 2000).

⁷⁵ CAB 134/3193, SCT(70)2, Ministerial Committee on Science and Technology, 'The European Space Conference', 16 July 1970.

potential impact of the government's stance on the post-Apollo programme in Anglo-European relations, British policy towards ELDO took on an additional importance. As negotiations for British entry to the European Communities ramped up throughout 1970, the importance of maintaining a positive policy towards European organisations on all fronts was emphasised.⁷⁶

Although there are certainly differences between approaches of the Wilson and Heath governments in their approach to Europe in this period, I have shown that the way in which the Heath government approached the balance of economics and foreign policy was similar. In spite of Heath's noted and obvious views that Britain should enter the European Communities, the British position on ELDO was not markedly improved. As under Wilson, it was the Foreign Secretary arguing for a positive policy towards ELDO, whilst around him other Ministers, and the Prime Minister seemed loth to engage. The European proposals for a new space organisation were problematic for the Cabinet. Although Douglas-Home was making a case for the linkage of ELDO policy with wider Anglo-European concerns, these attempts did not result in a more positive approach. Heath and his Ministers, whilst publicly promoting British accession to the European Community, did not see policy on ELDO as a vital contingent of supporting British claims to be 'good Europeans' as Douglas-Home did. While this may be due to differing personal views, or knowledge of the continued failure of the ELDO launcher, the conclusion of the vast majority of

⁷⁶ O.J. Daddow, *Britain and Europe since 1945: Historiographic perspectives on integration*, (Manchester, 2004); G. Wilkes (ed.), *Britain's Failure to Enter the European Community: The Enlargement Negotiations and Crises in European, Atlantic and Commonwealth Relations*, (London, 1997); J.W. Young, *Britain and European Unity 1945-1999*, 2nd Edition, (Basingstoke, 2000); B. Brivati, and H. Jones, *From Reconstruction to Integration: Britain and Europe Since 1945*, (London, 1993); S. George, *Britain and European integration since 1945*, (Oxford, 1991).

negotiation for British entry to the European Communities must have also played a part. After Harold Wilson had left the British application 'on the table' in 1967, Heath had taken up the negotiations again shortly after entering office.⁷⁷ Although Britain did not join the European Communities until 01 January 1973, the bulk of negotiations had been finished by early 1972.⁷⁸ I shall now turn to examine how the completion of negotiations throughout late 1971 and early 1972 affected British approaches to ELDO, and in doing so argue that the Foreign Secretary alone did not have the power to implement a positive policy without any Ministerial allies.

At the European Space Conferences in 1970 and 1971, attempts to obtain agreement of how a united organisation with two distinct programmes of research would actually work and whether the organisation would participate in the American post-Apollo offer faltered. The disagreement stemmed from the position of French, West German, Belgian and Dutch governments that an independent European launcher was necessary, whilst other nations were content to purchase American launchers.⁷⁹ The Foreign Secretary was not alone in pressing for a positive approach. Heseltine, the new Minister of Aviation and Shipping (in DTI) formulated his own constructive approach to the negotiations, and like Amery and Thorneycroft before him had clearly instructed his officials to develop a policy of his choice rather than being led by their advice (see Chapter 1). Focusing on the economic benefits of

⁷⁷ M. Pine, *Harold Wilson and Europe: Pursuing Britain's membership of the European Community*, (London, 2007), p.1.

⁷⁸ O.J. Daddow, *Britain and Europe since 1945: Historiographic perspectives on integration*, (Manchester, 2004); G. Wilkes (ed.), *Britain's Failure to Enter the European Community: The Enlargement Negotiations and Crises in European, Atlantic and Commonwealth Relations*, (London, 1997); J.W. Young, *Britain and European Unity 1945-1999*, 2nd Edition, (Basingstoke, 2000); B. Brivati, and H. Jones, *From Reconstruction to Integration: Britain and Europe Since 1945*, (London, 1993); S. George, *Britain and European integration since 1945*, (Oxford, 1991).

⁷⁹ Krige, 'The Long Struggle to Adopt a Balanced European Space Programme', p.352.

satellite communications Heseltine proposed that the British take the lead in such development, leaving France, Germany and Belgium in particular to pursue launcher research, and suggested that it would best to inform European nations sooner rather than later that the government was not interested in taking part in post-Apollo research.

Discussions at the 1971 ESC did not end in agreement as France, Germany, Belgium and the Netherlands refused to abandon the launcher project and smaller nations (such as Luxembourg, Norway and Switzerland) that had been members of ESRO refused to fund it. Heseltine felt that the European nations could be persuaded to engage with his suggestions if he was able to 'renew his proposals at the Ministerial European Space Conference (ESC) on 08 November [1971], but with the new proviso that he should be empowered to commit the United Kingdom to some contributions to post-Apollo and European launcher programmes.'⁸⁰ Although Heseltine was only proposing to involve the UK in a collaborative European study of the acceptability of the American proposals, the Chief Secretary to the Treasury was adamant that the UK should not take any part at all in the post-Apollo programme. As Oliver Simpson, assistant to the Government Chief Scientific Adviser, wrote to the Lord Privy Seal, the argument was 'finely balanced' between the Chief Secretary of the Treasury who was 'afraid that an offer now will be used to wring from us a deeper commitment later on than would otherwise be the case', and Heseltine who claimed that the overarching aims should be 'to authorise him to make every effort to achieve a European agreement – while remaining within the agreed ceiling of

⁸⁰ CAB 165/1025, O. Simpson to Lord Privy Seal, 27 October 1971.

expenditure on space.’⁸¹ The balance was again between an option acceptable to the Treasury dominated by economic concerns about future expenditure, and an option acceptable to the FO dominated by the potential foreign policy benefits at an initially small expense. In deciding which option to choose, the Cabinet were making a choice between policy favoured by the FO and DTI and policy favoured by the Treasury which would revive difficulties in between ELDO nations and the UK not seen since Wilson’s government.

While Heseltine had clear aims for a new organisation, his efforts, like Benn’s (see 3.6) were hampered by the existence of the previous one. Many members of the Cabinet saw Britain’s policy towards ELDO under Wilson as a low ebb in relations.⁸² By 1971 it was clear that negotiations for British accession were going smoothly and could be concluded by the target date of 1 January 1973, and although this lessened the importance of appearing to be ‘good Europeans’, Cabinet members were concerned that ‘Before we are full members of the Communities our “Europeanness” will be on test. We must recognise the importance to ourselves and to our future partners of unquantifiable “political” factors.’⁸³ In spite of many Cabinet minutes recording the unanimous desire of Ministers to pursue a ‘pro-European’ policy, different from that of Wilson’s governments, Ministers still made similar decisions based on similar priorities. ELDO, and potential European (and British) expenditure on an independent launcher was only viewed as only ‘important for political reasons’, whilst the UK’s promotion of satellite development

⁸¹ CAB 165/1025, O. Simpson to Lord Privy Seal, 02 February 1971.

⁸² CAB 134/3193, SCT(70) 1st Meeting, Ministerial Committee on Science and Technology, 20 July 1970.

⁸³ CAB 134/3450, SCT(71)20, Ministerial Committee on Science and Technology, ‘Science, Technology and Europe: Memorandum by the Chairman of the Official Committee’, 05 October 1971.

was seen as a 'hard headed approach' to avoid 'expensive technological white-
elephants'.⁸⁴ Heath's own attitude was that 'We ought to take these organisations
"by the scruff of the neck" and make sure that they did useful work.'⁸⁵

In spite of the lip-service to 'Europeanness' paid by Ministers and the Prime
Minister, economics triumphed: 'The United Kingdom's policy on space rests on the
premise that there will be a user requirement for every project', and noted that
'Good policy cannot be built on bad projects.'⁸⁶ The idea that ELDO was not a good
project was thoroughly evidenced by the continuing difficulties with the launcher,
which pushed the potential date for completion further and further back from the
original estimation of 1969 beyond 1971.⁸⁷ However, such a statement would not
have been out of place under Wilson, and that the Heath Cabinet concluded so
strongly in favour of economic rationale over foreign policy gain is indicative of the
small differences between their policy aims. In spite of the pro-European aims of
Ministers, and Heath in particular, economics were still undermining efforts to play
a positive part in discussions on European space research.

Even in preparation for the key meetings between Heath and French President
Pompidou, which were seen to be an opportunity to display and test British
'Europeanness' for both men, ELDO was regarded as a negative topic which was
best avoided. Planning for Pompidou's meeting with Heath in May 1971, the

⁸⁴ CAB 134/3450, SCT(71)20, Ministerial Committee on Science and Technology, 'Science, Technology and Europe: Memorandum by the Chairman of the Official Committee', 05 October 1971.

⁸⁵ PREM 15/635, 'Black Arrow and European Collaboration in Science and Technology', 26 July 1971.

⁸⁶ CAB 165/1025, O. Simpson to Lord Privy Seal, 26 January 1972; CAB 134/3450, SCT(71)20, Ministerial Committee on Science and Technology, 'Science, Technology and Europe: Memorandum by the Chairman of the Official Committee', 05 October 1971.

⁸⁷ Krige, 'The Long Struggle to Adopt a Balanced European Space Programme'.

Chancellor of the Duchy of Lancaster, Geoffrey Rippon, had told Foreign Office officials that it would be dangerous for the Prime Minister to commit himself finally to a meeting with President Pompidou until he was satisfied that the meeting had 'reasonable prospects of a successful outcome.'⁸⁸ As such, the agenda for the meeting was to be 'carefully prepared bilaterally with the French', and should stick to the major issues of concern for the European Community negotiations – involving other fields as much as possible.⁸⁹

Briefs prepared for the Prime Minister insisted that he keep away from discussing science and technology issues at all costs, but noted that President Pompidou had surprised West German Chancellor, Willy Brandt with a series of questions about 'European Space Programmes'.⁹⁰ Whilst in the event it was not mentioned by either leader, Heath was still well-prepared in case the topic of Britain's attitude to ELDO should be discussed as an aside. The brief, suggested that if the topic was unavoidable Heath might say that 'We still hope that we can negotiate adequate launching facilities for all European satellites from the US'.⁹¹ Given that such an approach hardly served to accentuate Britain's image as a European nation, it seems clear that, as with the first Wilson government, policy towards ELDO was not initially seen as a field which should be regarded by Ministers in the UK or Europe as a test of British 'Europeanness'.

⁸⁸ C.C.C. Tickell to P.J.S. Moon 07 April 1971

⁸⁹ C.C.C. Tickell to P.J.S. Moon 07 April 1971

⁹⁰ FCO 33/1377, PMVP(71)9, Visit of the Prime Minister to Paris, 19-21 May 1971: Anglo-French Technological Relations, 14 May 1971

⁹¹ FCO 33/1377, PMVP(71)9, Visit of the Prime Minister to Paris, 19-21 May 1971: Anglo-French Technological Relations, 14 May 1971

Given the weighting of priorities towards protecting the economy, the Heath government were careful not to enter into any new commitments that they were unsure of, and were critical of the way in which ELDO was operating. Britain was contributing nothing to ELDO (other than the guarantee that Blue Streak would be available) and as voting rights were based on monetary contribution could not affect the continuing programme to establish a Europa launcher. Although Ministers waited until British accession to the European Community was all but assured after 1971, there was little purpose in continued membership of ELDO, and they agreed that Britain should withdraw by the end of 1972.⁹² With the withdrawal of UK funds from 1969 onwards, ELDO found itself far more limited in budget than it had previously. Even though severe budgetary cuts had been made, the voting arrangements and the complex way in which the organisation functioned (see Chapter 2) limited the extent to which research was able to continue without a full set of paying members.

As debate continued about the shape of a united European space organisation, the ELDO nations embarked on a further re-shaping of the programme, with the commitment to develop the ELDO launcher into a more coherent project under a Franco-German consortium.⁹³ Such a change presented the UK with the opportunity to withdraw, taking a similar recourse to withdrawal as had been tried under the Wilson government, namely that 'the programme to which we agreed was so changed as to constitute a different programme, and that we are therefore legally

⁹² AVIA 92/259, R. Arculus to A. Goodson, 08 November 1972.

⁹³ M. Ince, *Politics of British Science*, (Brighton, 1986), p.140; Krige, 'The Long Struggle to Adopt a Balanced European Space Programme'

entitled to withdraw.⁹⁴ The government announced that it would fully withdraw from ELDO, effective from 1st January 1973, the same day that it would join the European Community. However, as with the Wilson government's attempts to withdraw, French officials immediately informed British representatives 'informally that they are prepared to press the question to arbitration.'⁹⁵ Even the Attorney General still believed that 'that our prospects of success are not better than an even chance.'⁹⁶ Just as previously, the government reversed its decision, and at the 1972 ELDO Council meeting, representatives announced the 'deferment' of British withdrawal until a united organisation could be formed.⁹⁷ The Heath government clearly did not choose to withdraw from ELDO because it would highlight the government's pro-European policy, and it only remained in the organisation because it was legally impossible for it to leave. Indeed, as plans were still in flux as to the future of ELDO (see below), there was little need to withdraw at all. Heath, the pro-European Prime Minister had presided over nearly two years of meetings which had arrived at this policy, and, unlike with Black Arrow, had not intervened to bring the policy in line with his views on improving Anglo-European relations.

In this section I have shown that Heath and his Cabinet were not pro-European at any cost. There was a distinct priority for economic concerns and the waste of expenditure that ELDO represented weighed more heavily with Ministers than any

⁹⁴ AVIA 92/259, Douglas Home to Brussels, 22 December 1972.

⁹⁵ AVIA 92/259, Douglas Home to Brussels, 22 December 1972; FO 94/267, A. Goodson to H. V Richardson, 'Denunciation by the United Kingdom of the Convention of 29 March 1962 for the Establishment of a European Organisation for the Development and Construction Space Vehicle Launchers', 25 September 1972,

⁹⁶ AVIA 92/259, H.G. Darwin to J.B. Loebell, 06 December 1972; FO 94/267, A. Goodson to H. V Richardson, 'Letter of 28 December 1972 deferring the entry into force of the Denunciation', 28 December 1972,

⁹⁷ AVIA 92/259, J.B. Loebell to AS Space, 08 January 1973.

desire to appear pro-European. Just like Benn, Heath's Cabinet believed that a 'hard headed approach' to European space collaboration would be well-received and convinced themselves through repeatedly affirming their desire to be pro-European, that they were following a pro-European policy. In fact Heath's Cabinet and Heath himself chose a policy which would put them at odds with their European partners. Although the main drive for a positive approach had come from the Foreign Secretary, Michael Heseltine began to take a more active approach in directing policy on ELDO, and in doing so provided a valuable ally, lending the Foreign Secretary's views much needed support in a relatively hostile environment.

4.4 Replacing ELDO with a new organisation

In the official history of the European Space Agency (ESA) by Krige, the UK appears to play a very limited role in its formation between 1972 and 1974.⁹⁸ As the UK's contributions to ELDO were nil, and it was in the process of withdrawing fully from the organisation, this is perhaps not surprising. However, as decisions about the new unified Agency were taken by the Ministerial level ESC, this allowed Heseltine to make his mark (something which he believes he achieved).⁹⁹ While European nations were attempting to find a way of funding launchers and satellites through the same Agency without introducing long term contracts, or pricing the organisation out of the reach of the many small nations who had been involved in

⁹⁸ Krige and Russo (eds.), *History of the European Space Agency: Volume 2*.

⁹⁹ J. Krige and A. Russo (eds.), *A History of the European Space Agency 1958-1987: Volume 1 The story of ESRO and ELDO 1958-1973*, (Noordwijk, 2000); M. Heseltine, *Life in the Jungle: my autobiography*, (London, 2000).

ESRO (such as Switzerland), the inherent difficulty in funding two strands of research with such different costs within the same organisation and a clear set of manageable rules proved very difficult. Indeed, the rules that were eventually agreed were complex, involving a rolling five year financial envelope with a provisional three year ceiling on costs, all of which was renewed every three years.¹⁰⁰ This fiscal complexity, and the fact that the suggested contributions set smaller nations against France, Germany and Italy, meant that the UK position at the ESC (as a large nation, firmly against expenditure on launchers) would be vital in resolving the situation.

The small number of civil servants (at this time no more than five or six) led Heseltine to believe that space policy was, at the time a 'sleepy backwater buried in the DTI' which needed his personal direction.¹⁰¹ Of course, there was also the political motivation, that should Heseltine appear to resolve the question of British participation in space he would be viewed as a successful man of action, rather than a Minister content to accept the situation he inherited. At the 1973 ESC, Heseltine played an enthusiastic role, promoting the government's plan to take a leading part in satellite research, whilst avoiding launcher costs if at all possible.¹⁰²

Heseltine's plan for a future space organisation, which aimed for the combination of ELDO, ESRO and CETS, took the same basic approach as many others had done throughout the late 1960s (although with little success, owing to the crises caused

¹⁰⁰ CAB 134/2652, CSC(70) 20, Communications-Electronics and Space Committee, 'European Space Conference: The Report of the Committee of Senior Officials: Note by the Ministry of Technology', 15 June 1970.

¹⁰¹ M. Godwin, 'Interview with Michael Heseltine', *Oral History of Europe in Space*, p. 6, <http://archives.eui.eu/en/files/transcript/16000?d=inline> [accessed, 31/03/2016].

¹⁰² Krige et al, *Europe in Space*, p.111.

by repeated failed launches and Britain's attempts to withdraw). Just as Britain had questioned the purpose of ELDO, other nations had also questioned the purpose of the overlapping yet uncoordinated nature of the whole European space effort. By 1971, ELDO was producing launchers which were far too large for ESRO satellites, yet underpowered for CETS' plans for communications satellites. All of the organisations were duplicating research in some areas (notably in communications), and expenditure for all of the organisations had increased beyond predicted costs.¹⁰³

Throughout the late 1960s and early 1970s ESRO had developed from launching basic studies of the upper atmosphere to engaging in the fields of communications and remote sensing (i.e. meteorology).¹⁰⁴ Satellites for these purposes would need to be launched into a geosynchronous orbit, and would be much larger than previous satellites. As such ESRO requirements would begin to compete with CETS and would be beyond the capability of ELDO's Europa launcher. Whilst a key group of nations (France, West Germany, the Netherlands and Belgium) were still eager to develop launcher technology, the majority of the member nations of ESRO which included politically neutral nations like Switzerland and small nations like Luxembourg and Denmark, did not want to take part in launcher research (due to its links to military technology, and its expense).¹⁰⁵ This division between the member states had prevented earlier attempts to unify ESRO, ELDO and CETS, as no acceptable formula could be arrived at to fund an organisation, which would,

¹⁰³ See, J. Krige and A. Russo, *A History of the European Space Agency 1958 – 1987 Volume II*, (Noordwijk, 2000), pp. 289; 337-368.

¹⁰⁴ Krige, *European Space Agency Volume 1*, pp. 254-327.

¹⁰⁵ See, J. Krige and A. Russo, *A History of the European Space Agency 1958 – 1987 Volume 2*, (Noordwijk, 2000), pp. 1-33.

ideally, provide launchers with the right capabilities to launch technologically advanced satellites.

Indeed, this was the major issue. Although nations found it relatively easy to agree what would be researched (maritime navigation satellites, launchers, and a small German contribution to the post-Apollo programme) working out how much research would be conducted in each nation, and how much each nation would pay (gross and net) was complex.¹⁰⁶ Aware that attempts to avoid the ELDO Common Charge had failed, Heseltine did not attempt to exempt the UK from making any contribution to launcher research. Instead, knowing that funds for satellite research were sanctioned by the Treasury, Heseltine negotiated a British contribution which would be acceptable. He described his achievements to Cabinet:

... we have now achieved in the ESA a framework for a common European space programme, we have established procedures for bringing national activities into the common European programme, we have obtained a major role for the UK in a new European satellite development programme, and we have offset our contribution – at less than the GNP rate – to other programmes of lesser interest to us [launchers] by attracting an equivalent sum of money from our partners into the satellite programme [which would be spent in the UK]. In the course of arriving at this package deal a new spirit

¹⁰⁶ Krige, *History of the European Space Agency Volume 1*.

of cooperation has become apparent in Europe which offers the hope of longer term gains in industrial efficiency as well as in technical knowledge.¹⁰⁷

Heseltine's stance effectively neutralised long-running Treasury opposition to involvement in space expenditure by guaranteeing a financial return on any investment in launcher technology (meaning all funds were in effect allocated to satellite research). After years of British intransigence and threatened withdrawal, his offer of collaboration and compromise appeared well-intentioned to the other nations involved. With the enthusiastic support of Douglas-Home Heseltine had been able to successfully negotiate a truly pro-European policy through the national and European decision-making processes.

In this section, I have shown how Heseltine acted to make the case for British membership of a reformed European Agency. By taking the initiative on a policy which had largely been ignored by Ministers and his officials, Heseltine was able to shape policy independently. Heseltine's shaping of the presentation of policy around the limits set by the Treasury on expenditure on launchers meant that for the first time since Thorneycroft, Ministers announced policy with the expectation of friendly discussion with European partners rather than the expectation of dismay and anger.

¹⁰⁷ CAB 134/3693, SCT(73) 7, Ministerial Committee on Science and Technology, 'Ministerial European Space Conference: Memorandum by Minister for Aerospace and Shipping', 15 October 1973.

4.5: Conclusion

In this chapter we have seen how the Heath government's attempted 'quiet revolution' of government directed its approaches to British space research.

Authors such as Ball and Seldon, and Holmes seek to explain this by noting the difficulty of the economic circumstances of the Heath government limiting attempts to pursue 'new' approaches. However, I have shown that the 'revolution' Heath proposed was not as revolutionary as it might have sounded whilst he was in opposition.¹⁰⁸ The lack of knowledge the Opposition has concerning the management of government led Heath to conclude greater weight should be placed on economic analysis in decision-making. Due to the conventions regarding the discussion of previous governments' policies, politicians were highly reliant on their officials for information, who recycled knowledge from the previous government. This recycling of knowledge from the Wilson government to the Heath government shows us that many of the major changes announced by Heath in fact represent a great level of continuity with his predecessor's administration. Such continuity highlights the role of civil servants in shaping and framing advice to Ministers and demonstrates the long-lived role of civil service advice in reform and policy-making.

This chapter has highlighted the role of individual civil servants in the policy-making process. In the case of Black Arrow, Goodson was able to influence policy to a great degree. Holt has suggested that some officials carry 'more weight than Ministers.'¹⁰⁹

In this case, Goodson was able to adapt the rhetoric of his case for retention (or

¹⁰⁸ Ball and Seldon, *The Heath Government, 1970-74: A reappraisal*; Holmes, *The Failure of the Heath Government*.

¹⁰⁹ . Holt, 'No more Hoares to Paris': British foreign policymaking and the Abyssinian Crisis, 1935', *Review of International Studies*, 37(3), (July 2011), p. 1389.

cancellation) under the Wilson and Heath governments, and was adept at constructing memoranda that would provide Ministers with the information to argue successfully at meetings for his preferred course of action, whilst discounting alternative options proposed by others. Although, from 1968, Goodson was crucial in ensuring Black Arrow was retained as an insurance policy, by 1971 the failure of the launcher was the spark for change. Goodson argued that if the UK would have to capitalise on its experience in satellite construction to acquire a share in the growing communications satellite sector, then an active choice would need to be made to redirect rocket research funds to further satellite research. Far from showing a programme abandoned by inevitable British decline, a focus on the individuals making policy reveals an active choice being made to direct research funding to a new project. Black Arrow was cancelled because in a changing technological context satellite research was more attractive, not because no funds were available.

Although Heath directed policy personally at times (represented by his embargo on the decision to cancel Black Arrow) he did not direct British policy on ELDO. On the surface Heath's interventions seem to confirm the general consensus that he was a committed pro-European.¹¹⁰ Although it was accepted by Ministers that policy towards ELDO would be seen as representative of the seriousness of their approach to Anglo-European relations more generally, the policy of his government towards ELDO continued in a similar vein to that of his supposedly less pro-European predecessor Harold Wilson. British withdrawal from ELDO was overturned, not by

¹¹⁰ Ball and Seldon (eds), *The Heath Government 1970-1974: A Reappraisal*; Gowland and Turner, *Reluctant Europeans*; Lord, *British Entry to the European Community*; Young, 'Britain and the EEC, 1956-73: An Overview'.

Heath's intervention, but after the reaction of European partners forced a reconsideration. Although far more Cabinet time was taken up discussing policy towards ELDO, and Ministers insisted that they should engage in a pro-European policy, the actual policy arrived at was little different from that of Wilson's government. It is, in fact, easy to suggest that prior to 1973 Heath's approach towards ELDO was just as un-European as Wilson's. Much like Wilson, while Heath and his Ministers may have been avowedly for British membership of the European Communities, this did not automatically mean that policy towards ELDO was positive at any financial cost.

The situation after 1973 is, however, markedly different. The appointment of Heseltine, who saw the negotiations over the successor organisation to ELDO as an opportunity to make his mark on policy instigated a notable shift in the government's stance. Rather than merely discussing how the UK could present itself as a committed European internally, Heseltine formulated a policy which would reduce Treasury opposition to commitments to large organisation whilst playing an active and constructive role in European discussions. Without Heseltine's determination to achieve a compromise solution, Heath and his government, would in retrospect, appear distinctly less pro-European in its approach to ELDO, and hardly the European crusader authors such as Gowland and Turner suggest.¹¹¹

¹¹¹ Gowland and Turner, *Reluctant Europeans*, p.168; Young, 'Britain and the EEC', p.109; Crowson, *At the heart of Europe?*, p.37

Conclusion

This thesis has charted the decisions to engage in and eventually withdraw from involvement in research on the Black Arrow and ELDO satellite launchers between 1960 and 1973. It centred upon three research questions. Firstly: who makes decisions, and how are these decisions made? Secondly, do decision-makers form alliances to ensure favourable outcomes, and if so, how do those alliances operate and how do they influence the decision-making process? Finally, what priorities shaped the decisions made in this period, and what do they tell us about the broader priorities of governments. I will show how I have addressed these three questions before focusing on an outcome of this thesis – that cancellations do not necessarily support suggestions that Britain was in decline in this period. Finally I will discuss the limitations of this thesis and suggest avenues of further research.

Who was in control of policy-making at any given time is difficult to assess.

However, I have attempted to follow the priorities which affected the decision-making process from their beginnings to their use in the formation of policy. Such influences come from all levels of government, Prime Ministers, Ministers and civil servants working alone and in concert to achieve policy aims reflecting their personal and departmental interests.

I have shown that there is a distinct role for Prime Ministers in this decision-making process. However, as Donoghue suggests, this role is mainly in late-stage

interventions.¹ As shown in Chapter 2 Wilson's intervention to alter the British stance at the 1966 ELDO conference led to a change in policy from withdrawal to pushing for a reduced contribution. In Chapter 4 Heath's intervention sought to prevent the decision to cancel Black Arrow from affecting Anglo-European relations, delaying any decision from being implemented until he had received further advice from Ministers. This role is one which seeks to prevent or delay rather than dictate, and shapes rather than directs decision-making. Neither Prime Minister drastically altered the policy position, and both occurred very late in the policy-making process; Wilson's after the delegation had left for the Conference, and Heath's after the decision to cancel had been approved in Cabinet. The timing of such Prime Ministerial intervention suggests that Donoghue is right to categorise them as low-quality and haphazard and unhelpful for Ministers who have by contrast often spend months arriving at such positions.²

By contrast, Ministerial decisions have been shown to be of an initiating rather than preventing or delaying intervention. As discussed in Chapters 1, 3 and 4, Ministers such as Thorneycroft, Amery, Benn and Heseltine initiated and pursued policies leading to the creation of ELDO, and Black Arrow, attempted to define the ETC, and assured British membership of future European space organisations. In order to do so Ministers attempted to ensure that their advice was central to decisions taken in Ministerial committees, something which was reliant on the formation of alliances of common interest between Ministers. What these alliances are, and how they work will be discussed in detail below, however, there have been many instances

¹ B. Donoghue, *Prime Minister: The Conduct of Policy Under Harold Wilson and James Callaghan*, (London, 1987), p. 6.

² Donoghue, *Prime Minister*, p. 6.

where the formation of alliances between Ministers and between Ministers and external actors has been vital in the success of Ministerial initiatives.

The continuance of Thorneycroft's negotiations for the formation of ELDO was, in part, made possible by the support of Ministers such as Edward Heath and Duncan Sandys who continually supported Thorneycroft's efforts in Cabinet, even as the delay in the formation of ELDO began to appear embarrassing to the Prime Minister. By encouraging support from Airey Neave and the Conservative Parliamentary Group for Space, Amery suggested that the formation of Black Arrow was not solely his priority. In pursuing British withdrawal from ELDO (in Chapter 3) Benn was supported by Ministers who shared his view that the elaboration of ETC proposals would distract from the withdrawal, and that it would not affect the quality of Anglo-European relations. Meanwhile, various Chancellors of the Exchequer who opposed expenditure on ELDO and Black Arrow, and Stewart the Foreign Secretary who opposed withdrawal from ELDO, held these positions alone, and were unable to prevent either course of action.

Of course, even at Ministerial meetings, Ministers are dependent on their officials for advice and information. As Jenkins and Gray, and Kaufman (amongst others) suggest, this reliance gives civil servants a large amount of influence over Ministerial discussions.³ I have shown how officials can shape the policy decisions made, through the framing of options from which Ministers can choose. In Chapter 1, the

³ G. Kaufman, *How to be a Minister*, (London, 1997), pp. 30-33; A. Gray and W.I. Jenkins, *Administrative Politics in British Government*, (Brighton, 1985); M.J. Smith, D. Marsh and D. Richards, 'Central Government Departments and the Policy Process', *Public Administration*, 71(4), (Winter, 1993); K. Theakston, *Leadership in Whitehall*, (Basingstoke, 1999).

way in which officials framed the three options of cancellation, cold storage and conversion (and even their choice of those three options at all) limited and directed the choice which Ministers could make. This relationship is not completely asymmetrical, however, and Ministers are free to reject the advice given to them by civil servants. In Chapter 2, Ministers rejected advice from civil servants which suggested that withdrawal from ELDO would be illegal, and continued to reject suggestions that withdrawal would damage Anglo-European relations.

Ministers and civil servants are not however, constantly fighting against each other for supremacy in the decision-making process. Throughout this thesis I have shown how Ministers and civil servants can cooperate to achieve shared aims, and how civil servants' knowledge of information, vital context and decision-making process can ensure success for a Ministers' preferred policy. This is most notable in Chapter 1, as Julian Amery sought to announce the Black Arrow programme before the 1964 General Election. The assistance of his civil servants to ensure that the programme was discussed in Cabinet without official consent, to begin a project study without Treasury approval, and to arrange an announcement without Cabinet consent ensured that the programme was announced months before the general election. Throughout, I have shown how combinations of Ministerial enthusiasm and civil service aims were vital in the initiation of British space policy.

However, as various authors have noted, Ministers are very busy and they do not all share the same levels of enthusiasm for all areas of their brief.⁴ Certainly Holt was right to suggest that in some cases, civil servants carry 'more weight than

⁴ Smith, Marsh and Richards, 'Central Government Departments'.

Ministers'.⁵ I have shown how a lack of Ministerial interest allows civil servants to shape, direct and formulate policy. In Chapter 3, we saw how Bullock undertook to prevent negative reviews of Black Arrow from reaching Ministers, ensuring that Ministers delayed decisions whilst they waited for civil service advice to reach them. In Chapter 4, Goodson was able to direct the decision to cancel Black Arrow from its earliest stages: initiating Penney's review of the project and developing briefs for his Minister (which were taken to Cabinet without modification and accepted). If Heath had not intervened – embargoing the decision for further discussion, the decision would have been Goodson's alone.

The fact that Goodson was able to enact policy with little reference to colleagues or any 'alliance' calls into question the use of such an approach in understanding decision-making, however, it is also clear that alliances were used by actors to achieve their aims (notably Ministers, as discussed above). Although I show that that officials' actions support similar aims it is occasionally a little much to call such actions a formal alliance. In Chapter 1, for example, MoA officials referred to the benefits of European collaboration in space on Britain's attempts to accede to the European Communities. Such arguments were designed to garner the support of FO officials, yet although the FO championed the formation of ELDO, and that support was assumed by MoA officials, it was not consistent.

As Latour states in his work, *Aramis: or the love of technology*, technologies can survive only as long as there is a significant network of actors willing to defend

⁵ A. Holt, 'No more Hoares to Paris': British foreign policymaking and the Abyssinian Crisis, 1935', *Review of International Studies*, 37(3), (July 2011), p. 1389.

them.⁶ Indeed, I argue that it is only when projects are being actively attacked that alliances of actors form in order to defend them. For example, in Chapter 1, Barratt suggested that Black Arrow should be paid for out of the Defence budget – in an attempt to provoke those officials into supporting its cancellation. In Chapter 2 Bullock and Goodson sought to include officials from PAU in order to increase their reputation for economic expertise and to defend against attacks from the economic departments. By the time Black Arrow was cancelled, only Twinn in RAE sought to defend it, with attempts to seek allies in the Ministry of Defence, too late to impact the ‘machine’ which ‘has taken over!’⁷ The Ministerial alliances described above were also primarily defensive, ensuring support if needed, rather than requiring support constantly. As such, whilst this thesis shows a less active role for alliances than authors such as Latour may suggest, this does not weaken their importance in ensuring certain issues became linked to the key priorities of governments.

In Chapter 1, I showed how the distribution of decision-making between officials and Ministers directed the way in which policy was made. The conversion of Blue Streak from a weapons project to a European satellite launcher was directed by civil service framing of options from which Ministers chose. Officials’ attempts to steer this policy by linking the creation of a European collaboration to Ministers’ aims of a rapprochement with the nations in the European Community prompted the formation of an alliance of Ministers who pursued its creation. While in this instance Ministerial interests were directed by civil service steers, in the case of Black Arrow political interest and departmental interests combined to save the

⁶ B. Latour (translated by C. Porter), *Aramis: or the love of technology*, (Cambridge, 1996).

⁷ AVIA 92/179, R.A. Lingard to AS/Space, 18 March 1971.

project from cancellation. Throughout various concepts of what ‘prestige’ was and how governments should attain it were debated at the departmental level – with FO officials suggesting it was attained through high-profile collaboration, and Treasury officials suggesting that it was attained through a strong economic position.

In Chapter 2, the economic situation inherited by the first Wilson government led to the rising prominence of economics in decision-making.⁸ Although attempts to create an economic policy-making rubric for Black Arrow passed control of the decision-making process to civil servants, Ministerial aims in doing so reflected the desire to understand and develop science and technology which was beneficial to economic growth. Such aims were taken up by Goodson and Bullock as defenders of the programme, especially in Goodson’s rebranding of the Black Arrow programme as the National Space Technology Programme – tying the project more firmly to Ministerial objectives. The prioritisation of the national economy continued in formulation of policy on ELDO, as Ministers sought to extricate the UK from commitments, in spite of advice from FO civil servants and Ministers. Although authors such as Parr and Young have suggested that Wilson’s government

⁸ P. Hennessy, *Whitehall*, (London, 1990), p. 431; J.W. Young, ‘Technological Cooperation in Wilson’s Strategy for EEC Entry’, in O.J. Daddow (ed.), *Harold Wilson and European Integration: Britain’s second application to join the EEC*, (London, 2003); D. Edgerton, *Warfare State: Britain, 1920-1970*, (Cambridge, 2006), pp. 266; 251; G. Ortolano, *The Two Cultures Controversy: Science, Literature and Cultural Politics in Postwar Britain*, (Cambridge, 2009)); R. Coopey, ‘The white heat of scientific revolution’, *Contemporary Record*, 5(1), (1991); R. Coopey, ‘Ministry of Technology 1964-70’, *Contemporary Record*, 5(1), (1991); R. Coopey, ‘Restructuring Civil and Military Science and Technology: the Ministry of Technology in the 1960s’ in R. Coopey, G. Spinardi and M. Utley (eds), *Defence Science and Technology: Adjusting to Change* (London, 1993).

attempted to improve Anglo-European relations, I argue that the prioritisation of national over diplomatic concerns cast this into doubt.⁹

Throughout Chapter 3, the distribution of decision-making continued to affect the policy developed. In the case of Black Arrow, a lack of Ministerial interest and knowledge permitted civil servants to direct policy-making. A growing divide between officials in SAB and RAE highlighted the weakening economic case for launchers and the growing economic case for the production of satellites in a changing technological context and the importance of alliances in defending projects under attack. Meanwhile, strong Ministerial opinions on the desirability of remaining in ELDO meant that official advice was disregarded. Benn's attempts to dictate an Anglo-European policy based on the economic assessment of projects to be undertaken by commercial companies rather than through state collaboration highlight not only his important personal role but, I argue, continue to highlight the high priority of the national economy. While Young notes that Wilson took British membership of the European Communities seriously, I have shown how Ministerial direction of policy towards ELDO tarnished the reputation of the government's Anglo-European policy as a whole.¹⁰

Chapter 4 contributes to the historiographical debate concerning the Heath government and its attempted 'quiet revolution' of the conduct of government.¹¹

⁹ H. Parr, *Britain's Policy Towards the European Community: Harold Wilson and Britain's World Role, 1964-1967*, (2006, Abingdon), p.9; H. Parr, 'Gone Native: The Foreign Office and H Wilson's Policy Towards the EEC, 1947-67', in O.J. Daddow (ed.), *Harold Wilson and European Integration: Britain's Second Application to Join the EEC*, (London, 2003), p.87; J.W. Young, *The Labour Governments 1964-70: Volume 2: International Policy*, (Manchester, 2003).

¹⁰ Young, *The Labour Governments*; Young, 'Technological Collaboration'.

¹¹ J. Bruce-Gardyne, *Whatever happened to the Quiet Revolution?: The story of a brave experiment in government*, (London, 1974); M. McManus, *Edward Heath: A singular life*, (London, 2016); M.

Heath was determined to replace what he saw as the short-termist policy-making of Wilson's government with the economic analysis of projects, and the creation of the Central Policy Review Staff (with its eventual report, establishing the customer-contractor principle) is seen as evidence of this new approach. However, this thesis shows that the extent to which Heath's policies can be distinguished from Wilson's is debateable. Until the appointment of Michael Heseltine, the policy of Heath and his Cabinet towards European collaboration on space research focused on the failure of the launcher and the cost of the organisation mirrored that of Wilson and Benn in chapters 3 and 4. Whilst there have been recent reappraisals of Heath's domestic policy, I show that Heath's government cannot be easily characterised as pro-European, and Heath himself cannot be seen to have been a pro-European at any cost. Individual officials again shaped and influenced policy on Black Arrow. Goodson convinced officials from other departments that the future potential for growth (and therefore for customers) of UK research was in the production of satellites and not launchers advised Ministers that the programme should be cancelled. Without the intervention of Heath, Goodson would have been the sole decision-maker in the process, as Ministers accepted his plans for cancellations without argument. The replacement of ELDO with ESA, and Black Arrow with an inflated satellite research programme, represent an active choice by officials and Ministers about the future direction of UK research rather than an acceptance of decline or defeat which traditional narratives might offer.

In establishing that the cancellation of Black Arrow represented an active choice on the part of decision-makers, one of the main outcomes of this thesis is its conception of cancellations. It is impossible to avoid cancellations in this history of British space research. From the very beginning of both the Black Arrow and ELDO projects key officials and Ministers were pushing for their cancellation, and the decisions taken to continue with both projects were constantly challenged at every stage by various alliances of actors across government with changing aims and motives. If declinist assumptions were to be borne out, then the eventual cancellation of these projects would have been due to an acceptance by decision-makers that the research was beyond reduced (or reducing) British financial and scientific capabilities. However, although financial concerns were of prime importance, they did not direct the cancellation of either project. The decision by Benn to pursue withdrawal from ELDO was motivated by the failure of the launcher and the convoluted way in which the organisation operated; whilst the decision to cancel Black Arrow, taken once by Heath's Cabinet, and once by Heath personally, was driven by a decision to redirect resources towards the rapidly growing field of satellite development. My research shows that the cancellation of projects does not provide evidence for a declinist narrative. Indeed the replacement of research on Black Arrow with an independent UK satellite programme and British involvement in the successor organisation to ELDO (the European Space Agency, ESA) led to increased expenditure over the next decade. Rather than being forced by economic circumstance to down-grade the UK's ability to undertake independent scientific research, decision-makers made active choices to undertake research in other fields which they believed would safeguard the UK's ability to remain a world power.

This research demonstrates that the tendency to assume that cancellations were decisions forced on governments by lack of money is incorrect.¹² Throughout this period governments made active choices to redirect research efforts to other fields, curtailing those which they deemed less vital. Whilst this did include the end of certain avenues of research it did not reduce the amount of research being undertaken and certainly did not reduce the level of expenditure on research and development as a whole. For example, the cancellation of the TSR2 led to greater expenditure on American replacements and a vast increase in expenditure on civil aircraft research and development).¹³ By providing a new frame of assessment for the examination of cancellations – with a focus on what happens after a project has been cancelled – this thesis shows us that cancellations are not only the end of research, but also the beginning of new projects and opportunities.

Throughout this thesis I have viewed the decision-making process as a lengthy one. Rather than focusing on the battles and interests of Cabinet Ministers and the Prime Minister, my approach recognises the importance of civil service advice in shaping and framing debates at Ministerial level. The conflicts of interest which occur at all levels of decision-making lead to a complex debate between actors who seek to maintain or change the priorities which affect policy-making. Actors at all levels sought to tie decisions made on an individual project with wider contextual aims and priorities, and in doing so steer the decision-making process. This approach highlights the importance of alliances and individuals in initiating and defending against shifts in policy-making priorities. In doing so, I have

¹² M. Walker, *Nazi science: Myth, Truth and the German Atomic Bomb*, (London, 1995).

¹³ D. Edgerton, *Warfare State*, pp.242-4.

problematized conceptions of prestige and identified a 'messier picture' of the policy-making priorities which led to decisions on British space research.

Avenues for future work: limitations and opportunities:

In choosing to highlight the British case, and the process of decision-making this narrative has put the decision-making process first, and attempted to uncover who influenced decisions, how, and what their priorities were. The limitations of this approach fall into two rough groupings and critiques: the bureaucratic politics critique, and the question of uniqueness.

Linked closely to concerns in economic policy, foreign policy, and science policy, space research occupied something of a unique place in the structure of government. Multiple departments had interests in the fruits of space research (not limited to the Ministry of Defence, Department of Education and Science, Foreign Office, Post Office, and Meteorological Office), yet policy was directed by a small number of officials in the Ministry of Aviation (and successors). In order to understand whether the complex interdepartmental relations and intertwining of domestic and foreign policy issues produced a unique policy-making environment, further research on other similar projects such as Concorde and TSR2 would be necessary. Indeed, to understand whether the cancellation of such projects can be seen as an active choice (rather than one forced on decision-makers by decline) would involve further study of cancelled projects such as Concorde, TSR2 or the Tracked Hovercraft.

As noted in the literature review, bureaucratic politics suggests that actors view other states as 'monolithic' and fail to understand the complexity behind their decisions.¹⁴ In its focus on British archival sources, and a narrative of British priorities and decision-making, this thesis also suffers to some extent from that weakness. The availability of a wide variety of archives in the five European nations participating in ELDO, and of a large European Space Agency Archive, highlight that there are certainly well-documented avenues of further research. Indeed, although this work drew on sources available from the National Archives of Australia, the large amount of sources available meant that there was no scope for a concerted effort to understand and explain Australian actions and priorities which would provide a distinctly forthright view of the collaboration undertaken. Although work solely using the European Space Agency Archive has been undertaken by Krige et al, the inclusion of national imperatives in this thesis highlights shortcomings in an over-reliance on organisational sources. Analysing the policy-making decisions and priorities of the European and Australian governments in undertaking space research collaboratively in this period will no doubt add further complexity to the narrative which this thesis has attempted to explain. Even maintaining a focus on Britain, there is much more work to be done on the inter-relation between policy approaches to the European space organisations which preceded the European Space Agency: ESRO, ELDO and CETS. Work done so far, including the present thesis, has analysed policies concerning these organisations separately, on account of the division of responsibility between the branches of British government – but it

¹⁴ K.R. Nossal 'Allison through the (Ottawa) Looking Glass: Bureaucratic Politics and Foreign Policy in a Parliamentary System', *Canadian Journal of Public Administration*, 22, (1979).

is clear that policies for each organisation were related and, in some politicians' minds, interchangeable.

Although this thesis ends with the establishment of large scale independent and European satellite research, no work has yet sought to analyse the history of these undertakings, even as the UK's indigenous space industries have become an important part of the UK economy (and one of the few to receive increasing government support after the introduction of austerity in 2010).¹⁵ Developing an historical account of British space policy post-1973 would include dramatic shifts in the balance of government and private initiative including the privatisation of the RAE's Space Department in 2001. New studies on these lines would thus provide new insight into the growth of private space industries in Britain in the twentieth and twenty-first centuries.

¹⁵ UK Space Agency, *The Size and Health of the UK Space Industry*, (London, 2014).

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