

# The British Response to SDI

edited by

Michael D. Kandiah and  
Gillian Staerck

CCBH Oral History Programme



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**CCBH Oral History Programme  
Programme Director: Dr Michael D. Kandiah**

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# **The British Response to SDI**

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**Held in the Chancellor's Hall, Senate House,  
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on 9 July 2003.**

**Chaired by Professor Sir Lawrence Freedman, KCMG, CBE  
Paper by Holger Nehring  
Seminar edited by  
Michael D. Kandiah and Gillian Staerck**

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**THE RT HON THE LORD** Lord Heseltine was Conservative MP for Henley 1974-2001. He

**HESELTINE, CH, PC**

was the Opposition Spokesman on Transport (1969), Parliamentary Secretary at the Ministry of Transport (June-October 1970); was Parliamentary Under-Secretary of State in the Department of Education (1970-72); and Minister for Aerospace and Shipping (1972-74). He also served as Secretary of State for the Environment (1972-83 and again 1990-92) and as Minister of State for Defence (1983-86). From 1992-95, he was the President of the Board of Trade, and from 1995 to 1997 he served as the First Secretary of State and Deputy Prime Minister. He has been the Chairman of *Conservative Mainstream* since 1998 and of the *Anglo-China Forum* since 1998. He published his memoirs under the title *Life in the Jungle* (2000).

**IAN KENYON**

Ian Kenyon has been Visiting Senior Research Fellow at the Mountbatten Centre since 1997 and is Joint Director of the Mountbatten Centre International Missile Forum. He served in the Diplomatic Service from 1974-95. He held various positions including First Secretary, UK Disarmament Delegation, Geneva, 1976-8; Assistant Head, 1982-3, and then Head of Nuclear Energy Department, Foreign and Commonwealth Office (FCO) 1983-5; Inspector with the Diplomatic Service Overseas Inspectorate, 1986-87; Deputy Leader of the UK Disarmament Delegation, Geneva, 1988-92; Leader of the UK Delegation in New York for the UNDC, 1989-92; First Committee, UNGA44 and 46; and, the Partial Test Ban Treaty Amendment Conference, 1991. In 1989 he represented the UK on the Chemical Weapons Ad-hoc Committee Working Group, and in 1993 took leave from the UK Diplomatic Service to serve as Executive Secretary of the Preparatory Commission for the Organisation of the Prohibition of Chemical Weapons in The Hague, 1993-97. His publications include: *Chemical Weapons in the Twentieth Century: Their Use and Their Control* (2000) and 'Dispute Resolution in Multilateral Arms Control' in Julie Dahlitz (ed.) *Peaceful Resolution of Major International Disputes* (1999).

**LORD POWELL  
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Lord Powell served in the Diplomatic Service between 1963 and 1983, with postings in Helsinki, Washington, Bonn and Brussels (at the Permanent Representation to the European Community). He served as Special Counsellor in the Rhodesia negotiations (1979-80). From 1983 to 1991 he was the Private Secretary to the Prime Minister. He has been the President of the China-Britain Business Council since 1998. Since 1995 he has served as a Trustee of the Aspen Institute and since 2002 as a Trustee of the British Museum.

**DR FRANK PANTON**

Frank Panton, a scientist, had been in Government service between 1953-83. His posts included: Technical Adviser to the UK Delegation to the Conference on the Discontinuance of Nuclear Tests, Geneva, 1959-61; Defence Attaché, British Embassy, Washington DC, 1963-67; Assistant Chief Scientific

Adviser (Nuclear), Ministry of Defence (MoD), 1969-75; Director, Propellants, Explosives and Rocket Motor Establishment (Waltham Abbey and Westcott) 1976-79; Director, Royal Army Research and Development Establishment, Fort Halstead, 1980-4. Post-retirement, Consultant to the Cabinet Secretary on Nuclear matters 1985-97; Consultant to MoD, as Independent Member of Nuclear Weapon and Nuclear Propulsion Safety Committees, 1984-99.

**SIR MICHAEL  
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Sir Michael was the Director of the Ditchley Foundation from 1992 to 1999. In 1954, he served as the Assistant Principal at the Air Ministry. From 1956 to 1958 he was the Private Secretary to the Parliamentary Under-Secretary of State for Air. In 1958, he was Principal at the Air Ministry. From 1962 to 1965 he served as Private Secretary to the Chief of Air Staff, and, in 1968, as an Assistant Secretary at the Ministry of Defence. From 1970-3 he served as Defence Counsellor at the UK Delegation to NATO. He was then an Under-Secretary at the Constitution Unit of the Cabinet Office, 1974-77. From 1977-81 he served as the Deputy Under-Secretary of State (Policy) at the Ministry of Defence, and served as Deputy Secretary (Industry) at HM Treasury from 1981 to 1982. From 1983 to 1988 he served as Permanent Secretary at the Department of Employment, and from 1988-92 as Permanent Under-Secretary of State at the Ministry of Defence. Sir Michael was a Visiting Professor at King's College, London, 1992-5 and again 2002-3, and a Public Policy Scholar at the Woodrow Wilson Center, Washington, DC (2000). From 1992 to 2001 he served as a Trustee of the Science Museum. His publications include: *Thinking About Nuclear Weapons* (1997) and *European Defence Co-operation* (2001).

**SIR JOHN WESTON, KCMG** Sir John joined HM Diplomatic Service in 1962. He served in the Office of the UK Permanent Representative to the EEC from 1972 to 1974 and was then Assistant Private Secretary to the Secretary of State for Foreign and Commonwealth Affairs. From 1977-78 he was a Visiting Fellow at All Souls, Oxford. From 1978 to 1981 he served as Counsellor in Washington. He was Head of the Defence Department of the Foreign and Commonwealth Office 1981-4 and Assistant Under-Secretary of the Foreign and Commonwealth Office 1984-5. From 1985-8 he was Minister in Paris. From 1988-9 he was Deputy Secretary to the Cabinet Office before serving as Political Director of the Foreign and Commonwealth Office from 1990 to 1991. From 1992-95 he served as Ambassador and UK Permanent Representative to the North Atlantic Council and UK Permanent Representative to the Permanent Council of the WEU from 1992 to 1995. From 1995 to 1998 he was UK Permanent Representative to the United Nations.

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# Citation Guidance

References to this and other witness seminars should take the following form:

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# Chronology

Prepared by Holger Nehring

- 1957 Soviet Union launches first satellite *Sputnik* and announces the development of the first intercontinental ballistic missiles (ICBMs).
- 1963 Limited Test Ban Treaty: nuclear tests, except for those underground, prohibited.
- 1965 US Secretary of Defense Robert McNamara announces doctrine of 'Mutually Assured Destruction': a strategic nuclear force had to be maintained that could deter by riding out surprise attacks and by inflicting unacceptable damage on aggressor.
- 1967 Outer Space Treaty: bans stationing of nuclear weapons in space.
- 1972 ABM (anti-ballistic missile) Treaty (amended 1974): prohibits USA or USSR deployment of more than ballistic missile defence (BMD) interceptors.
- 1972 SALT (Strategy Arms Limitation Talk) I Treaty.
- 1979 SALT II not ratified by US Congress in the wake of the Soviet invasion in Afghanistan.
- 1982 2 Oct US President Ronald Reagan announces the modernisation of the US strategic arsenal.
- 1983 23 Mar Reagan's 'Star Wars' speech: directs the military, scientific and industrial communities to undertake long-term research programme to 'achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles' => development of the Strategic Defence Initiative (SDI).
- Jun–Oct In wake of National Security Study Directive NSDD-85 (25 March 1983) and National Security Study Directive (NSSD) 6-83 (18 April 1983) two study groups are set up: (a) Defensive Technologies Study, led by Dr James Fletcher, sets the basis for SDI programme by concluding that 'powerful new technologies are becoming available'; (b) Future Security Study Group: examines role of defences in US security policy: - deployment of defensive systems can increase stability.
- Nov Soviet Union walks out of arms control negotiations.
- 1984 6 Jan Reagan reportedly signed National Security Decision Directive-119 authorising national research programme to assess and demonstrate the technological feasibility of intercepting attacking nuclear weapons.
- 7 Feb French President François Mitterrand expresses desire for co-operative 'European space community' as 'the most appropriate answer to the military realities of the future' at a luncheon offered by the Council of Ministers of the Kingdom of the Netherlands, the Hague.

	24 Apr	US Department of Defense directive establishes charter for the Strategic Defense Organization (SDIO) with a Strategic Defense Program (SDIP). Gives the SDIO broad responsibility to pursue research, co-ordinate and control various defence-related programmes that had previously been fragmented among the various services, defend the programmes before Congress, and make specific recommendations to the Secretary of Defense.
	22 Dec	The British Prime Minister and the American President agree on a statement regarding the British response to SDI at a Camp David meeting.
1985	Feb	German Chancellor Helmut Kohl 'strongly advises' participation in SDI at Munich security conference.
	20 Feb	Prime Minister Margaret Thatcher endorses the SDI before a joint session of the American Congress, expressing enthusiasm for the project and promising British support.
	15 Mar	Foreign Secretary Geoffrey Howe criticises BMD deployment in a speech at the Royal United Services Institute, London.
	Mar	Formal invitation for Allied participation in the SDI by US Secretary of Defense Caspar Weinberger.
	Jun	Meeting of NATO Foreign Ministers in Portugal – US gives up acquiring NATO endorsement for the SDI, facing strong French opposition.
	6 Dec	Participation agreement completed by Britain.
1986	Jan	Geneva arms reduction talks.
	11-12 Oct	Reagan and Soviet President Gorbachev meet at Reykjavik to discuss arms control issues.



# The British Response to SDI

Holger Nehring

University College, Oxford

American President Ronald Reagan's initiative to build a strategic defence system to protect the United States against incoming ballistic missiles was 'one of the most difficult defence policy issues a British government has had to grapple with since the Second World War'.<sup>1</sup> By aiming to develop a defence against nuclear weapons, SDI reintroduced into strategic debates an issue which had been shelved at the beginning of the 1970s – both because of the signing of the Anti-Ballistic Missile Treaty in 1972 and because of the small effectiveness of ballistic missile defences (BMDs) against a determined enemy. Although the topic of anti-ballistic missiles (ABMs) and BMDs had been on the agenda since the late 1950s, the aim of SDI was novel. The vision was to develop BMDs that could not only protect single nuclear-weapons silos or cities but which could protect the whole country from a nuclear attack. The aim was to develop ways and means of destroying hostile missiles by a series of attacks all along their flight path, from their boost phase after launch to their entry into the atmosphere above the United States of America. For this objective, so-called directed energy weapons, mainly working with lasers, could be used.

The SDI issue thus had enormous implications in terms of technological and financial resources. It also raised questions about the costs for US *conventional* forces in Europe.<sup>2</sup> And it threatened to damage US-Soviet relations further. The technological questions were difficult to assess. The combination of these concerns presented great problems for British foreign, defence and research and development (R&D) policies.

Most of the literature on SDI has discussed its likely impact on the arms race and on arms control.<sup>3</sup> However, the debate about SDI is one of the foremost examples of how politics, science and strategic thinking were *linked* during the Cold War. The purpose of this witness seminar is to shed some light on the details of this linkage by exploring the role which technological, political, and strategic factors played in shaping the British response to SDI. The aim of this paper is to give an outline of the most important developments involving SDI as a basis for the discussions and to formulate questions which might be addressed during the session. First, the paper gives an overview of the developments in the United States before giving a brief outline of the British response. It then draws out three areas which might be discussed in more detail: the relationship between science, technology and politics; the importance of strategic considerations; and the role of foreign and defence political factors in framing the British response to SDI.

## *US Developments*

In a televised speech on defence spending and defence technology on 23 March 1983 the American, President Ronald Reagan, announced his plan to 'embark on a program to counter the awesome Soviet missile threat with measures that are defensive'. He then encouraged his countrymen to 'turn to the very strengths in technology that spawned our great industrial base and that have given us the quality of life we enjoy today' in order to 'achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles'.<sup>4</sup> The proposal, which came as a surprise to

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1 Trevor Taylor, 'Britain's response to the Strategic Defence Initiative', *International Affairs* 62.2 (1986), pp. 217-30, here p. 217.

2 Paul Mann, 'Missile defense worries NATO', *Aviation Week & Space Technology*, 11 Mar. 1985.

3 Cf., for example, Raymond L. Garthoff, *The Great Transition. American-Soviet relations and the end of the Cold War* (Washington, DC, 1994), pp. 514-7.

many, both within and outside the Reagan administration and all over the world, soon developed into one of the most expensive research programmes which the United States launched in the twentieth century.

In the wake of two National Security Study Directives (NSDD-85 of 25 March 1983 and NSDD 6-83 of 18 April 1983), two study groups were set up. They worked from June to October 1983 to assess the technical viability and to investigate the strategic consequences of the project. The *Defensive Technology Study*, which was written by a team under the former director of NASA, Dr James Fletcher, concluded that 'powerful new technologies are becoming available'. This would make the development of the envisioned system of anti-ballistic missile (ABM) defences a viable option.<sup>5</sup> The second group produced the *Future Security Study*. It concluded that the deployment of defensive systems could only increase stability in the international system. On 6 January 1984, Reagan reportedly signed the National Security Decision Directive-119, thus authorising a large-scale national research programme to assess and demonstrate the technological feasibility of intercepting attacking nuclear weapons. In April 1984, the Pentagon established the Strategic Defense Initiative Organization (SDIO). The SDIO had a broad responsibility to pursue research, to coordinate and control various defence-related programmes which had previously been fragmented among various services, to defend the programmes before Congress, and to make specific recommendations to the Secretary of Defense. In particular, it was directed to follow the technology plan directed by the Fletcher panel and the policy outlined by Future Security Study. The Pentagon directive also mentioned the importance of full consultation with the Allies. In March 1985 US Secretary of Defense Caspar Weinberger indeed requested Allied participation in SDI. Yet, as early as June 1985, the United States gave up attempts to gain NATO endorsement of SDI in the face of strong French opposition. The issue of BMDs disappeared from public debates with the end of the Cold War, yet has reappeared with President George W. Bush's attempts from 2001 onwards to build a BMD defence for the United States.

### *The British Response*

Given the great implications of the programme for Britain's defence, foreign and technology policies, it is striking that the UK's initial response to Reagan's speech was remarkably subdued. Officially, the British government kept silent about the issue. The 1984 *Defence White Paper* did not mention SDI. At the same time, however, there were reports that members of the British government were not happy with the American President's speech.<sup>6</sup> Indeed, the Government avoided significant public comment for 14 months, longer than it took the Reagan administration to set up the SDIO. Margaret Thatcher recalls in her memoirs that SDI was a 'source of contention'.<sup>7</sup>

The first official British statement was a *communiqué* which the British Prime Minister 'hammered out', in her words,<sup>8</sup> at a meeting with the American President at Camp David on 22 December 1984:

I told the President of my firm conviction that the SDI research programme should go ahead. Research is, of course, permitted under existing US/Soviet treaties; and we, of course, know that the Russians already have their research programme and, in the US view, have already gone beyond research. We agreed on four points: (1) the US, and western, aim was not to achieve superiority, but to maintain balance, taking account of Soviet developments; (2) SDI-related deployment would, in

4 Speech on 'defense spending and defensive technology', 23 Mar. 1983, <[http://www.townhall.com/hall\\_of\\_fame/Reagan/speech/sdi.htm](http://www.townhall.com/hall_of_fame/Reagan/speech/sdi.htm)>

5 Quote: US Dept of Defense, *The Strategic Defense Initiative, Defence Technologies Study* (Mar. 1984), p. 4.

6 Ronald Koven, 'Europe expressing growing alarm over US "Star Wars" defense plan', *Boston Globe*, 30 Jul. 1984.

7 Margaret Thatcher, *The Downing Street Years* (London: HarperCollins, 1993), p. 468.

8 Michael Getler, 'Space Arms pose dilemma - quandary for Allies', *The Washington Post*, 5 Jan. 1985.

view of treaty obligations, have to be a matter for negotiation; (3) the overall aim is to enhance, not undercut deterrence; (4) East-West negotiation should aim to achieve security with reduced levels of offensive systems on both sides. This will be the purpose of the resumed US-Soviet negotiations on arms control, which I warmly welcome.<sup>9</sup>

On the whole, British policy towards SDI appears to have been clearer and more decisive about participation in the R&D programme than about the initiative as a whole. The UK's line was to give qualified support to SDI, while trying to exert a restraining influence on the American government. The aim appeared to have been to support SDI as a research programme, but to reject any plans for its deployment at least for the time being. After West German Chancellor Helmut Kohl had 'strongly advised' participation in SDI at the Munich security conference in February 1985, Prime Minister Thatcher endorsed SDI before a joint session of the American Congress on 20 February 1985 by expressing enthusiasm for the project and promising British support.

However, in March 1985, Geoffrey Howe, the British Foreign Secretary, gave a speech at the Royal United Services Institute in London which was, at the time, widely interpreted as a piece of thinly-veiled criticism of the British response of SDI.<sup>10</sup> Howe mentioned the dangers for the West which emanated from the Soviet R&D efforts to construct a more effective BMD system by replacing her old *Galosh* batteries around Moscow with more modern weapons systems. But he also stressed the importance of deterrence for international stability and raised questions about the programme's costs, its implications for European conventional defence, and the dangers of possible Soviet countermeasures. Like the other West European states, Britain ignored the 60-day deadline for responses to Caspar Weinberger's formal invitation to participate in SDI.<sup>11</sup> Yet, unlike her West European allies, Britain preferred to deal with the United States on a bilateral basis. The Ministry of Defence, in particular, was interested in achieving better terms for an agreement on technological exchange. The agreement was finalised on 6 December 1985, yet it remained unclear exactly how much Britain would profit from SDI.<sup>12</sup>

The **central question** which this witness seminar seeks to address is, therefore, which factors influenced the British response to SDI, how they interacted and, in particular, why the British government responded so cautiously to the initiative despite the otherwise apparently cordial personal relationship between Margaret Thatcher and Ronald Reagan. Analytically, we can distinguish three areas which should be covered: first, the role of science and technology; second, the role of more political considerations; and finally the role of strategy.

### *Science and Technology*

SDI was, in essence, one of the largest state-sponsored research programmes in the twentieth century, comparable to the Manhattan Project, which led to the development of nuclear weapons, and to the Apollo project, which was launched by American President John F. Kennedy to venture into space. Its aim was to determine whether the threat of ballistic missiles could be eliminated using primarily non-nuclear techniques.<sup>13</sup>

9 Thatcher, *Downing Street Years*, p. 468. Cf. also: *House of Commons debates* (Hansard), Issue 1331, 9 Jan. 1985, written answers, col. 441.

10 For the Howe statement cf. *Journal of the RUSI*, Mar. 1985, vol. 130, no.2, pp. 3-8. Cf. also: 'Howe underlines risks in "Star Wars"', *The Times*, 16 Mar. 1985, p. 5 and the subsequent criticism as 'mealy-mouthed, muddled in conception, negative, Luddite, ill-informed and, in effect if not intention, a "wrecking amendment" to the whole plan', 'Howe's UDI from SDI', *The Times*, 18 Mar. 1985, p. 13.

11 *The Times*, 18 Apr. 1985.

12 *The Guardian*, 5, 7 and 9 Dec. 1985.

13 Gerold Yonas, 'Research and the Strategic Defense Initiative', *International Security*, Vol.11 No.2 (1986), pp. 185-189, and: Harvey Brooks, 'The Strategic Defense Initiative as science policy', *International Security*, Vol.11 No.2 (1986), pp. 177-84.

This was particularly relevant for the United Kingdom. Margaret Thatcher stressed the role technical developments played for her response to SDI in her memoirs.<sup>14</sup> Here, the state and science were more intimately connected than in other West European countries. More than in other countries, science in Britain was a weapon in the Cold War. For the United States and the United Kingdom, the Cold War was 'an R&D war'.<sup>15</sup> The government's research establishments were thus not merely centres of research. They also offered technical advice to the government, both on the feasibility of projects and on possible contractors, as well as on the role of technology in future strategic planning. More than half of the government-funded R&D, and about a quarter of the national total, was funded out of defence budgets. This was particularly true for the 1950s and 1960s, but it remained so throughout the 1980s despite reductions in the Ministry of Defence's R&D staff.<sup>16</sup> Indeed, from the mid-1950s British research establishments were involved in developing defences against ballistic missiles, albeit without making use of laser technology at the beginning.<sup>17</sup>

The following **questions** arise from this overview:

- \* What role did technology play in framing the UK government's attitude towards SDI? More precisely: was British support for the technological side of SDI motivated by the perception of Soviet competition in the arms race, or by the desire to boost the economy by establishing SDI-related R&D?
- \* What role did scientists play in framing the perception of threat, by creating new threats through new technological developments?
- \* Margaret Thatcher recounts in her memoirs that, as Leader of the Opposition, she 'had had several briefings from military experts about the technical possibilities of SDI and indeed about the advances already made by the Soviet Union in laser and anti-satellite technology'.<sup>18</sup> How far did previous UK research predispose her to take part? Further, what earlier UK work was valuable to the US?
- \* What role did scientific advisors and advisory committees play?

### *The Political Response*

The second area which determined the British response to SDI was more purely political. In practice, it was inextricably linked to the technological considerations. Yet analytically it can be treated as a separate category. Reagan's unexpected announcement in March 1983 for a technological initiative to end nuclear deterrence by developing anti-ballistic missiles that were able to intercept and destroy incoming projectiles was not only a challenge to the British R&D efforts. It also challenged profoundly the parameters on which British foreign and defence policies had been based since the Second World War.

14 Thatcher, *Downing Street Years*, p. 463.

15 Robert Bud and Philip Gummert, 'Introduction: Don't you know there's a war on?', in idem (eds.), *Cold War, Hot science. Applied research in Britain's defence laboratories, 1945-1990* (London: Science Museum, 1999), pp. 1-28. Cf. also Jon Agar and Brian Balmer, 'British scientists and the Cold War: the Defence Research Policy Committee and information networks, 1947-1963', *Historical Studies in the Physical and Biological Sciences*, Vol.28 No.2 (1998), pp. 209-52, as well as Daniel Kevles, 'Cold War and hot physics – science, security, and the American state, 1945-56', *Historical Studies in the Physical and Biological Sciences* Vol.20 No.2 (1990), pp. 239-64.

16 Cf. Council for Science and Society (ed.), *UK Military R&D* (Oxford, 1986).

17 Cf. Stephen Twigge, 'Ground-based air defence and ABM systems', in Robert Bud and Philip Gummert (eds.), *Cold War, Hot Science. Applied research in Britain's defence laboratories, 1945-1990* (London, 1999), pp. 85-115, here pp.100-4.

18 Thatcher, *Downing Street Years*, p. 464.

Nuclear weapons have been essentially a symbol of great power status. Since the 1950s Britain pursued four more specific aims with obtaining operationally independent nuclear capabilities. They were lucidly summarised by the British Government as, in that order:

- (a) To retain our special relation with the United States and, through it, our influence in world affairs, and, especially, our right to have a voice in the final issue of peace and war.
- (b) To make a definite, though limited, contribution to the total nuclear strength of the West – while recognising that the United States must continue to play the major part in maintaining the balance of nuclear power.
- (c) To enable us, by threatening to use our independent nuclear power, to secure United States co-operation in a situation in which their interests were less immediately threatened than our own.
- (d) To make sure that, in a nuclear war, sufficient attention is given to certain Soviet targets which are of greater importance to us than to the United States.<sup>19</sup>

These four aims were threatened by Reagan's announcement of an SDI. Britain's deterrent has been dependent on US technology. It is thus no surprise that Prime Minister Margaret Thatcher felt 'nervous' when discussing the plans with Reagan in more detail.<sup>20</sup> From the early 1950s, Britain was informed in much greater detail than the other West European allies about changes in United States strategy. Yet subsequent developments show that Britain, as a post-imperial power, had problems in maintaining her great power status through nuclear weapons, while at the same time lacking the resources to participate fully in the arms race between the superpowers. Her own weapons programmes had, by that time, arguably become both expensive and obsolescent in the light of the superpower arms race.

This brought advantages for Britain's rapport with US decision-making. But at the same time it resulted in a great degree of dependence on American technology. When the United States cancelled the *Skybolt* programme, Britain did not possess her own workable strategic weapons system.

From the early 1960s onwards Britain possessed an operationally independent deterrent. It was equipped with American missiles which carried British warheads. This arrangement was established when the United States and Britain came to an agreement that the technological exchanges between the countries should be increased and when Britain's purchase of the *Polaris* missile system was agreed at Nassau in 1962. For smaller missions, Britain continued to rely on aircraft with free-fall bombs. However, Britain was essentially left with one strategic weapons system (*Polaris*) when the Valiant bombers were phased out due to metal fatigue in 1965, when the Victors were converted into tankers and when only the Vulcans were left for tactical missions. In 1980, the Conservative government under Margaret Thatcher decided to acquire the American *Trident* C4 missile system to succeed *Polaris*. The *Trident* system carried MIRVs (multiple independent re-entry vehicles) and would thus be better than *Polaris* at penetrating the ABM batteries around Moscow. In March 1982, in line with new US developments, the British Government announced the purchase of the *Trident* system's more modern version D5. Ronald Reagan's attack on what he regarded as offensive weapons thus came as a strong blow to the Government's whole new defence effort. SDI thus seemed to come as a blow to the \$13 billion modernisation programme of sea-based deterrent.

But this was not the only reason for the British government's nervousness. The possibility of obsolescence of the UK's own nuclear weapons threatened the Anglo-American relationship in more general terms and Britain's role in NATO (in particular to her European allies). There was a

19 The National Archives of the UK (TNA): PRO AIR 8/2400, 'Medium Bomber Force: Size and Composition'. 'Defence Board, The V-Bomber Force and the Powered Bomb. Memorandum by the Secretary of State for Air'. DB (58) 10, 29 Oct. 1958.

20 Margaret Thatcher, *The Downing Street Years* (London: HarperCollins, 1993), p. 466.

wide concern that Britain's role in NATO and, indeed, NATO itself could be damaged by SDI. From 1967 at the latest, European defence was the major British commitment. The purpose of the British deterrent was not so much to destroy Moscow, but as a contribution to NATO security. It was supposed to make the Soviet Union believe that the security of the United States and that of Western Europe were indivisible. The UK thus saw it as her mission to mediate between the US and Britain in NATO-related issues. SDI potentially threatened to undermine this role in two ways. First, it opened a gulf between American and West European security needs which was difficult to bridge. Second, it threw the United States's commitment to European security into doubt. Yet, in British thinking since the beginning of the Cold War, the credibility of a NATO response to a Soviet attack 'hinges mainly on the *solidarity* between the nuclear and non-nuclear members of NATO. This, in turn, depends largely on satisfying the non-nuclear members that, in a crisis, nuclear weapons will – or will not – be used in accordance with the needs of the alliance as a whole.'<sup>21</sup> This reasoning still dominated the British arguments in favour of acquiring the *Trident* missile system in order to replace *Polaris* in the 1980s: 'We need to convince Soviet leaders that, even if they thought that at some critical point as a conflict developed the US would hold back, the British force could still inflict a blow so destructive that the penalty for aggression would have proved too high.'<sup>22</sup> Britain was concerned that, if the Americans achieved invulnerability, they would lose interest for the protection of Europe, reduce their commitment of 200,000 troops and their contribution of about 50 per cent to NATO's military spending. The most important question which SDI raised for UK defence was whether Britain could still be expected to be protected by the US shield, given her proximity to the Soviet Union, while her own missile system would not be able to penetrate the Soviet shield and thus fail to function as a deterrent. Accordingly, Margaret Thatcher tried to persuade the American President that the Western Alliance had to avoid a situation where people were told that nukes were 'wicked, immoral and might soon be rendered unnecessary by the development of defensive systems'.<sup>23</sup>

Caught in the quandary between the traditionally cordial Anglo-American relationship and Britain's security interests, several central questions emerge:

'British officials, who had not been consulted in advance, were horrified...The basis hope was that, as the announcement had so obviously slipped through the policy filter, the machine would now correct the mistake and the plan would soon die out without a trace.'<sup>24</sup> Is this an accurate description of the Government's attitude towards SDI?

When did consultations with the American Government over SDI start?

What was the decision-making structure within the British Government? How important was the Prime Minister in determining the Government's response? How important were the views of the British scientific community in determining the Government's response?

In particular: Does Foreign Secretary Howe's speech at the Royal United Services Institute in March 1985 represent the Government's official line more honestly than Thatcher's Camp David statement?

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21 'Statement on the Defence Estimates, 1966' – Part II: 'Britain's military role', Cmd. 2901.

22 Defence Open Government Document 80/23.

23 Thatcher, *Downing Street Years*, p. 469.

24 Lawrence Freedman, 'The Small Nuclear Powers', in Ashton Carter and David Schwartz (eds.), *Ballistic Missile Defense* (Washington, DC: Brookings, 1984), pp. 272-3.

Reagan's criticism of 'mutually assured destruction' seemed to vindicate CND protesters. What role did the domestic political situation (particularly the extra-parliamentary protests against nuclear weapons) play in shaping the British response?

Was there the intention in the British Government to help the US President with his re-election by supporting SDI?

Were there any scenarios of how Britain should react, if SDI systems were actually deployed?

### *SDI and British Nuclear Strategy*

The British Government's response to SDI has, thirdly, to be understood in terms of the programme's implications for British nuclear strategy. Earlier than the United States, Britain had based her policies on a strategy of deterrence. Reagan's moral condemnation of the rationale behind this strategy was thus a major challenge to the post-1945 British way in warfare. With SDI, divergent security needs between the United States and Britain which had lain dormant from the 1970s onwards came to the surface.

While the United States still assumed a possible use of nuclear weapons in the early and mid-1950s, their most important function for British strategic thinkers was to deter the enemy from attacking by threatening him with a devastating counter-strike. Due to her limited arsenal of nuclear weapons, Britain developed the concept of 'nuclear sufficiency'. The concept meant that a minimum degree of threatened destruction would suffice to deter the enemy. The emphasis was on hitting important targets in the Soviet Union, particularly in Moscow ('Moscow criterion') rather than the enemy's nuclear forces. Nuclear sufficiency stressed counter-value rather than counter-force targeting.

British governments thus had to be worried both about arms control of their already small force and about the invention of weapons systems that could prevent the United Kingdom from fulfilling the 'Moscow criterion'. The first of these factors regularly came to the surface in the various arms control negotiations between the United States and the Soviet Union. With the minimal size of the British nuclear arsenals every further reduction was unacceptable to the UK. When the United States and the Soviet Union signed an agreement on the prevention of nuclear war in 1973 alarm bells rang again in London. It is similarly not surprising that Margaret Thatcher claimed that she felt an 'earthquake beneath my feet' when she heard how far the American President was prepared to go in strategic arms reduction talks with Gorbachev in Reykjavik in 1986.<sup>25</sup>

British governments also had to worry about the possible deployment of ABM systems in the Soviet Union. There had been attempts in the Soviet Union to build ABM systems since the early 1960s. The fear in Britain was that these systems could possibly prevent the small British force from destroying their targets. To Britain's great relief, ABMs were virtually abandoned due to the ABM Treaty of 1972.<sup>26</sup> From then onwards, mutual deterrence had become the undoubted bedrock of the strategic relationship between the United States and the Soviet Union and a basis for pursuing political measures to avoid war. Implicitly, ABMs were regarded as destabilising factors in the international system.

Yet SDI put ABMs back on the agenda. By launching SDI, the United States sought to develop ABMs that would not only protect the silos of intercontinental ballistic missiles or cities, but the whole country. The aim was to develop a means of destroying hostile missiles by a series of attacks all along their flight path, from their boost phase after launch to their entry into the atmosphere

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<sup>25</sup> Thatcher, *Downing Street Years*, p. 471.

<sup>26</sup> Cf. the chronology.

above the United States. The programme itself, as well as the feared Soviet response of entering into an ABM race with the USA, threatened British strategic thinking in its foundations.

When the Soviets had continued to improve their ABM defences around Moscow in the late 1970s, Britain tried to overcome the threat to her strategy of deterrence and to maintain the 'Moscow criterion' by improving its strategic weapons systems with the purchase of *Trident* from the USA. The United State's response to the upgrading of ABMs around Moscow, however, threatened British strategy. Reagan's SDI speech challenged the logic of deterrence and claimed to emphasise the defence and security of the American population. The possible deployment of the advanced ABM envisioned by SDI thus threatened that the British deterrent would become obsolescent. The gradual erosion of the rationale behind the ABM Treaty, the British government feared, could erode the viability of deterrence.

This gives rise to the following questions:

Was SDI a major shift in US strategic philosophy or were there other motivations for this initiative?

How did the British Government evaluate the impact of SDI on arms control negotiations and how far did this differ from the US position?

How did foreign and defence related issues, strategic, and technological factors interact in framing the British response to SDI?

What was the role of science and technology in framing the British response? In particular, how far did scientists participate in framing British threat perceptions? In what ways were scientists influenced by the Cold War background?

What expertise did the UK have to contribute to SDI?

Did disagreements within the Government influence decision-making at the time?

Were there consultations between the United Kingdom and her European allies, in particular within NATO?

What was the perception of the Soviet threat at the time?



# The British Response to the Strategic Defense Initiative

Edited by  
**Michael D. Kandiah and Gillian Staerck**

This witness seminar on the British response to the Strategic Defense Initiative was held on Wednesday 9 July 2003, 3 p.m. to 6 p.m. in the Chancellor's Hall, Senate House, University of London.

**PROFESSOR SIR  
LAWRENCE  
FREEDMAN**

I think, ladies and gentlemen, that we should start. I am going to ask Holger Nehring to explain what we are doing and get it started.

**HOLGER NEHRING**

Since Oct. 2003 known as the Centre for Contemporary British History.

On behalf of the Institute of Contemporary British History\* I would just like to thank everyone, particularly the participants, for coming along to our witness seminar today on the British response to the Strategic Defense Initiative. Before I start by giving a very short overview over the main events, I will say some things about the procedure. I would like to remind the witnesses that the sessions are going to be recorded and then later transcribed, and in the end they will be published. Before publication all the witnesses will get the opportunity to see the transcript and to make corrections or amendments. I would also like to welcome the audience. If you would like to get involved in the discussion and ask any particular questions you are very welcome to do so, but please do identify yourselves. A microphone will be provided to you and it is important that you identify yourselves because otherwise it is going to be very difficult to keep track of who says what later when we are transcribing the proceedings. Now I will give a very short overview of the main issues involving the British response to the American Strategic Defense Initiative. American President Ronald Reagan's\* initiative to build a strategic defence system to protect the United States against incoming ballistic missiles was, in the words of a contemporary commentator, 'one of the most difficult defence policy issues a British government has had to grapple with since the Second World War'. Although the topic of anti-ballistic missiles and ballistic missile defences had been on the agenda since the late 1950s at least, the aim of SDI was novel. The vision was to develop anti-ballistic missiles that could not only protect single nuclear weapons sites or cities, but which could protect the whole country from nuclear attack. The aim was to develop ways and means of

Ronald Reagan (1911-2004), American politician. President, 1981-9.

destroying hostile missiles by a series of attacks all along their flight path, from their boost phase after launch to their entry into the atmosphere above the United States. For this objective so-called directed energy weapons, mainly working with lasers, could be used – that was the idea at the time. The SDI issue thus had enormous implications in terms of technological and financial resources. It also raised questions about US conventional forces in Europe and it threatened to damage US-Soviet relations further, as some critics at the time pointed out. The technological questions were difficult to assess and the combination of all these concerns presented great problems for British foreign, defence and research and development policies. Only a few months after US President Ronald Reagan had announced the modernisation of the US strategic arsenal, the President gave a televised speech on 23 March 1983 in which he asked the American military, scientific and industrial communities to undertake a long-term research programme to ‘achieve our ultimate goal of eliminating the threat posed by strategic nuclear missiles’. From that date onwards the American administration started planning what came to be called the Strategic Defense Initiative, or SDI – and also Star Wars, which was the term chosen mostly by critics of this enterprise. Two study groups were set up to investigate the feasibility of the programme. In January 1984, President Reagan signed a directive authorising a national research programme in order to assess and demonstrate the technological feasibility of intercepting attacking nuclear weapons. The first official British reaction came only with Prime Minister Margaret Thatcher’s\* statement after a meeting with President Reagan at Camp David on 22 December 1984. In this statement she expressed ‘a firm conviction that the research programme should go ahead’, yet Reagan and Thatcher specified the form the agreement should take. She agreed with President Reagan that the US and Western aim was not to achieve superiority, but to maintain balance in strategic forces; that SDI-related deployment would, in the light of treaty obligations, be a matter of negotiations; that the overall aim of SDI was to enhance, not to undercut, deterrence; and finally, that East-West negotiations should aim to achieve security with reduced levels of offensive systems on both sides. In February 1985 Prime Minister Thatcher endorsed SDI at a joint session of the US Congress. However, in mid-March 1985, British Foreign Secretary Geoffrey Howe\* criticised the deployment of ballistic missile defences in a speech at the Royal United Services Institute in London. In December 1985 the United Kingdom and the United States completed the SDI participation agreement, about three-quarters of a year after US Secretary of Defense Caspar Weinberger\* had issued a formal invitation to European governments to join SDI.

Now in this witness seminar we hope to explore the British response to the Strategic Defense Initiative in a bit more detail. The central question which we seek to address is: which factors influenced the British response to SDI, how they interacted and, in

Margaret Thatcher (Baroness Thatcher of Kesteven), Conservative politician. Prime Minister, 1979-90.

Sir Geoffrey Howe (Lord Howe of Aberavon), Conservative politician. Foreign Secretary, 1983-9 and Deputy Prime Minister, 1989-90.

Caspar Weinberger, American politician. Secretary of Defense, 1981-7.

particular, why the British government responded so cautiously to the initiative despite the otherwise cordial personal relationship between Margaret Thatcher and Ronald Reagan. Analytically we can distinguish three areas which we can cover: first, the role of science and technology; second, the role of political considerations; and finally the role of strategic considerations. In particular we may explore the following questions:

What role did technology play in framing the British government's attitude towards SDI, or more precisely, was British support for the technological side of SDI motivated by the perception of Soviet competition in the arms race, or rather by the desire to boost the economy by establishing SDI-related research and development?

What role did scientists play in framing the perception of threat by creating new threats, for example through new technological developments?

Moreover, as far as the political side of the British response is concerned, we may explore for example when the consultations with the American government over SDI started, and also what the decision-making structure within the British government was like and how important the Prime Minister in particular was in determining the government's response. As far as strategic issues are concerned we may want to explore today whether the former participants thought that SDI represented a major shift in US strategic philosophy away from deterrence, and how the British government evaluated the impact of SDI on arms control negotiations.

#### **FREEDMAN**

I think it would be useful before we actually start if I could encourage the panel to identify themselves and perhaps say very briefly what their role was in the proceedings that we are talking about. I will start with myself, because as a mere academic I got drawn quite a lot into the transatlantic debates going on over SDI during the 1980s. I am Professor of War Studies at King's College, London.

#### **DR FRANK PANTON**

I had a career in the Ministry of Defence, mainly on the nuclear side. I also directed a couple of the Ministry of Defence's non-nuclear establishments, and I had a lot of negotiations and contacts with the Americans. After I retired, I was engaged by the Cabinet Office as a part-time Consultant on nuclear armament and disarmament for about 12 years, and I also was a Consultant to the Ministry of Defence for 15 years on nuclear safety in weapons and submarines. So at the time, in 1985, I was a part-time Consultant in the Cabinet Office.

#### **ROY DOMMETT**

My work was at Farnborough as part of the RAE/DERA Establishment between 1954 and 1998 on ballistic missiles and the defence against them, which was rewarded with the Silver Medal of the Royal Aeronautical Society and being appointed a CBE. A special merit Grade 5 by the time the UK became involved with SDI, then there were posts as Chief Scientist to Special Weapons

Department and finally the Principal Consultant on ballistic missiles within DERA. Following the first technical briefing given to John McMordie (Atomic Weapons Research Establishment: AWRE) and Colin O. Allingham (RAE) who both then had specialist interests in DEW [Directed Energy Weapons], I was sent with the first formal Technical Mission which visited thirteen major agencies and companies in ten days. I took six pre-prepared proposals from the RAE for possible technology exploitations, which went along with lists from the other establishments represented. They were thought by the RAE to be valuable in the SDI context, but not really coverable within the UK defence budget. All the RAE suggestions were picked up eventually. The Holy Grail at that visit in the US was a 1000 by 1000 pixel detector, now available through Japanese technology in every digital camera and camcorder! I remained in contact with several areas of UK supporting activity, particularly system architecture, although my major contribution was in the field of counter-measures. Over half of my 132 visits to the USA were associated with SDIO and its heirs.

### **SIR JOHN WESTON**

The briefing papers sent out to participants in advance of the event provided an incorrect biography for Sir John Weston.

Sir Michael Pakenham, diplomat.  
Head of Arms Control and Disarmament Department, FCO, 1983-7.

I am John Weston, formerly of the Diplomatic Service and not to be confused with the former Chief Executive of British Aerospace, as some of the papers for this seminar did.\* Having returned from Washington DC, where I served as a political and military Counsellor in the Embassy in the early Reagan years, I became the Defence Department's head and then the Under-Secretary involved in the Foreign Office at the time we are now discussing. Together with my colleague Michael Pakenham,\* who is not here today, I was responsible for engineering Geoffrey Howe's speech, which has been referred to.

### **IAN KENYON**

I am also former Diplomatic Service. At the time we are talking about I was heading the Nuclear Department in the Foreign Office, basically concerned with non-proliferation, and subsequently with the development of the missile technology control regime, which I think was another response to the same problem as SDI was, but sitting beside Michael Quinlan rather than directly in charge as he was.

### **PROFESSOR A. DAVID CAPLIN**

I am a physicist at Imperial College and at that time, being very conscious of what was going by way of scientific criticism and opposition to SDI in the United States, I was one of the people who organised a movement against UK scientific participation in the SDI programme. As a result of that several of us were invited to a meeting at the MoD with some of the MoD scientists.

### **PROFESSOR KATHLEEN BURK**

I am Professor of Modern and Contemporary History at University College London and I do for diplomatic relations what Lawrence Freedman tends to do for military relations.

**DR JEREMY STOCKER**

Jeremy Stocker, *Britain & Ballistic Missile Defence, 1942-2002* (London: Frank Cass 2004).

I am an external Research Associate at RUSI. After 20 years in the Navy I returned to academic life a few years ago and completed my PhD last year on the history of UK policy on ballistic missile defence, which is coming out in book form later this year.\* One of my later chapters dealt with the UK's policy towards SDI.

**SIR MICHAEL QUINLAN**

Chequers, located in Buckinghamshire, is the Prime Minister's official country residence.

My main career was as a Civil Servant and the vast bulk of that in the defence field, especially on nuclear policy and doctrine and arms control and the like. As it happens though, during the period we are due to address I was Permanent Secretary at the Department of Employment, and had therefore no official role at all in this. I had, however, strong views from the moment the Reagan speech was made and rather unusually was asked to the Chequers\* seminar, which we will no doubt be discussing later. But that was the limit of my involvement at the time.

**LORD HESELTINE**

I was Defence Secretary from 1983 to 1986.

**LORD POWELL OF BAYSWATER**

I was Margaret Thatcher's Private Secretary for Foreign Affairs and Defence from 1983 to 1990.

**FREEDMAN**

Dr Paul Wolfowitz, American politician and diplomat. Arms Control and Disarmament Agency working on SDI, 1973-7; Deputy Assistant Secretary of Defense for Regional Programmes, 1977-80; Under-Secretary of Defense for Policy 1989-93; Deputy Secretary of Defense, 2001-5.

Richard N. Perle, American politician. Assistant Secretary of Defense for International Security Policy, 1981-7, Chairman, Defense Advisory Board, 2000-3.

Paul Vorbeck Lettow, unpublished University of Oxford DPhil (2003), 'Reagan and his Quest for Nuclear Abolition'.

Thank you all very much. We have to imagine ourselves back in a time when Europeans looked in great alarm across the Atlantic at an American President who wasn't considered up to the job, a Secretary of Defense who was considered to be rather scary, a time when the Americans were thought to be pursuing their own interests at the expense of Europeans, and Paul Wolfowitz\* and Richard Perle\* were close to policy-making centres. That is a time rather similar in some respects to today! The debate on SDI, as Holger Nehring indicated, came very unexpectedly. I think it is just worth mentioning that there has been a very good Oxford DPhil recently on the origins of SDI, which demonstrates I think pretty convincingly how much of Reagan's own programme this was, almost tracing it back to his liberal days right at the end of the Second World War when he developed quite strong anti-nuclear sentiments, which I think this thesis shows never actually left him.\* It was his programme, he pushed it through, but it was a rather peculiar shift in the organisation of the Joint Chiefs of Staff which made it possible in 1983 for him to get military support, because the previous Chairman of the Joint Chiefs of Staff would have been much more hostile. But he got a naval man who had not much nuclear experience and had very similar views to Reagan himself on the nuclear issue. So I think from the British point of view the challenge posed by SDI is first the challenge to deterrence, which was the background to a lot of Mrs Thatcher's charges across the Atlantic on this issue – it became sort of a regular December feature. The second is the technological challenge This was seen (and in retrospect probably rightly) as, whatever it was going to mean in terms of ballistic missile defence, the most enormous boost to American

high technology and the dangers then all others faced of being left behind if this really did take off. And behind it all was a third question of 'will it happen'? Will we actually see this sort of ballistic missile defence? Now in the end we didn't and that was not a great surprise. I want to come in a second to asking the scientists here how much it was part of their assessment that in the end the Americans were actually likely to go ahead and do this, or did they see this as basically an exciting research programme which would go off in all sorts of interesting directions but was unlikely to lead to ballistic missile defence. But to start, it would be interesting, just to perhaps set the scene politically a bit more, to ask Michael Heseltine and then Charles Powell about the political response to this. Was it seen as a challenge in transatlantic relations that somehow had to be managed, or was there enthusiasm in the potential there that the government felt it could take up and get some real benefit out of?

## HESELTINE

*HMS Conqueror* sank the *General Belgrano*, one of the largest ships in the Argentinean navy, on 2 May 1982. This decision, to which the Prime Minister and the Cabinet were privy, was politically one of the more controversial actions taken during the hostilities.

Can I start by a moment or two of what will appear to be a wholly irrelevant story? It fell to me to defend Mrs Thatcher over the sinking of the *Belgrano*\* just after I became Defence Secretary. That was six months after the event and I gathered in my room I think every senior adviser who had been present when she took the decision. I thought it would be a very simple exercise to listen to what they had to say, to summarise what they had to say and get on with the job of explaining as best as I could. We spent quite a long time in a meeting, in which these people could not agree about what had happened. They were all there; it was six months after the event. Not all the people who took part in the events we are discussing today are here, and it is 20 years, and I haven't looked at any of the papers since. So there is a very substantial limitation on one's evidence in an occasion of this sort. I think that the reaction to the announcement was one of despair – Oh Lord! Here we go again, the next escalation in the arms race – and then *realpolitik* – Oh help! What's this going to do to Britain's independent nuclear deterrent. Then thirdly – and my golly, US\$29 billion worth of research, what sort of competitive advantage is that going to deliver to the United States. Was it a shift in US policy? Well, in a sense it was because we had mutually assured destruction: that was the given theory. But my view is that that was the label given to the present state of the art and I belong wholeheartedly to the Eisenhower\* doctrine of the industrial defence complex.\* It is an inevitable process, which no government has ever found a way of cutting into; there will always be the next step and the other side will be seen (rightly or wrongly, but probably rightly) to have taken a counter-step. It is a remorseless process and, once you are caught up in it, the simplicity of it is amazing, the inevitability of it daunting. So I think that once somebody had missiles and intercontinental ballistic missiles, it was only a matter of time before someone said you have got to have some way of stopping them. You can either stop them by having missiles

Dwight D. Eisenhower (1890-1969), American General and politician. President, 1953-61.

In President Eisenhower's farewell speech to the American people, on 17 Jan. 1961, he warned against the burgeoning influence of what he called the 'military-industrial complex', which he said had the 'potential for the disastrous rise of misplaced power'.

ABM Treaty was signed at Moscow 26 May 1972, and ratified by the American Senate 3 Aug. 1972. It entered into force on 3 Oct. 1972.

*Polaris* was an American-designed nuclear delivery missile intended for launch from specially built Royal Navy submarines.

The *Trident* system replaced *Polaris* in the 1980s.

North Atlantic Treaty Organisation is an alliance formed in 1949 on the basis of the Treaty of Brussels (1948) by Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States of America. Greece and Turkey joined in 1952, the Federal Republic of Germany in 1955, Spain in 1982, and the united Germany in 1990.

Lieutenant General James Abrahamson, American soldier. NASA Associate Administrator for Space Transportation Systems, later serving as Head of the Strategic Defense Initiative Organization (SDIO), 1981-4.

of your own that you can throw back, or you attack the incoming missiles. Of course, to the person whose missiles you are going to destroy there is no way of knowing that, if you create in space the apparatus to take out on launch aggressive missiles, you don't at the same time create in the same apparatus in space the ability to launch an aggressive attack. So inevitably there is no way that your opponents are going to accept the sanctity and purity of any weapons system you create, whether it be in space or whether it be a shield or a castle wall or whatever. So this was an escalation, and a frightening escalation because it took the war as we knew it into space. Goodness knows where that would lead. There was great debate. The suggestions were that the Russians had already infringed the ABM Treaty.\* The ABM Treaty, if I remember, permitted research, but did not of course allow the development of weapons. The argument was that the Russians were already ahead of the game; that was the American view. My scientists in the Ministry of Defence disagreed with this and this was one of the areas in which I had one of my most confrontational rows with Cap Weinberger, because I said we were not satisfied. That is, my scientists were not – my views were not worth having, because how could I conceivably have a serious scientific view on this matter. I could only take the advice of my scientists and put this point to my opposite number, which I did, without persuasive success. But that was the language: the Russians are already cheating, we have to catch up, the only way to deal with them is to have a more effective weapons system. There was deep concern, moving on to one of your other points, about the whole independence of Britain's system. What would the system be worth if President Reagan was going to negotiate with the Soviet Union a serious diminution in the numbers of nuclear weapons systems available to either side. If the Soviet Union is going to have some ABM system of its own, what use then and what credibility is left to, not the *Polaris* system,\* but to the *Trident* system\* in which we were investing huge sums of defence money at that time. And, if we didn't have that system, in the hypothetical (and I personally think much to be deplored and avoided) situation of a decoupling of the United States from the NATO Alliance\* and from Europe, what deterrent would we be left with? There was deep anxiety on those grounds. I haven't any real doubt myself that a very significant part of the British political defence establishment would have wished to stop the process developing the way that it did, but self-evidently any realistic assessment of the position indicated that America was going to do it: there was no question of consulting and involving us in a dialogue, they were going ahead. So you then were left with the unenviable decision as to what do you do. There was also the US\$29 billion research programme. I remember being in my office in the Ministry of Defence, when General Abrahamson\* came to see me to persuade me that Britain should take part in the programme. All the great strategic arguments were deployed, but the argument I shall never forget was the moment in which he said to me: 'Do you

know, Secretary of State, that, if you agree to my proposals to join this scheme, today I can place an order for a hundred thousand dollars' worth of research with the Heriot-Watt University in the United Kingdom.' What I heard him say was, 'And Secretary of State, I am travelling the world, I know where all the leading-edge technologies are, and I have got enough money to buy a partnership in every single one and we will transfer it back to the United States under the umbrella of the Strategic Defense Initiative, which will give the American industrial base a competitive advantage at taxpayers' expense which nobody in the world could begin to compete with'. That is what I heard him say with that little simple offer of US\$100,000 that he put to me. Anyway, I argued with my colleagues that we had no choice but to recognise that the Americans were going to go ahead: if there was going to be any kind of involvement by the United Kingdom it had to be at the research level and we must get whatever we possibly could out of it. We didn't get very much, but that was the nature of the deal that we were being offered. We were told that it was all then about research. I never believed that. I believed that the moment they had the capability one President or another would develop it. To the best of my knowledge that has now happened. Twenty years later the research has been spent and America has now moved into testing practical systems. It was as night follows day.

**FREEDMAN**

Not quite the same ambition as SDI itself though.

**HESELTINE**

Not yet.

**POWELL**

I would give a slightly different perspective. My view, my account, will be biased, one-sided, prejudiced and will reflect the views at the time of Margaret Thatcher, which is presumably why you have invited me here. Margaret Thatcher was very torn by the SDI and there were various strands in her reaction to it. One part of her said, 'As a scientist I shall understand this better than any of my ministers and therefore I am the one that the Americans should be talking to', and indeed General Abrahamson pretty well had a regular pass to Number 10 Downing Street for several years, to come and tell us about every latest development. As a scientist she also took the view that SDI, once declared, was inevitable, because you can't hold back science, it goes forward and nothing will stop it, so you might as well live with the fact that it is going to happen. So that was one part of her. A second strand was, 'This is Ronald Reagan, so I must support him; Ronnie believes in the same things as me, on lower taxes, on the evil empire of communism and so on, if he wants the SDI he is going to get it and I should support him'. A third strand said, 'But the man is mad, he wants to get rid of nuclear weapons, this is intolerable, we can't allow this to happen, nuclear weapons are vital to Britain's defence, I have an agreement to purchase *Trident* and I would look very silly indeed if I was left without



Mrs Thatcher was elected leader of the Conservative Party in 1975 and was leader of HM Opposition until the 1979 General Election.

Major General George J. Keegan, Jr (1921-93), American soldier.

Konstantin Ustinovich Chernenko (1911-85), Soviet politician. Chairman of the Supreme Soviet, 1984-5.

a nuclear weapon. So we must stop that side of it: we must have SDI *and* we must have nuclear weapons and the two go hand in hand, and indeed I can construct an argument which says that deterrence is actually enhanced by the SDI as long as you keep the nuclear weapons as well, possibly in slightly smaller numbers'. So that was really her approach from the first announcement of SDI through the remainder of Ronald Reagan's time. And it was reflected, as Lawrence Freedman quite rightly says, in her frequent scampers across the Atlantic to Camp David and to the White House, to persuade President Reagan to issue statements which reaffirmed his belief in nuclear deterrence alongside SDI, his determination to go on updating nuclear weapons and to continue to sell Britain *Trident*. This was how she squared the circle. I have to say I think her views originated from considerably earlier than the announcement of the SDI. From some point in her time as Leader of the Opposition,\* long before I was working for her, she was in touch with an American air force general who I think from memory was called General Keegan,\* who was a publicist of the various wickednesses of the Soviet Union in this whole area of High Frontier. So she had started to develop views on this subject before she came into government and found them reinforced in part at least by President Reagan's initiative. She didn't actually ever talk to President Reagan about SDI until 22 December 1984 when she went to Camp David. That was the first discussion of any sort that she had had with him, and she was impressed at the time with his determination that he was going to pursue this and that nothing, but nothing, was going to head him off. So that became a central feature. I am sure other points will come up in discussion and I will only add one at the moment. John Weston spoke of his co-authorship of Geoffrey Howe's speech. That, of course, is absolutely true. The person who is responsible for allowing it to come to the light of day I am afraid is me, and the reason for that is that we were at Mr Chernenko's\* funeral in Moscow in 1985 and as we boarded the plane back to London Geoffrey Howe handed me a copy of his speech and said you had better read this and let me have any comments. Well, I don't know whether it was the boredom of the funeral or the gripping quality of Geoffrey Howe's prose, but I am afraid I fell asleep over it and I did not complete reading it until we got – in fact I never completed reading it. And when it was delivered the next day and Margaret Thatcher saw it I think I probably came closer to being sacked than I ever have before or since. So there's a confession for you.

**FREEDMAN**

John Weston, do you want to defend your prose?

**WESTON**

Well no, I want rather, if I may, just to give a Foreign Office view to complement those of Number 10 and the MoD so far. I think it wouldn't be caricaturing too greatly to say that the view in the Foreign Office of the Star Wars initiative was, in a nutshell, that it was

dangerous moonshine. This was because it subverted the whole basis of deterrence and arms control as we knew it, it was seen as something that might well spark a new arms race in offensive systems, it threatened the UK deterrent, it risked division within the Alliance, it was likely to skew US defence spending in a way which would not be in the interests of NATO, it would not work, and it was probably a case (and this is slightly against what was argued in your own remarks earlier) of programmes driving policy, rather than policy driving programmes. But at the end of the day it presented us with the need to manage once again the UK-US relationship and that of course was what the Prime Minister, as seen from the Foreign Office, had with Charles [Powell]'s advice to address herself to primarily. We had some preparation for that, in particular in the form of the day at Chequers, which Charles [Powell] organised, and four of us at this table were present at it. I remember that the officials present, certainly including myself, wanted to try to explain to the Prime Minister the importance of the ABM Treaty in this context, because that was a kind of benchmark for the whole position in arms control. The Treaty did actually say (and I remember quoting her this) in its agreed Common Understanding D that in the event ABM systems based on other physical principles, and including components capable of substituting ABM interceptor missiles, launchers and radars, are created in the future, specific limitations on such systems and their components would be subject to discussion between the parties in the Standing Consultative Commission set up by Article XIII of the ABM Treaty. The Prime Minister argued that, whatever the Treaty said, it didn't prevent research. I argued that you couldn't take research to the development phase without proper testing and that *was* limited in the Treaty. And I believe that the shift in her position by the time she got to Camp David to some extent reflected some of these points being lodged in her mind. Indeed, I remember early on there was the saying going round Whitehall – (Charles Powell may want to say that this is a complete nonsense) which was attributed to the Prime Minister – to the effect that she had commented right at the start that President Reagan's initiative was nothing but a pipedream, and that like all dreams it would die with the dawning of the day. Now the move from that, whether it is apocryphal or not, to the position in the Camp David formula I think really represents a recognition of the need to grapple with the UK-US relationship and not allow that to founder, whatever the underlying verities. The four points in the Camp David formula – balance, deterrence, negotiations and reductions – and again Charles may be able to correct this, but I attach them in my own mind firmly to John Kerr,\* who was then doing the job in the Washington Embassy which I had done some years previously.

Sir John Kerr (Lord Kerr of Kinlochard), diplomat. Head of Chancery, HM Embassy Washington, 1984-7; Assistant Under Secretary of State, FCO, 1987-90.

## FREEDMAN

I think that is an excellent overview of the political response and raises most of the issues that we want now to begin to explore in

some depth, which are the questions of arms control, and the impact on the British nuclear deterrent, but behind it all is this question of is this an inevitable thing, is it something that is technically possible, is the science there?

## QUINLAN

Francis Fitzgerald. *Way Out There in the Blue: Reagan, Star War and the End of the Cold War* (New York: Simon & Schuster, 2000).

I want to make just one observation about the background, the pre-1983 background, and it is this: that there was within the Reagan administration a strand of people (and I have in mind of course especially Richard Perle) who had always hated nuclear arms control and had always hated in particular the ABM Treaty. Whether we were alert to that and whether Richard was part of the genesis of the 1983 speech, I don't know. Francis Fitzgerald's book *Way Out There in the Blue*\* suggests that rather surprisingly he was not, but it was certainly part of the thinking of powerful people in the Reagan administration that they would positively welcome something which destroyed the ABM Treaty.

## FREEDMAN

Edward Teller (1908-2003), American scientist. Los Alamos Scientific Laboratory, 1943-6.

I think that's true. What is interesting about this PhD thesis I mentioned before is that it demonstrates that Perle was horrified by the March 1983 speech, as indeed was Weinberger, simply because of the impact on NATO. This was coming as a bolt from the blue and actually Perle had not been a major factor in creating this nor indeed Edward Teller.\* Frank Panton, if I could start with you, how did you see it from your perspective?

## PANTON

From my perspective, if we look at the probability of it succeeding in President Reagan's terms, that is a complete shield over the United States, it was plainly impossible. In President Reagan's terms, no such thing could be achieved: there would always be in any system some errors or some breakages and you could reckon that a few per cent would still get through in almost any system. Now a few per cent of about 1,400 is still quite a large number of nuclear bombs landing on the US. In terms of deterrence, the question might be, what level of efficiency of the SDI system would deter the enemy from attempting an attack on mainland USA? Is it 90 per cent, 80 per cent, or even 70 per cent? That is a matter for political judgement which I would not attempt to make. I would only say that account would need to be taken of possible stratagems by the attacker which would reduce defence effectiveness, and it would be surprising if a figure as high as 90 per cent could be achieved. The structure proposed for the SDI system envisaged three defence phases: in the boost phase of the attacking ICBM, in the mid-course, and in the final re-entry phase. The boost phase would allow for four minutes of action but no more, and you would need to have between 100 and 600 (estimates varied, depending on who did the estimating) satellites in orbit ready to fire beams at the missiles being launched. Again, the threat envisaged might be from 1,400 attacking missiles. The problem was, however, that the technology to produce laser and directed particle beam from satellites

in space was not proven; much research and development work was still needed. And, given the need to act immediately on the detection of the launch of attacking missiles, it was not clear how political decision could play a part in the command and control system. Looked at in the context of a NATO decision to fire nuclear weapons, where unanimity among nations might be required, the whole thing would be over before the first stage of consultation had been reached. A point to be emphasised is that it was essential to eliminate as many as possible of the attacking objects in the boost phase, because surviving ICBMs in the mid-course phase would be giving birth to a large number of objects which would need to be reckoned to be threats to be eliminated. Numbers of defensive strikes needed in space in the mid-course phase could thereby increase by an order of magnitude. In the re-entry phase, what was being attempted was an updating of a ground-based ABM system of the Moscow type. Advances in the field of solid-state technology and microchips had enabled small missiles with their own pre-programmed guidance to be developed, making the last phase of the SDI system look more credible than the concepts of ABM defence in the early 1970s. Putting all that together, it was clear that the System was far from proven, and it seemed very doubtful that a complete, effective and controlled system could be achieved in anything like the time-scale proposed. On the other hand, when I was asked by Sir Robert Armstrong\* in 1985 for my views on SDI, it seemed to me that it was not necessary to take a view on the credibility of the whole concept before agreeing to UK participation in the SDI research programme. The US SDI research programme was going ahead anyway. The money for it had been voted, as you were saying, US\$3.7 billion a year for about eight years, and it was clear to me that, although the programme might not prove the system, a lot of good science would come out of it which might be relevant to the UK's strategic interests, and of which we ought therefore to be cognisant. To achieve that, we should co-operate fully in the research, while maintaining an open mind on deployment until firm and proven proposals could be made for the system to be deployed. Another advantage of participating in the research programme was that this would provide the opportunity to gain industrial contracts for work in the UK on it.. I don't think we estimated those actual industrial contracts as more than a few tens of millions and I think this is what in fact came out of it in the end. But more than that, our own research and development establishments in many areas had expertise which really ought to be put alongside and gain the benefit of American work. Indeed this is what happened and I am sure my colleague Roy Dommett will explain more of this in detail. What was done was, in effect, to construct an arrangement similar to the arrangement under the atomic agreement, the 1958 agreement, where specific areas were determined as areas in which a pretty free exchange of views and work between the American side and the British side would be established.\* Now that was done and an organisation in the MoD

Sir Robert Armstrong (Lord Armstrong of Ilminster), civil servant. Secretary of the Cabinet, 1979-87, and Head of the Home Civil Service, 1983-7.

The 1958 US/UK Mutual Defence Agreement was an amendment to the 1954 US Atomic Energy Act and opened the way to a bilateral agreement between Britain and America on nuclear weapon design information exchanges.

The *Chevaline* Programme, begun in the early-1970s, was an adaptation of *Polaris* with a hardened front-end and with penetration aids (penaids) to meet British requirements.

was set up to manage that. I haven't really had much contact with it since, not for the last ten years anyway, but I believe it was really quite successful and it did actually produce from our point of view information in areas which we wouldn't have got by ourselves. Of course at the back of our minds, as you said Lord Heseltine, was that there may well come out of this some factors that would be extremely important for our own position as a nuclear power. Bear in mind that we were in mid-stream at that point: we had got the *Chevaline* programme,\* which was nearing deployment and which I have described in another forum as a second to a choice that we might have taken in 1967 or 1968, but nevertheless it was maintaining the credibility of the deterrent in a satisfactory fashion. Any change in the situation in the Soviet Union because of things that came out from the Americans system or any pointers that the American research would give us in order to sharpen up our own nuclear system would be very welcome. And we were apprehensive about what the American programme might reveal and we would not know it unless we were participating in it. As I say, at this point the *Trident* programme was still under development, and would not be deployed until the mid-1990s. So we had a ten-year stretch to look forward to where the deterrent system depended on *Chevaline* and we were desperately anxious to know whether anything that came out of the SDI programme would affect that particular system. And that was the advice that I put up to Robert Armstrong, which I think as you will remember Lord Powell was sent to Mrs Thatcher, strengthening, I think, her own views. In all this, my appraisal of the SDI programme was not improved by General Abrahamson's presentation of it. In a meeting in the MoD he gave an exposition of how far he had got, in which he was bold enough to claim that all the technical problems were reaching solution and all we had to do in the very near future was to take a decision on deployment. This sweeping affirmation of faith no doubt may have been intended to bolster up general support for SDI, but it was hardly an accurate summary of the technical state of his programme at that time.

## DOMMETT

Frances Fitzgerald, *Way Out There in the Blue: Reagan, Star Wars and the End of the Cold War* (New York: Simon & Schuster, 2000). See also Bradley Graham, *Hit to Kill: the new battle over shielding America from missile attack* (New York, Public Affairs, a member of the Perseus Book Group, 2003) which continues the SDI Story at Thompson, Ramo and Wooldridge (TRW).

It seems to me that the seminar introductory note may represent the media perceptions, but does not reflect well what happened as experienced by scientists and technologists working on UK defence systems. First there is a need to understand the huge shifts in concepts that have occurred. From my position, the lurches in US policy were puzzling, partially explained since by an excellent book about President Reagan and SDI.\* The switches from Directed Energy Weapons (DEWs), to satellite-based impact weapons, to ground-based hit-to-kill have been dramatic in terms of the technologies involved. The UK input has varied accordingly. The US changes each reflected increasing realism in the technology and its likely near-term achievement. It was obvious that the USA wanted to tap UK brains. At first the SDIO had poor relationships with the

USAF/BMO (Ballistic Missile Office) HQ at San Bernadino, California, with TRW as their systems contractor.

Sir Henry Tizard (1885-1959), scientist and government adviser. In 1940 he led a mission to establish co-operation between scientists and the governments of the UK and the USA.

Anglo-American Joint Working Groups (JOWOGs) were established under the 1958 US/UK Agreement for Co-operation on the Uses of Atomic Energy for Mutual Defence Purposes.

Under the terms of the 1985 Memorandum of Understanding, Anglo-American information exchanges on ballistic missile defence were facilitated through SDI Collaboration and Research (SCORE) Groups and sub-groups.

Dr Stanley Orman, government scientist. AWRE Aldermaston, Director Missiles, 1978-81, Chief Weapon System Engineer *Polaris*, 1981-2, Ministry of Defence; Minister-Counsellor, Head of Defence Equipment Staff, British Embassy, Washington, 1982-4; Deputy Director, AWRE, 1984-6; Director General, SDI Participation Office, MoD, 1986-90;

Chief Scientific Adviser (CSA) is a very influential post for a noted academic, usually held for three years.

Dr Michael Rance, government scientist. Key systems scientist, RAE; Counsellor for Defence Science and Equipment, Washington Embassy; Director of the Directorate of Science (Ballistic Missile Defence).

Stanley Orman, *Faith in G.O.D.S.: Stability in the Nuclear Age*, (London: Brasseys, 1991).

Advisory Group for Aerospace Research & Development, a NATO agency under the authority of NATO's Military Committee.

US forces from whom their programme had been cobbled. The USAF/BMO\* were well ahead of the Soviets in R&D, and generations ahead of rogue nations in their thinking about the design of their own future threats and counter-measures. There was a large divide between the US forces and the many US Intelligence Agencies, unlike in the UK where the relationship between much smaller teams is more intimate. Each US Intelligence Agency has a clearly defined separate role, dealing with facts and the possible implications for forward planning and R&D. Sometimes the US executive confuses what it could mean with what it actually is, and has accused countries of actions much to their surprise. The UK had a small-country viewpoint which the US has always found hard to grasp. There has been a long history of technical collaboration, from Tizard's\* team at the start of WWII, for example, through JOWOGs (Joint Working Groups)\* under the 1958 Agreement, the TTCP (Tripartite Technical Cooperation Panels), and JRSWG (Joint Re-entry System Working Group) under the 1963 *Polaris* Sales Agreement. So successful were those models for engineer-to-engineer exchanges through a proper agreed and controlled channel, that SDI has worked with the UK through rather similar SCORE Groups.\* Each had a leader and a formal secretary, with an overall co-ordinator, and regular stock-takes on progress and continued viability. Stan Orman\* was the first Director under CSA\* and Michael Rance\* the last. Stan Orman wrote a book about it.\* There were several SCORE Groups, the titles changed over time, and I do not remember them. The content of their work depended on who became the UK leader, so it mattered which establishment obtained the leads. Much of the UK experience of modelling ABM systems rested in the strategic community, where RAE could tap the general experience of modelling guided weapons and exploit relevant industrial capabilities such as at BAe Filton. It was important to understand the significance of the Soviets copying or even sharing SDI hardware. The problem with any open discussion of the UK contributions or of UK views is that the key work has been, and still is, classified, some of it at the highest level. Thus any account will be far less impressive than is the reality. A consequence is that this account will be biased towards the failed activities. One simple lesson from SDI has been that anyone who wants to work effectively on a day-to-day basis with an organisation so far away, has to adopt US methods of keeping in touch. It is no great use having committees that meet occasionally in the British manner. To participate by invitation in any US group required UK attendance on an exhausting three-week cycle. It is essential to keep on the 'phone, to speak at length, to visit on every excuse, and to promote in the US, not the British, fashion. The difference is encapsulated between the very British 'I will try' and the US 'I can' when both are talking about the next step. The UK had much more to offer than other European countries, who tended to see contracts as building up their independent capabilities, and who wanted to extract as much as they could. This may be illustrated by the various AGARD\*

William Penley, government scientist. Director, Royal Radar Establishment, 1961-2. He led a working party which reported in Nov. 1962 and recommended support for the Black Knight Dazzle programme in Australia.

Gaslight and Dazzle were two joint Anglo-American research programmes at Woomera exploring re-entry phenomenology using the *Black Knight* test vehicle.

Sparta was a radar-type experiment using modified American Redstone *Spartan* missiles launched at Woomera 1966-7.

*Sprint* was an ABM in US BMD systems.

*Spartan* was a long range ABM in US BMD systems.

Global Positioning System refers to a multi-satellite system whose signals can be interpreted into the position of the receiver to an accuracy of a few centimetres.

The *Blue Streak* programme, which would have launched ballistic missiles with nuclear warheads from silos was cancelled in 1960. (See also Roy Dommett, 'The *Blue Streak* Weapon' in *Prospero*, No.2, Spring 2005.)

Radio Frequency (RF).

sponsored studies when a European view was wanted: the lead was mostly from the UK, as the US seldom made a major input, because the others had had no reason to put the same effort into thinking about the issues and the philosophies. The UK started serious ABM studies in 1954 when an agreement with the US on research co-operation was signed. These continued until 1962 when Dr Penley's Report\* killed work on test vehicles, suitable nuclear warheads, and radars, whilst exploratory joint observations were made of re-entries at Woomera using special instrumentation under the Gaslight, Dazzle\* and Sparta\* programmes. Further such programmes were cancelled because it became clear that most observables were under designer control, and were not going to provide the essential discrimination concepts, even though progress with radars and computing power were overcoming some of the identified limitations. The UK and US informed each other in the 1960s through an unusually high-level T'TCP Sub-Group, F, until the US decided to deploy a system based on the *Sprint*\* and *Spartan*\* missiles and exchanges were barred by Congress. The many shorter ABM studies done by the UK subsequently usually concluded, at least before GPS\* arrived, that a non-nuclear attack could not be accurate enough to be a serious threat needing an immediate threat of retaliation, and that a nuclear attack would trigger the UK strategic deterrent force. The US-published debate of the mid-1960s on ABMs was very interesting, but showed there was little engineering experience. The US deployment of a nuclear warhead-based system in the 1970s was quickly cancelled. The modules were not sold to NATO as they were far too expensive. The UK had been working penaid since *Blue Streak*\*, were thinking of them for *Skybolt*, and then for *Polaris*, and finally deployed a suite for *Chevaline*. Counter-measures challenge the defence functions, of detection, tracking, weapon allocation, engagement, end game, and kill assessment. They would always be specific to the sensor suite faced, never generic. By the 1980s the UK had a philosophy and a viewpoint based on small numbers in exchanges. For a brief time there was a National Penaid Programme as a backup for *Trident*, just in case Soviet defence developments continued and penaid might be an appropriate counter. SDI has a responsive view, not just of how to beat what is currently out there, but a concern with what will the offence do to respond to the defence, because of the huge investment implied, in an attempt to break from the normal leap-frogging progress, and so to stay robust. The key to any SDI defence was that outside of the atmosphere all threat objects flew on very predictable Kepler trajectories without the possibility of any manoeuvring to confuse engagements. There are lasers, neutral particle beams, RF\* and X-rays. To kill they need high-energy sources, stable beams, and sufficient dwell time on a very fast moving target. The technical risks with the devices appear not to have been as great as imagined from a background in similar fusion research, and the ways forward are apparent. But so are the possible counter-measures. Proving either would be difficult and expensive.

Directed Energy Weapons (DEW).

Brilliant Pebbles was a space-based kinetic energy weapon concept under development in the USA by the Ballistic Missile Defense Organization. Approximately 4,600 small interceptors would be deployed in orbit, each capable of homing in on and destroying incoming hostile warhead.

Low Earth Orbits, usually considered to be between 100 to 200 nm altitude.

This was a division within RAE, Farnborough, with a remit to look at advanced ideas for systems which might have some involvement with space.

The UK offered significant technologies to the US in these weapon areas. Adaptive optics and similar ideas for beam control have been exploited for astronomical sensors. The suggestions to beat DEW,\* such as rotation of the missile, fast acceleration boosters, screens and decoys, have not been subjected to sufficient detailed engineering examination, and too much may have been made in the media of the possibilities of their success. The emphasis on kill has ignored the great value of DEW in discrimination. Anything that can give a threat object a push can produce a direct measurement of its mass, which is one parameter in which a decoy inevitably differs from a live re-entry body. Unfortunately the resultant recoil is not necessarily along the line of sight and there have not been any UK theoretical studies of the degree of its effectiveness as a discriminant. Simple ground-based experiments showed that laser vibrometry could be effective in detecting changes in modal frequencies at the dropping of payload items by a carrier, as structural natural frequencies vary with the load being carried. What is a kill has to be addressed. It could be catastrophic (immediate), consequential (delayed) or just a system kill (a miss). Threat objects once engaged have still to be observed, even if the engagement is automatic. The stopper for DEW was that it was going to need at least two generations of devices to approach the powers that would be needed in an operational system. On a chart of the *Star Trek* fictional weapons, real DEW were beginning to appear! The US proposal was for relatively small Brilliant Pebbles\* kinetic kill vehicles, supported by Brilliant Eyes long-range sensor vehicles in multiple constellations in low earth orbits (not geostationary as stated by Frank Panton). Any missile launched from anywhere has an apogee comparable to satellites in LEOs,\* and could apparently be quickly detected and engaged. The UK was first briefed in a visit to the Livermore Laboratories. There were many ingenious ideas involved such as ‘first shout’, to avoid automatic multiple engagements. This scheme was a concern because it implied that the owner could stop any country’s launches, including the UK’s, whose deterrent would then not be truly independent. A Space Battle model was developed at RAE and methods of penetrating the cover explored. I made a presentation to the Director of SDIO showing how to do it based on work at RAE, and it caused a rethink. We also measured the aerodynamics that would have been on the Brilliant Pebbles in its proposed orbits in RAE’s Low Density Wind Tunnel and showed that the lifetime in orbit would not be anywhere near as long as hoped. Much of the creative contributions came initially from Maurice Deller’s special division which was originally in Space Department, RAE.\* One fall-out has been the development of disciplines for software writing which ensure that only what is wanted is delivered. The stopper for satellite-based systems requiring large numbers of bodies in orbit was that there was no prospect of a cheap enough launcher vehicle. A common fault in studies has been that the offence takes a simplified view of the defence side of an engagement and *vice versa*,



Richard Lawrence, government scientist. A specialist in advanced guidance theory within Weapons Department, RAE, Farnborough.

Kwajalein is an atoll in the western Pacific Ocean within the impact area of the US Western Missile Range for firings from California.

Royal Signals and Radar Establishment was set up in the 1970s and became part of the Defence Research Agency (DRA) in 1991.

MESAR is an experimental, adaptive, programmable phased array radar developed at Malvern

*Lance* was an American Army surface-to-surface missile. The missile entered service with the British Army in 1976; it was withdrawn early in the 1990s.

Admiralty Research Establishment was formerly spread over 15 sites, mostly in southern England. Now they have been brought together on the top of Portsdown Hill, overlooking Portsmouth, and planned to become the site for consolidating DSTL.

whereas both need high fidelity modelling in a hit-to-kill situation. The size of a warhead in a re-entry vehicle is roughly that of a four-drawer filing cabinet. To hit, the collision has to be within a circle of 10-20 cm radius. The rigorous theory of optimum interceptions had been developed by Dick Lawrence\* at Farnborough. To improve the chances by optimising the end game, it is necessary to know the angular motion of the target, which could be deduced from IR observations as they are a direct measurement of the projected area, but again this has been little studied in the UK. The weaknesses of earlier US hit-to-kill work had been pointed out to the Director of SDI, which also caused them to have a rethink. The American style of R&D places emphasis on meeting the contract rather than obtaining independent advice, thus weaknesses of work are papered over by the producers. The UK took a serious interest in the US proposals, but mostly the UK interest was in how the advances would improve other weapon areas. Some uncertainty exists over what happens at an impact. The energy available is large, but the impact is at speeds much higher than the speed of sound on the materials involved, and the inabilities of the bodies to know what is happening dominates. At the contact face the materials melt, vaporise and perhaps become plasmas. Realistic ground-based experiments at the speeds and sizes involved have been very difficult to achieve. Roughly about the same mass as the impacting body is removed from the target object. The impact of bodies at hypervelocity speeds is beginning to be modelled. As most will know, some success has been reached with cometary impacts on planets. Unfortunately most studies seemed to concentrate on impacts normal to surfaces rather than the much more likely glancing ones, for which the phenomena should be quite different. One area of help given to the US was in the provision of a number of parts from the *Polaris* missiles for the US *STAR* Test Vehicle, of which some were test flown from Hawaii to Kwajalein\* with an additional third stage solid propellant motor to give the range and the desired re-entry speed. I am not very aware of the contributions made from the other establishments and have no idea of their schemes that have failed. RSRE\* Malvern had the innovative, transportable and programmable MESAR\* phased array radar which participated in a number of trials, and also had a multi-band IR sensor which went to various sites, including observing the launch of a *Lance*\* missile in an Army training shot at Benbecula in the Outer Hebrides. Besides sensors, Malvern was the home of 'systems' having been responsible for the UK Air Defence system with its man-in-the-loop. Another establishment that made substantial contributions was ARE Portsdown\* who had experience in systems 'integration' with their HMS *Marlborough*, again a man-in-the-loop system. This aspect was thought important by the UK, as SDI was tending towards a fully automatic concept. We did consider possible lower speed intercept experiments. A promising line was to fire at *Lance* missiles with ship-borne guided weapons. It had been demonstrated that the *Lance* was large enough to carry a variety of

Guided Weapon, the Royal Navy's Seawolf missile is a low-cost, light-weight, silicon gyro-technology missile system.

Westcott was the site of the former RAE out-station, then an independent R&D establishment, near Aylesbury, which became the Rocket Propulsion Establishment, PERME and then Royal Ordnance.

Royal Armament Research and Development Establishment, Fort Halstead.

Fluid Gravity Engineering Ltd was founded by a member of Surrey University, Guildford, to provide advanced validated software for numerical solutions to a wide range of engineering and physics problems, formerly at Cranleigh, then Witley in Surrey and finally at Liphook, Hampshire.

Phillips was an electronics company based in Crawley, Sussex.

Marconi was a company based in Camberley Surrey.

Hunting Engineering Ltd based at Reddings Wood, Ampthill, Bedford, was part of the Huntings Group. The company has now ceased trading.

Data Sciences, a software house based in Farnborough. They in turn have been bought out by IBM and the team dispersed.

simulated warheads such as sub-munitions. However a trial with the best ship-carried GW\* was unacceptable because of the slight risk to the frigate. Even more ambitious was the idea of intercepting a *Polaris* re-entry body as it fell at its terminal transonic speed. It would have needed only a small modification to the radar to handle a target falling near vertically. But it failed to gain political approval. Porton Down is the centre of UK defence studies against chemical and biological agents and has models of cloud dispersal. A problem was that a re-entry body carrying such agents not only compresses and pushes out of the way the atmosphere, but also drags some along behind it as a wake. When the agent is dispersed as a slowly moving cloud, the wake catches up, punches its way through, and cushions it from below, thus invalidating predictions. A current fear was the delivery of such agents in dispersed sub-munitions. Not that they are at all easy to engineer with many serious problems to overcome, but they would be difficult to intercept with high confidence of a large number being killed. But if more conventional techniques are found to be unrewarding, there is always the fallback of small nuclear devices of the order of tens of tons equivalent rather than kilotons, no matter how politically unpalatable. At the start of co-operation it was thought that the UK had an edge in missile plume calculations because of work done at Westcott\* and Fort Halstead.\* This was the initial impetus for the development of algorithms for complex flows with chemistry and radiation which became the FGE Ltd\* stock in trade. RAE used Phillips\* to generate a general-purpose tool for image processing that could be widely used within the specialised interests of the strategic and counter-measures communities that incorporated all the regularly used algorithms. It was not exploited as responsibility was moved to an officer who thought it ought to be done differently. It is obvious that the visible/IR signature of a body is the contrast with its background, and therefore there was a need to develop models of viewing against the space, the sky or the earth. The USA had made substantial progress with very interesting outputs and offered the suite of codes to the UK. The same officer again thought it could be done better, but it did not mature as a UK tool. The USA needed a European view on ABM defence structure as the geography and needs were much different from that of the continental USA either against the Soviet *bloc* or the Middle East. A team was set up at first under Andrew Machin, who was loaned from RAE before he became the head of Special Weapons Department, with members from industry, such as Marconi,\* HEL\* and Data Sciences.\* A key member and later leader was Group Captain Watson, who was an expert in mission analysis. The work came in at least eight separate phases each to agreed programmes of studies of potential scenarios. Their efforts showed that a European defence would need to be arranged differently from one for the USA. In every case the defence would be satisfactory if there was a sound discriminant that could be exploited. Much was made of the need for airborne sensors, and of the huge numbers of aircraft needed to

United Kingdom Architecture Study, the title of the US Ballistic Missile Defence Organisation (BMDO) funded exercised to gain a UK or European view of ballistic missile defence possibilities. The main conclusion was that, whether considering a threat from the East or from the third world, the best solutions would not be the same as for the continental USA.

David Sloggett, scientist. Leader of the Data Sciences team.

Artificial Intelligence Discrimination Algorithm (AIDA) was a software package initially developed in the LISP language that used many simple models and data bases to reason under uncertainty about observations, as an aid to distinguishing between re-entry vehicles and decoys, and used in the USA.

ensure one always in the air. Data Sciences provided an overview of the first six phases of UKAS (the UK Architecture Programme).<sup>\*</sup> There were good insights, but not surprisingly it met not-invented-here responses elsewhere, so had little impact. There was a tendency therefore within the UKAS team to keep the experience to themselves and just provide the requested outputs; it helped make it desirable to continue with the same team, but it was all lost once the contracts were over and the team split up again. The weakness of any defence was that it had to be prepared for all likely possibilities, whereas the offence had only to find one in which they had confidence. When the UK looked at possibilities it seemed obvious that counters existed, for example a re-entry body with a sacrificial coat and a fly-by-wire attitude control system. Much had been made of the effects of direct impacts, whereas most would be glancing contacts. Counters to the various defence functions were easy to imagine, but they were usually high technology solutions probably not available to the non-superpowers. UK contracts started with a task summarising UK industrial capabilities, and then a three-year task to list and evaluate possible counter-measures from decoys to attacking defence communications. About six months into it the contract was cancelled, but work already done was forwarded in several volumes. For some time afterwards the US recipient was seen travelling to meetings clutching his copy, used as a stimulus to US thinking. The larger US scene required order to be imposed. One administrator was tasked to provide a sorted and annotated master list of counter-measures types. There are many ways of classifying them but it has been convenient to work from this US list, which is comprehensive enough. The need was for a real-time reasoning system that had the potential to exploit any weakness of any offered counter-measure. Such a tool was constructed by Data Sciences, under David Sloggett.<sup>\*</sup> It involved using Artificial Intelligence disciplines and was called AIDA.<sup>\*</sup> Although not implemented in a real-time language it had considerable success with the US, despite the lack of essential support on embedded models from the UK establishments. It illustrated that any offence designer would need and use such a tool to find how well counter-measures had to work to be effective. Matching inertia ratios and avoiding hot spots were typical examples of limited UK studies. Ultimately it failed because too few technical people in the UK had any faith in the AI approach. But Dave Sloggett gained a PhD based on his innovative thinking. The real lesson is that there are no general counter-measures effective under all circumstances. A suite of counter-measures is usually required, tuned to the sensor suite which is being challenged. A defence improves its chances by having a sensor-rich environment, but they are rather expensive, choices have to be made, and the problem is that of optimising the returns. The UK has been receiving recently about £4-5 million a year for its inputs. What have we gained? Both the AGARD exercise in 1993 and the following UK pre-feasibility study were about getting groups up to speed. In neither case did the proposed work evaluat-

Terry Cain, government scientist. He was an Australian working at DERA, Farnborough, using the Low Density Tunnel, which had been moved from the National Physical Laboratory (NPL), Teddington to Farnborough to support the *Chevaline* studies. The Low Density Tunnel has now gone to Glasgow.

Oxford University Engineering Laboratories near Oxford did an unclassified study of the downstream mixing of simulated multi-plume rocket exhausts.

Penny Marriott, scientist. She is an Imperial College-trained chemist with an interest in fluid flow problems, particularly what happens at low densities.

ing counter-measure suites happen, so there is no agreed position on them. Rather useful tools such as background modelling, a generic image manipulator, and discrimination reasoning did not mature for various reasons. But some outstanding basic aerodynamic problems were addressed and solved, including the lateral control jet interactions with hypersonic flows (Terry Cain\* at DERA) and the internal structure of multiple plume interactions (Oxford Engineering Laboratories)\*. It has depended on the interest and dedication of individuals. One area of progress was with low-density flow calculations pursued by FGE Ltd. In particular Penny Marriott\* developed in her PhD thesis the first correct model for the interaction of energetic molecules not near equilibrium and which appears to have wide application, including to atmospheric warming studies. It cannot exploit the existing chemical rate data for near equilibrium states and needs new laboratory determinations. Typically for the UK, it has proven impossible to obtain the necessary small funding. In the defence field, it has application to the chemi-luminescent reactions that occur in front of highly expanded missile plumes as they exit the atmosphere. These cannot be suppressed by clever booster design, and therefore are important for tracking of the boost phase of missiles. Studies had shown that for small rockets the detectable plume IR radiation could be largely suppressed by additives. However the extension of this to larger motors has not been explored and the utility is unknown. Several promising routes failed because the UK was unable or unwilling to match US funding and show a belief in the credibility of the proposals. A few failed because someone thought it could be done better, but they never did.

## FREEDMAN

Thank you very much indeed. David Caplin, perhaps you would like to comment, having looked at this from a slightly different angle?

## CAPLIN

Could I preface my remarks by just thinking back to 1983/4/5, pre-e-mail, pre-web, so it needed letters and visits to be in contact with the States. I am based at Imperial College and roughly once a week somebody would come through. There was very close contact between physicists in the UK in the civil sector and the civil sector in the US: conferences, visits and so forth. Also, people may not be aware that the research lab of the US navy has an Office of Naval Research in Old Edgware Road, not very far away, and very often the people who are attached to that are either civilian academics or maybe navy researchers, but they become visiting professors at Imperial College and we talk physics together. I am sure they don't disclose anything classified, but what I am saying is that we were pretty well up to speed in knowledge of what was going on the other side of the Atlantic on the unclassified side. I was helped a lot by the chronology that Holger Nehring has given us, but there is one very important thing I would like to add to it and that is the

The Congressional Office of Technology Assessment was established in 1972 and closed in 1995. Its remit was to provide members of the American Congress and its committees with analysis of complex scientific and technical matters.

series of reports that came out from the US Congress Office of Technology Assessment (OTA).<sup>\*</sup> This was a very well funded organisation, by Congress, the equivalent of the Parliamentary Office for Science and Technology but a hundred times larger, a hundred times better resourced. It produced a whole series of reports from 1984 through to 1986. It commissioned those and the people who worked on them included many people who had been in various military weapons programmes. Those reports raised serious issues, the kind of things we have been hearing about, about hardware, technologies, software in particular. We have all had our computers crash, and you were going to have a software system that was untested and impossible to test – could it survive. So I think we were all very much aware of the technical problems of SDI and physicists in the United States were sufficiently concerned about this, in part because the SDIO went out to attempt to recruit academic scientists, physicists in particular and computer scientists too. It is not that any highly classified research was going to be done on campus. Let's take the Heriot-Watt example that Michael Heseltine mentioned – I knew about that group and the work it was doing. It wasn't about getting highly secret stuff being done, it was rather clearly about adding credibility to the SDI programme by recruiting research groups, preferably in well-known institutions, and indeed they did so to the extent that some institutions felt they went overboard on it. As a result the American Physical Society, which is a major professional organisation, ran a special session in I think it was March 1986 on the technical aspects of SDI. It had available the background to all these OTA reports, and at the last minute the SDIO declined to attend. So there was a general feeling amongst US physicists that this was not a completely straight programme. Some of the data were, let us say, being fudged. It wasn't being terribly straightforward in the way it was doing things, at least with the academic community. As a result a petition was started in the spring of 1986, originally at Cornell, and it attracted nearly 4,000 signatures. A counter-petition was started – it got 77 signatures. So that was some measure of the balance of professional views about the technology of the SDI programme. When the SDI office opened here, Mr George Gallaher I think was the guy in charge of it in the MoD office ...

## FREEDMAN

Stan Orman.

## CAPLIN

Stan Orman also, yes. It started to approach groups, including the Heriot Watt one and a couple of others, and a number of us felt that they were being recruited in a not quite straightforward way and credibility of support was being sought. So we organised a boycott and that attracted some 600 signatures – there is a lot smaller number of physicists in this country. But in major departments like my own by far the majority of people signed, mostly people who were not particularly political and who hadn't thought about the

strategic consequences, but who just felt that the science was not right and going wrong. That actually attracted quite a lot of media attention. I remember that we held a press conference on a Sunday morning and it was then I think the lead news item on the news at 1 o'clock. So we thought this boycott petition had been very successful and as a result we dashed off letters to various ministers, including the Secretary of State for Defence, not expecting to get any response. However, back in the post a few weeks later back came an invitation for some of us to go over to the MoD and meet with the Deputy Chief Scientist. The Deputy Chief Scientist is the permanent civil servant, as opposed to the Chief Scientist who is an academic seconded to the MoD. I don't think either of you were there, were you, this would have been about late 1986?

**PANTON**

No I wouldn't have been, I would have been across in the Cabinet Office, and I wouldn't have come to that one I think.

**CAPLIN**

It may be interesting to this witness seminar as to the attitude of the four or five people who were there, one of whom I now recall was Stanley Orman. Now with the exception of Stanley Orman, the reaction we had was, 'Yes, of course we understand all these problems, we are not idiots, we know that technologically there are all these difficulties, it isn't going to work, and this, that and the other, but it is much better – we are not going to go out and broadcast this – that we use our excellent connections with Washington, the special relationship, because they listen to us: we can calm them down' – you might have heard those words recently. So this was very much the attitude of the people involved, who I think were mostly scientists. . Indeed I noticed flicking through something the other day that one of the ex-MoD strategy people, John Wright,\* had published an article earlier that year in *Nature*, a long article on the strategic implications of SDI.\*

J. K. Wright (1928-94). Chief Scientific Adviser's Staff, Ministry of Defence, 1961-6, Senior Economic Adviser, Commonwealth Relations Office, 1966-8, Head of Economics Department and subsequently Director (Economics) Foreign and Commonwealth Office, 1968-71.

J. K. Wright, 'Uncertainty and the Strategic Defense Initiative', *Nature* (1986), Vol.319, pp 275-9.

**QUINLAN**

J.K. Wright was not a policy person, he was a scientist.

**CAPLIN**

Oh okay, but ex-MoD.

**QUINLAN**

Very ex.

**CAPLIN**

Okay! Anyway, it was intriguing that we were invited to this meeting and obviously being encouraged to say 'oh well, the MoD has all this in hand and appreciates that the Americans need calming down a bit'. Except for Stanley Orman, who was perhaps more of a Teller figure, but maybe the rest of you can tell me more about Stanley Orman. So I think that that was the general view and as far as I am aware there was very little funding of any academic research in this country. As for spin-off, it is a very expensive way to buy spin-off, whether it is in the US or anywhere else.

- FREEDMAN** Stanley Orman went to run the office in Washington and stayed there, he never came home I think.
- PANTON** He has been back once or twice, but he still lives in the States.
- DOMMETT** He still has a house in Newbury.
- FREEDMAN** I am not sure how much of the audience are picking up all the references, the reference to *Chevaline*, which was the front end of *Polaris*, which had been introduced as an alternative to having the next generation of American submarine-launched missiles, which would have been *Poseidon*.
- PANTON** Well, that's a short way of describing what happened. *Chevaline* is the improvement of the *Polaris* system which was eventually chosen for development and deployment. Other systems, such as *Poseidon*, were considered before the *Chevaline* decision was made, but I have to say that at no time during the nine years in which the whole matter was debated was there any real choice except between *Chevaline* and doing nothing.
- FREEDMAN** Yes, it was a combination of decoys and warheads ...
- PANTON** That's right.
- FREEDMAN** ... that allowed the government to say that it was not moving to a new generation of strategic nuclear weapons, while maintaining the credibility of the full system.
- PANTON** To elaborate a little, the government had already decided that in 1965, and repeated it in 1967.\* When the Tory government came in, in 1970,\* they examined it again. They wanted I think to go for *Poseidon*, but that wasn't on offer at that time for various reasons that I won't go into here, so in default of that the *Chevaline* system was pursued. Then there was another change of government and we had another one or two years before they could make up their minds to pursue that alternative, which they did eventually. I have to say that the *Chevaline* system was a great success, it was in service and it preserved the deterrent for about ten years while *Trident* was being developed. But it wasn't the best solution in my view, the best solution was one which was foreclosed on right at the start. Sorry, but this is very close to my heart.
- DOMMETT** And mine.
- FREEDMAN** We need a seminar on *Chevaline*.

Between 1964 and 1970 there was a Labour government, led by Harold Wilson.

In 1970 a Conservative government was elected, with Edward Heath forming an administration which ran until 1974.

**HESELTINE**

James Callaghan (Lord Callaghan of Cardiff, 1911-2005), Labour politician. Foreign Secretary, 1974-6 and Prime Minister, 1976-9.

There were two motives as to why we did *Chevaline* and not *Poseidon*. One was that the Americans wouldn't give us *Poseidon*, the other is that it would have meant announcements being made by the Callaghan\* government which were considered politically unacceptable. His backbenchers wouldn't accept it. So he actually deceived his backbenchers by going for *Chevaline*.

**PANTON**

Harold Wilson (Lord Wilson of Rievaulx, 1916-97), Labour politician. Prime Minister 1964-70 and 1974-6.

Yes, but that was the same with Wilson\* as well I think to a degree.

**HESELTINE**

It was Wilson who did it? Okay, it was a little earlier. But which was it, that the Americans wouldn't let us have it or that Wilson couldn't face up to it?

**PANTON**

Sir Solly Zuckerman (Lord Zuckerman of Burnham Thorpe, 1904-93). Chief Scientific Adviser, 1964-71.

Wilson was offered the *Poseidon* system in 1966. He refused it in 1967. Zuckerman,\* who briefed the Prime Minister, had been saying at that time that the British would not go to a second generation of nuclear weapons, so we scientists were set to looking at alternatives, which we did and we came up with the *Chevaline*. And as I say, it took from 1967 to 1975 for the successive governments which came and went at that time, nearly nine years, to reach a decision which they actually could have reached in 1967. And having done that, almost too late, you did have a good system, a very good system. I won't go into the other reasons why it took so long, except to say that there was much dissension within the ranks of the Ministry of Defence at that time between the services and the scientists. I am writing the history of that and I am intending to publish it at some point.

**QUINLAN**

Strategic Arms Limitation Talks (SALT I), between the USA and the USSR were finally signed in Moscow in 1972.

Though the Americans may have offered *Poseidon* in 1967 (that was before my time and not known to me), by the later stages, certainly when the Heath government was in power, the view was taken that they would not provide it, because they were involved in the SALT negotiations\* and therefore it would be imprudent even to ask.

**PANTON**

Multiple Independently Targetable Re-entry Vehicles (MIRVs).

It was a matter of the MIRV.\*

**FREEDMAN**

A matter of the MIRV system that they wouldn't give us.

**DOMMETT**

Yes.

**FREEDMAN**

I don't want to go too far down this path, though it is utterly fascinating. The important point about *Chevaline* was to some extent also that it was an anti-ABM system.

**PANTON**

It was designed to penetrate the ABM defences of Moscow.



**FREEDMAN** So if you are having a new ABM system coming along from the Russian side but perhaps being encouraged by the Americans, then that was one reason why *Chevaline* was appropriate.

**QUINLAN** Certainly.

**FREEDMAN** The question I want to move on to is the importance of the serious debates going on on the American side, first on the different versions of directed energy weapons, with Teller on one side and others elsewhere, but also conceptionally between those who were trying to remain true to the President's vision, which was a system that would protect everything, and those who saw an opportunity to develop something that would protect say *Minuteman* ICBM silos,\* that would protect ICBMs or command centres or important sites, but wouldn't make this claim to protect the whole society – the astrodome concept as it was called – from a missile attack. How much of a sense did you have of those debates on the American side? So was it a deliberate attempt to subvert the President's vision and take it into an area of feasibility, or were they sticking to the big story?

*Minutemen* are American intercontinental ballistic missiles.

**PANTON** Perhaps I wasn't in a position to be aware of this specific discussion but, in any case, I don't recall it. Of course, thoughts such as, don't think about this as a total system, some bits of it may be useful, were always around. And, indeed, such bits were precisely those which we wanted to be aware of, in case they might be relevant to the credibility of the UK's deterrent system. One thing that happened was that, by 1985, it had become clear that the concept of directed energy weapons in space required much more research and development than had been thought in order to demonstrate viability, and the time-scale for possible deployment lengthened to beyond the late 1990s. For the boost phase defence, laser and neutral particle beams travelling at the speed of light were the postulated mechanism to achieve a satisfactory kill rate. As an interim system for deployment in the early 1990s, to be replaced as soon as directed energy weapons became available, Brilliant Pebbles was proposed. The concept was that Brilliant Pebbles would be fired from satellites by an advanced version of a defence interceptor already in operational use by the USAF at that time. As a stop-gap system it had the virtue, at least in the minds of its proposers, of using technology already available – and it probably was, largely, as far as the pebbles themselves were concerned. Whether or not the system as a whole would be effective remained to be demonstrated, but nevertheless the concept achieved some support as a temporary expedient to buy time while more work was done on directed energy weapons. I think the concept sank without trace after a year or two, but these were the sort of thoughts going around at the time.

- FREEDMAN** With the Brilliant Pebbles you had things in space that were whizzing around and you would activate ...
- PANTON** No, you parked them.
- POWELL** In garages in space, that's right.
- PANTON** You parked them on satellites and you had about 150 of these little things on rockets, with rocket motors, and you fired them off and had a shower.
- POWELL** You forgot to mention the little green men who fired them!
- PANTON** For the boost phase they were thinking of anywhere in between 100 and 600 satellites, each with 150 of the Pebbles, so you got a great shower of them. You were trying to counter the mass firing of 1,400 missiles, ICBMs, at the same time. As I said earlier, I couldn't myself see how anybody could get in the system there to say, 'Wow, stop, it's all a mistake'.
- WESTON** I think one of the interesting things about this discussion so far is the way in which it reflects how easy it was for all of us to get caught up in the original vision, to use President Reagan's words, 'to render all nuclear weapons impotent and obsolete'. We have been talking so far only about defence against strategic ballistic missiles, but of course in terms of the overall theory of deterrence that both sides were comfortable with and had been long thinking in terms of, there were also *other* nuclear strategic systems, which weren't land-based intercontinental strategic ballistic missiles at all. For example, what did Star Wars say about for example submarine-launched ballistic missiles launched in depressed trajectory very close to the continental United States? What about sea-based nuclear-armed land-attack *Cruise* missiles\* and the other paraphernalia of nuclear attack such as manned heavy bombers? SDI did not address these. It is just very interesting that we have assumed for the purposes of this discussion that ICBMs were the only threat there was to contend with, whereas, of course, this was not the case. Quite apart from the technical credibility of the 'astrodome' idea as conceived and presented, there were a whole lot of other holes in it, from the nuclear threat point of view, which it simply didn't address.
- FREEDMAN** Closing the door while leaving the windows open.
- PANTON** They'd be coming mostly from the wrong direction, that would have been one of the problems I think really.

*Cruise* missiles are unmanned winged, self-propelled guided weapons, whose antecedents are the V1 type missiles.

**POWELL**

Can I raise two or three points, which I think arise from the discussion. One is I need to think back about how decisions were taken and how policy was set. We have been hearing a great deal about the work that was going on, and it was going on of course at the time. Very little of that really penetrated to the Prime Minister, inevitably, and you have to remember that (take 1984 as an example) there were one or two other things going on: there was a coal strike, which was taking a lot of attention. We talk as though all this was distilled and was all into the minds of those reaching decisions, when a lot of it didn't, a lot of it came nowhere near that. So you have to rely rather more on the political instincts of the people who were taking the decisions, and of course their views did differ quite sharply. We heard Michael Heseltine's view, we know what Geoffrey Howe's views were from the speech he delivered thanks to me. But Margaret Thatcher's views were really in her own mind based on what she thought, what she heard from General Abrahamson, what she read in *Aviation and Space Weekly* which she avidly devoured every week, and if you read her memoirs you will find that she says that she kept requesting papers from the Ministry of Defence and the Foreign Office, but they never arrived so they were pretty much of a write-off. Indeed, I hate to say it when John Weston is in the room, but she actually used a term like 'laid-back generalists', and this was reflecting her view.

**WESTON**

We need a few more of those in politics!

**POWELL**

So, to maintain a reality check on these things in the historical context, you have to think that much of this work was informing what the Foreign Office and what the Defence Secretary and the Foreign Secretary thought, but not necessarily what the Prime Minister thought. And in a sense the essential dialogue was the one she was conducting at the highest level with President Reagan.

**FREEDMAN**

That did come through at the time. There often did seem this disconnect between what Downing Street was doing and what the MoD and the Foreign Office did.

**POWELL**

If you read her memoirs again, she says 'I was determined to keep the subject under my control' and you could debate whether she did or not, but certainly in her own view she did and I think she was the main channel.

**HESELTINE**

But how would you distinguish *that* determination from her determination to keep the whole of government under her control?

**POWELL**

I think you underestimate the role of Private Secretaries, who decided what to put in her box every night!

**HESELTINE**

So it was you!

**POWELL**

That's right: tonight is the night we will torment the Ministry of Defence! My second point is something that is quite instructive and that is the whole sort of Camp David episode in December 1984. John Weston is quite right, we had this seminar and certain thoughts *did* get into her mind. She realised that above all she had to stop President Reagan undermining the case for nuclear weapons in the public opinion. This is what she feared most: there you were, she had won an election, she had battered Kinnock\* on the subject of nuclear weapons and here of all people was Ronald Reagan saying that nuclear weapons were a menace and should be got rid of. This was a serious political problem and this is how she approached that problem. Before going to Camp David she had been in Peking to sign the agreement on Hong Kong, flew down to Hong Kong to tell the grateful people of Hong Kong what their fate was, and then set off on an aeroplane to fly from Hong Kong to Camp David, which in an RAF VC10, facing backwards, takes a while.

Neil Kinnock (Lord Kinnock of Bedwellty), Labour politician. Leader of the Labour Party, 1983-92.

**QUINLAN**

The aircraft goes forward!

**POWELL**

Not always. When there was a strong wind it sometimes seemed it wasn't! It was during that flight that she really worked out the position she was going to take at Camp David, communing very largely with herself. But she decided that the politics of it were that she must allow President Reagan to believe that we supported research, and in her mind I have to say also testing. She always took the view that research is meaningless unless you can test the results and therefore by research you mean testing. She knew deployment was ruled out by the ABM Treaty. What she retained from the conversation with John Weston was that testing was separate, but in her view it was permissible and must be supported. But by giving support to that, she must rein him in on the nuclear weapons side of it. When we got up to Camp David we had a discussion with the President. First of all she saw him alone, or almost alone, with a note-taker present, and talked to him and got this idea of his passion for it, and then in a slightly wider group, where my main recollection is that his eyes kept straying to the clock as she told him how SDI *should* be managed. At the end of it she said, 'We must have some conclusions which I can use in the press and while we are having a drink some people will go off and write those'. I went off to join, as John Weston rightly says, John Kerr, who was waiting in another small room outside. And John, a much more flexible person than me, knew how to use a typewriter and between us we sat down and devised the four points on a scrap of paper. I walked them back into the room where they were having a drink, handed them to Margaret Thatcher, who looked at them and said, 'That seems to be what I had in mind'. She passed them to President Reagan, who

Robert C. McFarlane, American politician. National Security Adviser, 1983-5.

George Schultz, American politician. Secretary of State, 1982-9.

Mikhail Gorbachev, Soviet politician. Chairman of the Supreme Soviet 1989-90 and the Executive President of the USSR 1990-1.

looked rather blankly at them and passed them on to Bud McFarlane,\* who must have been there and who said, ‘They look alright to me’ and handed them to George Schultz,\* who nodded. And that is how the Camp David four points were agreed – as you can see, with careful drafting by both sides! Secretary Weinberger was not there and was furious to discover afterwards that these points *had* been agreed. I think what I am saying is never underestimate the random features in some of these things; the circumstances and the events often produce the policy in a way. And yet the policy which emerged was the right one, essentially it was the right one. It said you can’t deploy these things, it said the whole aim is balance not superiority, it said the aim of reducing numbers of nuclear weapons should be there but that nuclear weapons remained essential. So sometimes these things do come together. Can I just make one more point, and I will make it very quickly. One thing we have strayed away a bit from is the impact of SDI on the Soviet Union. There is a lot of dispute about this, a lot of people say, ‘Oh, it is only after the event that Reagan and the Republicans and the Americans claim that the whole purpose of this policy was to bring down the Soviet Union and destroy it.’ That is actually not quite true, and again I refer to her memoirs on this point, and I do so only because this part (indeed all the foreign policy parts) of her memoirs was based on my contemporaneous notes and whatever else I do, I do write things down fairly accurately. But he said even in 1984 that his purpose was to put to the Soviet Union a challenge which she could not afford to rise to; that there was a limit to how far the Soviet system could oppress Russian people, they could not be expected to constantly devote so much money to defence and that he was proposing in SDI was going to crack the Soviet system. So I think you have to give President Reagan credit for having that as part of his vision of the SDI. I think it also helps to explain the very general nature of it. He knew it wasn’t going to happen in five years or ten years or whatever. Whatever might be said, he knew this was some distant thing, but the concept was going to be such that it would really face the Soviet Union with a terrible choice. You can then trace that through Mr Gorbachev’s\* meetings with him: at first trying to get the President to give up SDI, to confine it to the laboratory, not to let it get out of hand, but eventually conceding that there was no way it was going to be stopped. And we all know how history then wrote itself. I do think you have to give President Reagan above all credit for realising that and I think some credit to Margaret Thatcher for also recognising it early on, because she does say that she thought that this was the single most important decision of President Reagan’s presidency.

## FREEDMAN

I would like to talk about the Russian side and about the arms control aspect, but just one question before that, which is that Camp David was December 1984 and the speech was March 1983. There is quite a gap. One of the things that interests me is how long it

took before people realised that this was actually serious. I have got a recollection of a Ditchley Conference in 1984, which I am not sure if you were at John Weston, which Weinberger came to.

**WESTON**

And it snowed.

**FREEDMAN**

That's right, my Volvo got stuck, I remember that. That must have been late 1983 then or early 1984, because this was the first time as far as I could see that Weinberger was aware that people were at all sceptical and dubious. He was really very surprised.

**WESTON**

I don't know whether it was the first time, but certainly he was good enough to sit through a lot of flak.

**FREEDMAN**

Yes, he certainly did. It was probably sort of the start of the recognition that firstly the Americans were serious and secondly that if the Americans were serious it was going to generate a response.

**WESTON**

In intra-alliance terms, yes.

**FREEDMAN**

Lieutenant General Brent Scowcroft,  
American soldier and politician.  
National Security Adviser, 1975-7,  
and 1989-93.

But up to that point it had been seen almost as anomalous, because it had been followed I think by the Scowcroft\* report which had been very moderate, very bi-partisan, pushed things back towards the traditional deterrence ways and had been rather dismissive of ballistic missile defence. And that had been after the President's speech, so I think it took a while before people realised that actually they meant it.

**HESELTINE**

I don't have the dates in front of me, but I do remember vividly the circumstances in which we were informed about the SDI decision that was going to be announced. I had spent two days with Cap Weinberger at a NATO conference, at which the subject was not mentioned. I had hardly got back into my office before the 'phone went and he said, 'By the way, I ought to tell you that we are going to develop the SDI project'. The Ministry of Defence understood at once the significance of the announcement and perhaps found it difficult to understand why I hadn't heard about it when I was with him a few hours before. I think he understood the sensitivity of the issue. But which NATO conference that was I have not looked up.

**FREEDMAN**

This was why Weinberger and Perle both tried to get the speech delayed and altered, not only because of the sensitivity, but because of the consultation point: that it seemed very odd to go through a NATO meeting with people like you and then all of a sudden to bounce this on them immediately afterwards.

**HESELTINE**

Yes, there was no consultation.

## Session II

**FREEDMAN**

John Weston, as he warned us, has unfortunately had to go. A couple of people have indicated that they wish to ask some questions and it might perhaps be useful to take those now, to get them on the table as it were before the next round of discussion.

**PROF BHUPENDRA  
JASANI**

One of the things in the discussions that didn't come through, and I wonder whether you would enlighten me on that, is that Article 9 of the ABM Treaty specifically states that there cannot be any technology transfer and if you read it with the Common Understanding it also in fact prevents the blueprint even being transferred. Under those conditions, how did we regard this call that the US made to us about collaborating in technology, when by the ABM Treaty they couldn't do that? That is the first question. The second one is of a more technical nature and some of the technicians might be able to enlighten me. If one intercepted a warhead, depending on how the warhead is used you probably want to destroy that and a lot of the radioactivity, exploded or unexploded, or even chemical weapons, would shower on to us. So I ask myself: what are we defending ourselves against? I just wonder whether people thought about these kind of things.

**STOCKER**

One aspect that hasn't been sufficiently teased out yet, but it will be interesting to get reactions to, is the extent to which there were in reality two SDIs: there was Reagan's SDI and there was everybody else's SDI. A lot of the public debate in the UK, particularly the hostile aspect of that debate, was predicated on the Reaganite astro-dome-type view, whereas most of the SDI programme, and the UK's limited involvement in it, was actually predicated on a much more realistic and also more limited view of what SDI might or might not achieve within the foreseeable future, which in practical terms meant many people's lifetimes. There were of course two different aspects to the UK response to SDI and we have heard elements of both of them already. On one level there was the policy aspect, in terms of what it meant for the UK's nuclear deterrent, arms control, relationships with Russia, alliance cohesion and so on, and a related but distinct element, which was the extent to which we should participate in SDI and attempt to get spin-offs from it in research and development terms. The participation element of that has endured to this day and of course right up to the present day there are British companies and research institutes getting missile defence funding and activities from the US still under the terms of the 1985 Memorandum of Understanding, even though SDI itself, as then foreseen, has long since gone away. But in terms of the policy response to SDI, and this comes back to the final point that the chairman made before the break, the period during which at a policy level the UK responded to SDI was a fairly

limited one and I date it between 1984 and 1987. It seems to me the reason why it took about a year or more before the UK government really started to respond at a policy level to SDI was several fold. First of all, there were more pressing strategic issues: deployment of *Trident*, deployment of *Cruise*, both in the face of substantial domestic opposition, and also the stalled arms control negotiations with the Soviets. Those were all clearly much more pressing issues. But what changed in 1984 was that Reagan secured his second term, SDIO was set up and SDIO was given a budget. Those three things in combination, it seems to me, if I have read it correctly, answer Lawrence Freedman's question of why did it take at least a year before we really started getting any high-level response. But of course by 1987 Reagan was in his last year of office and whatever George Bush\* was going to do, he was clearly not signed up to the astro-dome version of SDI, and more importantly the arms control process was back on track, with the INF Treaty,\* with the prospects of other agreements to follow. Therefore much of the public heat of the SDI debate had gone away. So when we are talking about the policy response to SDI, we are talking it seems to me about a relatively short timescale: three to four years at most. Noting of course that SDI, although with that label and particularly with the pejorative 'Star Wars' label, is thought of as a distinct entity, but actually it was merely one episode in a continuous story of US investigation into missile defences from 1945 right up to the present. People often say Star Wars failed – it didn't fail, it is still going on, it has simply evolved and been relabelled several times. But it seems to me that in the present terms those three to four years in the mid-1980s were the critical period. I would be interested to hear from those involved on the policy side whether my reading of that is correct: why we really started to take an interest in 1984, but why by 1987 most of our fears had been assuaged and it subsided as an issue.

George H. Bush, American politician. President, 1989–93.

The 1987 Intermediate Range Nuclear Forces Treaty (INF Treaty) between the US and USSR sought to reduce the actual numbers of nuclear weapons rather than put ceilings on their possession and eliminated intermediate range (500 to 5500 kilometres) missiles.

#### **FREEDMAN**

It might be interesting to start with to just clear out of the way Bhupendra [Jasani]'s first question on blueprints – whether we felt under any inhibition about handing things over to the Americans. Presumably we would argue that we were dealing with component technology, we didn't have blueprints for ABMs ourselves so there wasn't very much that could be handed over one way or the other.

#### **CAPLIN**

My recollection is that it did delay and it was a hurdle at the time.

#### **FREEDMAN**

I don't remember this point ever being put out.

#### **HESELTINE**

I don't think it ever occurred to anyone.

#### **PANTON**

If it was put at all I think the answer would be that this was technology and it wasn't the achieved technology that was going to be



deployed, and that was what basically the ABM Treaty was about. I don't recall it being raised at all.

**DOMMETT**

My impression was that SDI brought together a number of US research programmes already in existence in an organisation that had no history, no background at all. When we first met them they were rather naïve about what was going to happen and how they pulled it together and it did take two or three years for them to actually pull themselves together and have a proper direction in which they were going. That was one reason why it took us some time to get involved with the things that we had proposed and work that we had in fact suggested we could do.

**HESELTINE**

I could say something about the two concepts, the Reagan concept and the practical concepts that emerged. It is I think commonplace in the political life of a minister to have 'the big idea' and say, 'Let's get rid of a, b and c or let's achieve x, y and z'. By nature politicians are generalists. In this case one was talking about a big idea. The politician says, 'This is the policy I want to achieve'. In practical terms, many different groups of scientists, defence experts, officials have to think through the implications and determine the options. It would be very easy for different views, different interpretations, different route maps, to be designed by the political process. I can remember time and again submissions coming back basically, and I parody the situation, saying, 'Secretary of State we have now worked on your brilliant idea and this is how we think we can achieve it. It is not a hundred per cent yet worked out as you would hope, but it is the best we can do in the short time we have available ...'. Actually what is in front of you can range from a travesty of your idea to something that is 90 per cent of the way there.

**PANTON**

This is the rather normal staff requirement.

**HESELTINE**

Yes, exactly.

**PANTON**

The staff make a requirement and the workers go away and do their best to try and fulfil it. At some point in this SDI thing somebody would have collected it all together and we would have told him what we can do in the boost phase, what we can do in that phase and what achievement we got, and if it was like 90 per cent success it might have gone ahead, but if it was 50 per cent or below I should think it'd get the hammer – 'back to your drawing boards boys', more or less. But you are quite right.

**HESELTINE**

We were also asked questions about timing. The question was, did arms negotiations, the deployment of *Cruise* missiles and other things divert attention away. Well, I was responsible for the deployment of *Cruise* missiles., It did take time, but it is to misunderstand

ministerial life to think that you are sitting there hour after hour after hour worrying about the deployment of *Cruise* missiles. You might spend an hour on a Monday and have another meeting for an hour or a Thursday. In the meantime you'll have meetings, perhaps on a half-hourly basis, all through every day and often later on every sort of other subject. So it is extremely difficult, especially at the top of politics, and impossible for a Prime Minister, to find that your programme is being crowded out. You have a lot of decisions to take and your Private Secretary (excellent civil servants as they are) will slot them into your diary. But I actually didn't agree with the analysis that the process had taken time. I can't remember the date of the phone call to which I referred after the NATO meeting. It is well documented, but before I left the Ministry of Defence we had signed the Memorandum of Understanding. The decision-making was quite speedy. You were talking about 1987, which is 18 months after I had gone. The implementation of it, for all sorts of practical reasons, was relatively slow because people didn't actually know much what to do.

#### FREEDMAN

In late 1986 two covert US government operations were exposed: the selling of American arms to Iran; which were linked to aid to Nicaraguan contra rebels.

Frank C. Carlucci, American politician. Secretary of State for Defense, 1987-9.

I think there were two important shifts in the US by 1987, one of which is a complete overhaul of the National Security team, partly because of Iran Contra.\* McFarlane has already been mentioned, he came away with some disgrace from Iran Contra. They had a completely different team in the White House, but also Weinberger went and Carlucci\* came in, so you had a different Secretary of Defense. But I think the key thing was Gorbachev, because through 1985, 1986, Gorbachev was banging away about SDI. There was the curious episode of the Reykjavik summit in late 1986. Then it seemed to me that it dawned on Gorbachev that he was the thing that was keeping SDI going. Because every time somebody said this is a ludicrous idea it was argued that if it was so ludicrous why were the Russians so upset, why did they keep on banging on about it. And at some point Gorbachev decided that there was no point banging on about this anymore because it was actually having a counterproductive effect.

#### PANTON

My own surmise is that Gorbachev was being attacked by his own military and his own scientists saying, 'Look here, this is what the Americans own; by God they must know something we don't know and we'd better start on it', and he was under considerable pressure I think to start his own programme. And at Reykjavik he almost gave the whole Soviet Union away in order to get the SDI knocked on the head, but providentially, and for what reason I never did determine, I believe that Reagan actually said, 'No, this is no bargaining chip', not realising this was the biggest bargaining chip he had in his hand.

#### FREEDMAN

He clearly never saw it as a bargaining chip at all, yet many of his aides *did* see it as a bargaining chip.

**PANTON**

I do personally think that from that moment onwards the Soviet Union started to unravel, because from that moment onwards the expense of either combating an SDI system or building one yourself, on top of all these other expenses – and bear in mind all throughout this Cold War the Soviet Union was trying to match the advances in America on a gross national product which was somewhat less than half the Americans'. The Soviet Union said that their expenditure was about 8 per cent of GDP, about the same as the Americans. I think our intelligence people estimated something rather larger than that, but history has shown that it was much larger than we ever thought. For Gorbachev to have a situation in which he had to have another ratchet upwards was really I should have thought the killer. I am not very certain that President Reagan had that in his sights when he refused to give up SDI, but whether he had or not, I think the answer was after that point the Soviet Union starts to unravel.

**CAPLIN**

The Moscow Olympics were held in 1980.

May I just interject a little story here. I had a visitor from Moscow in 1986, soon after the Moscow Olympics,\* and I asked, 'How on earth did you manage to mount the Moscow Olympics.' My visitor, who incidentally was a great admirer of Mrs Thatcher, explained that for two years he had been unable to buy a nail or screw anywhere in Moscow! That was the state of the economy.

**FREEDMAN**

It is clear that the Soviet military saw SDI not in terms of a ballistic missile defence, but as a boost to American advanced military technology. That is why we wanted it stopped, as much as anything.

**PANTON**

I don't believe from what I remember that you could say that at that time the Soviet Union *had* an SDI programme. They had a lot of programmes in appropriate areas, but they never had been trying to put them together and I think this was the move that was probably being thought of by the military. This is all surmise on my part.

**FREEDMAN**

Of course Reagan offered to transfer SDI technology to the Russians, which Gorbachev never really took that seriously.

**STOCKER**

It is worth recalling perhaps that the people who started first thinking seriously about the implications of what today we call the Revolution in Military Affairs in the early 1980s were the Russian military. They were saying internally within the Soviet Union 'there are key technological issues, particularly computing', and that of course was relevant to SDI, 'in which increasingly we cannot compete with the Americans'. They were aware of the extent to which they were already falling behind long before we were aware of it in the West. That perhaps provides the context within which SDI played on their minds. They had already identified a problem and SDI just rubbed salt into the wound.

**FREEDMAN**

Charles Powell, Reykjavik was another occasion where Mrs Thatcher got rather alarmed, and possibly more so than with SDI, because this did bring out the abolitionist nature of the President's worldview.

**POWELL**

General Colin L. Powell, American politician and soldier. National Security Adviser, 1987-9.

I think that is absolutely true. First of all, I agree with what really all of you have said, Michael Heseltine and you, about the reasons for the time it took to get the policy and why after 1987 it began to fade. I think the different team in the US administration was a real factor. I mean, Colin Powell,\* who came in as National Security Adviser in 1987, never believed in SDI and doesn't believe in it today, doesn't believe in missile defence. As you say, President Reagan was already being weakened by Iran Contra and the pressures on him were getting pretty considerable and his own attention was beginning to falter. So for all those reasons I think that is a big factor. Reykjavik was a terrible shock to Margaret Thatcher and I think the phrase she used at the time was that 'the earth shifted beneath my feet'. I think I am right in saying it happened on a Saturday and it was a rare Saturday when I wasn't actually sitting at the desk being bullied about something. I had gone out of the country and I got an anguished telephone call, telling me that the world had come to an end, we must go straight across to Washington and would I book a plane more or less on the spot. This was because she had been listening to the radio, as was her wont at the weekend, and had heard a report on Reykjavik and the real risk, as it seemed, that nuclear weapons would be ultimately abolished. We did go over to Washington, I think three or four weeks later. It didn't take very long to get there and it was a very carefully worked-out bit of paper this time, which reiterated once again that whatever he might have been saying in Reykjavik, what he really believed was that nuclear weapons were simply great, they were essential, needed to be modernised and Britain had to have *Trident*. Once again, armed with that bit of paper she felt a good deal more secure. One of the questions I always ask myself, and I don't know the answer to it, is how much did President Reagan really believe in what we are politely calling the astrodome theory. President Reagan was a much more serious man than his image and I think he really understood the political effect of SDI and the propaganda he could make with it, and used it against the Soviet Union without the serious expectation that it was going to develop on any timescale which was relevant to *him*, anyway. And yet he knew that this was his great means of putting pressure on Gorbachev and on the Soviet system. I think you have to find a direct link between the 'evil empire' speech and the SDI, they are part of the same strategy: an offensive strategy against communism and an offensive strategy against the Soviet Union. That was why he was perfectly prepared on other occasions to sign up to statements saying nuclear weapons are still essential, because he knew in his mind that this was actually the reality of the present day and what he was talking about was far in

the future. But after that statement in 1987 I think Margaret Thatcher's worry sort of fell away, because she could see that was going to be the high water point of the link between SDI and nuclear weapons and that after that the scenery was changing.

**FREEDMAN**

He had written the 'impotent and obsolete' phrase, that was one of his phrases and it was part of his report.

**POWELL**

It is a very Californian vision.

**FREEDMAN**

It *is* very Californian. The interesting thing is you can trace it in Reagan's speeches from when he was Governor of California and even from when he was a union activist in 1945 to his presidency, so it is a consistency in his position. We should talk about the arms control and proliferation side. Ian Kenyon, perhaps we could get from your perspective how this aspect of it appeared in the Foreign Office and whether there was much that you could do about it.

**KENYON**

The problem was impotence in a sense. One was very conscious of the importance to a large slab of public opinion and to a lot of our allies and those we dealt with more broadly of the concept of arms control and the 'achievement' that it had had up to that early 1980s period. The key in a sense was the bilateral arms control, of which the underpinning was the ABMT,\* and here was something which could be seen as attacking that. Then you had at the same time a lot of explanations of what these wonderful technologies were. The one that terrified us most I remember was the X-ray laser, because if you have a space-based X-ray laser you breach the outer space treaty because you have got a nuclear weapon in space, to test it you break the partial test ban treaty, and by even going down that road you are rocking the whole concept of the ABMT and its Article 6. So we had to be out there saying to all our friends don't worry, it is all going to be alright. But until there was a clear statement of policy and knowing as we did that our first job as members of the Foreign Office was protecting our own deterrent interest and not arms control at all – arms control was sort of nice if you can have it as an add-on, but deterrence is really what it is all about, or was at that time in the Cold War situation – it made life extremely difficult. Of course these weren't the kind of issues that were getting pushed all the way up, they were just the things we had to try and control on a day-to-day basis and hope that the real issue, which was how far are we going to get into this, does it affect our deterrent and how are we going to have a proper policy that we can present outside which is consistent with maintaining our basic arms control posture, was going to be resolved. Fortunately it happened not too long in, but I remember that the early period (it coincided with my being head of the department more or less, because I took over the department in the middle of 1983) was really quite a worrying time. One didn't feel in control of one's act.

The 1972 Anti-Missile Ballistic Treaty [ABMT] between the USA and the USSR.

**FREEDMAN**

This was the point at which the Americans started to break with the arms control consensus.

**KENYON**

The next play round of the whole thing 15 years later is of course that the ABMT turned out to be the dog that didn't bark. They tore it up and nobody said anything. But we're in a totally different strategic situation, so you can't really compare the two. As I recall 1983 is one of the low points in the balance of the relationship and the Cold War was still a very real thing at that time, perhaps the very last point when it was a real thing, it started to go downhill very rapidly afterwards and I think the argument we have just been hearing that SDI played a large part in that is probably true.

**POWELL**

I think Ian Kenyon makes a very interesting point about the threat to the UK deterrent and the whole issue which Michael [Heseltine] raised of de-linking the US and Europe, because that really was one of the more profound differences across Downing Street and perhaps to an extent across Whitehall. The Foreign Office argued very strongly that the SDI was going to undermine deterrence, ruin the effectiveness of the British nuclear deterrent and de-link the defence of Europe from the defence of the United States. Margaret Thatcher certainly never accepted that view, she took the view that actually the SDI could strengthen deterrence because it gave the United States the security of knowing that even if the Russians launched a first strike, they would be able to destroy sufficient incoming missiles to leave themselves with a guaranteed second strike capability. Therefore defence was enhanced. And of course she would say that she knew that the Americans weren't going to launch a first strike, so it didn't apply the other way. But there was quite a profound difference in view on that and it came out in the 1984 seminar which John Weston mentioned at the beginning.

**FREEDMAN**

Tell us a bit about this seminar, there have been a number of references to it.

**POWELL**

In Oct. 1983 the Commonwealth country of Grenada was invaded by the USA and six other Caribbean nations. This action had taken place without any prior consultation with the UK Government.

I am slightly struggling to remember a great deal about it. We had a lot of seminars and one of them on Germany got some rather unfortunate publicity, but my recollection is that it was a seminar that had two parts. It came after the invasion of Grenada,\* which gave Mrs Thatcher a great worry on the issue which is still of course current today, namely when is intervention justified. She was very worried about the subjects we had at seminar, with people from the Ministry of Defence and we had civil servants and politicians and lawyers, and the result was a rather interesting one. The civil servants, the politicians, the military men, said it is extremely difficult, it is almost impossible to intervene, there is this constraint and that constraint, and the international lawyers said, 'what is the trouble, international law barely exists, you tell us what you want to do and we will give you a legal excuse for it'. So that was the morn-

ing seminar. The afternoon was devoted partly to NATO strategy generally and arms control, and partly to how we would react to this. Were you there chairman?

**FREEDMAN**

Yes, that is what I think.

**POWELL**

You must have come to the second part.

**FREEDMAN**

Yes, I came to the second part. This happened because some trip had been cancelled and they all of a sudden put in some seminars.

**POWELL**

Yes, that is quite likely. We cancelled a trip to the Far East because of the coal strike.

**FREEDMAN**

But SDI was quite a small part of that seminar as I recall it. There was a lot about deterrence and about arms control.

**POWELL**

John Weston's recollection is absolutely right in everything he says about the discussion of the ABM Treaty, but that was not the theme of the seminar.

**FREEDMAN**

No that's right – I was wondering what I had missed. You were there as well Michael Heseltine.

**HESELTINE**

Yes, it was at Chequers wasn't it. But I thought – here we are with the *Belgrano* incident you see – that the essence of the seminar *was* the SDI and our response to it, in the morning session.

**QUINLAN**

I am sure that is right. I don't remember you (Charles Powell) being at the one I was at. I can't date it precisely because for me, as I explained at the outset, it was completely out of my then current working context. But I can remember a seminar which was essentially about SDI.

**HESELTINE**

I can date it, because it was in order to discuss the upcoming visit to Washington, when we met President Reagan. It was February 1985, wasn't it?

**POWELL**

She gave the Congress speech at that time.

**HESELTINE**

Yes, and that's when we raised the issue with President Reagan about SDI and I think the seminar was a prelude to that.

**POWELL**

It came after Camp David in that case, because December 1984 was Camp David.

**HESELTINE**

That's what I find curious, because Camp David had set down the policy.

**QUINLAN**

I find that very odd too; I have the same difficulty with that date.

**FREEDMAN**

Sir Arthur Hockaday (1926-2004), civil servant. NATO Assistant Secretary General, Defence Planning and Operations, 1967-9, Deputy Under-Secretary Ministry of Defence (Policy) 1973-76, Second Permanent Under-Secretary, 1977-82.

Lord Cameron of Balhousie (Sir Neil Cameron, 1920-85), soldier. Chief of the Air Staff, 1976-7.

This is the problem with oral history seminars when you don't have the papers in front of you and you are trying to date things. The one I remember started with Arthur Hockaday\* saying something and being shot down. This was before 1985 because Neil Cameron\* was also there and he died before 1985. So we obviously have got two different seminars. Something for somebody to explore and check the papers on. We will move on to the British deterrent. In some ways SDI might have been expected to do more damage to the arguments for *Trident* than it did. I was wondering whether this was partly because it would have required the Labour Party to talk up SDI, which they were disinclined to do because it was a Reagan project, in order to damage *Trident*, which they didn't like because it was a Conservative project. They were torn between the two. In arguing for *Trident*, did you find SDI being used in evidence against you?

**HESELTINE**

The big public argument over the purchase of *Trident* and the deployment of *Cruise* missiles was in the run-up to the 1983 election, which of course was before SDI became a live issue. In the event my own recollection is that what had initially been a vote loser for the Conservative government became a very substantial asset by the time we got to the 1983 election. Instead of talking about nuclear weapons and *Cruise* missiles and all that, we talked about Britain's independent deterrent and one-sided disarmament. Once you turned nuclear disarmament into one-sided disarmament, you had half won the battle (that change of language was a strategic decision taken in my office in the Ministry of Defence). In the 1983 election defence was a very big issue. The government was materially helped by the intervention of Jim Callaghan halfway through the campaign knocking the Labour position, which was anti-NATO, anti-nuclear, and argued to cut the defence budget by a third. It all turned out to be hugely advantageous once we got to the election campaign. But SDI didn't come into it.

**FREEDMAN**

And after that you didn't feel at all on the defensive about the issue?

**HESELTINE**

I think it is the timing. I was responsible for building *Trident* facilities. It meant modernising the existing system, and it was happening at the time. Star Wars was something twenty years away. *Trident* would long since have been redundant if there had ever been a real Star Wars system, so quite different new decisions would have to be taken along the journey. So the two things were not so linked. They would have been in the minds of the peace movements, but



the peace movements had suffered very severe reverses before we got on to Star Wars.

**QUINLAN**

Greenham Common, near Newbury, Berks, site of airfield where *Cruise* missiles were deployed in the early 1980s. To protest, women's peace camps were established and came to be known as 'The Greenham Women'. Greenham Common was released from military use in 1997.

But even the peace movement, surely, at this time was fussed about *Cruise* missiles and Greenham Common more than this.\*

**HESELTINE**

You are absolutely right, because that was the deployment that took place 1984-85 and that *was* big policies.

**QUINLAN**

Yes. That was their focus, rather than this theoretical stuff.

**POWELL**

I come back to my point, that I think one of the main drivers in Margaret Thatcher's views on all this was this fear that President Reagan's concept would appeal to public opinion and seem to endorse Labour Party policies that you could get rid of nuclear weapons, and that therefore she had to keep racing over there to get the belief in nuclear weapons and the effectiveness of nuclear deterrence re-established time after time.

**QUINLAN**

Can I put a point to Ian Kenyon, since he was working in the Foreign Office on arms control? Did anybody think it important to talk to the French or the Germans, or was this entirely a UK-US issue?

**KENYON**

Well, one did. One talked rather more to the Germans than the French on the kind of arms control I was involved in, because the French always took rather a sort of view of their own and you could never really predict what it was going to be, whereas the Germans tended to think rather as we did.

**QUINLAN**

Of course the French would have disliked SDI, for some of the same reasons as we did.

**KENYON**

Yes, I think that was one area where they were with the dislikers, but of course we were at the position of as it were climbing aboard with the Americans.

**QUINLAN**

Seeking damage limitation rather than opposition.

**KENYON**

And I am not sure the French thought that was a brilliant idea.

**HESELTINE**

Helmut Kohl, German politician. Chancellor of the Federal Republic of Germany (1982-90) and of Germany (1990-8).

Manfred Wörner (1934-94), German politician. Minister of Defence, 1982-8; NATO Secretary General 1988-94.

And we were very close to Chancellor Kohl\* and Manfred Wörner,\* the Defence Secretary in those years.

**KENYON**

Yes, the Germans worked with us much more closely as I recall.

**CAPLIN**

Eureka, established in the mid-1980s, is a pan-European network for market-oriented, industrial research and development.

But the French set up the Eureka programme\* at about that time.

**FREEDMAN**

François Mitterand, French politician (1916-96). President 1981-95.

That was supposed to be the civil equivalent, wasn't it, to the SDI, but there wasn't very much happening with Eureka. But, in general, Mitterand\* and Thatcher thought quite closely on these issues, so one would normally have expected the British and the French to work quite closely together at least on sustaining the concept of deterrence, if less so in taking the same view on SDI itself.

**POWELL**

The whole issue of Anglo-French nuclear co-operation was a very live one during the 1980. It never actually got very far, but a great deal of discussion went into it.

**BURK**

Michael Charlton, *The Star Wars History: From Deterrence to Defence: The American Strategic Debate* (London: BBC Publications, 1986).

Robert McNamara, American politician. Secretary of Defense 1961-8.

Can I ask a little bit more about the background in terms of the theory that went into this. Last night I spent some time re-reading a book that I think at least one of you appeared in, which is Michael Charlton's transcripts of his series of radio programmes on Star Wars.\* It was a quick re-reading, but one thing that sticks in my mind is the development of what you ought to do, from McNamara\* with the mutual assured vulnerability – if you are able to kill each other then no-one will start it – through what you did during *détente* to end up at Star Wars, when you actually are going to then have a defence against it, with the implication that the opponent is going to produce more missiles to be better prepared and so forth. To what extent were the British actually involved or taking part in the developments in theory about what you do about nuclear war, or was it (which I cannot believe) all of a sudden burst upon policy makers over here?

**QUINLAN**

You seem to be implying a lively debate whose existence I simply do not recognise. The fact of mutually assured destruction capability – it was a fact and not a policy, something people constantly forget - was something which was taken for granted, I think, on both sides of the Atlantic. But it was a fact which had to be managed; I don't think there was something going on in the United States that hadn't been noticed here. One of the things that was so

interesting – there are other adjectives than interesting I could choose – about the Reagan action was precisely that it appeared to overturn that acceptance. I don't think there had been a great process which we had not noticed going on before that, if that is the implication of the way you put it.

## BURK

No, the implication very much wasn't that. These particular transcripts are interviews with McNamara and Richard Perle and so forth and McNamara goes on at great length about how he thought that a defence against nuclear war was not only not possible, it was wrong, because that would encourage the other side to produce more missiles to overbear the defence. Now this developed differently during the period of *détente*, as you know much better than I do, and there is an evolution of policy that ends up almost the opposite by the time you get to Reagan's period. And all I wanted to know was to what extent the British policy makers or military men or scientists were involved in the discussions that led to the evolution of this policy.

## QUINLAN

I still do not quite recognise what you say. Is this an evolution from McNamara up to just before Star Wars? It seems to me there wasn't a huge upheaval of policy going on during that time.

## FREEDMAN

The Strategic Arms Limitation Talks II, which began in 1972, culminated with the signing of a Treaty between the USA and the USSR in 1979, limiting strategic and offensive arms.

The Committee on the Present Danger (CPD), formed in 1950 to alert Americans to the Soviet 'present danger' to US interests. Re-emerged in the 1970s when supported by US President Gerald Ford and the Head of the CIA, George Bush.

NeoCon (neo-conservative) is used to describe members of the American Republican Party and government under President George W. Bush who endorse a powerful government, with traditional moralist commitments and aggressive promotion of the US economy and foreign policy interests.

There had been an enormous debate in the late 1970s around SALT II\* and the whole SALT II ratification debate in the US Senate, the Committee on the Present Danger,\* this is where what we now call the NeoCons\* cut their teeth and were challenging mutually assured destruction, not so much in terms of defensive systems but in terms of targeting of offensive systems. So there had been that debate, which I think in Britain had been watched with some anxiety, but there hadn't been a comparable debate in Britain. The debate here was much more about INF. The debate got slightly tortured in crossing the Atlantic, because this was interpreted in the UK in terms of limited nuclear war, that the Americans had this idea of limited nuclear war by which they were going to fight the Russians, but the only missiles would be hitting Western Europe and Eastern Europe. It was that sort of idea and *Cruise* missiles were represented as part of that. So there were those debates that were going on.

## QUINLAN

There were certainly debates going on about how you should give reality to flexible response as a policy, alongside the *fact* of ultimately mutually assured destruction capability.

## CAPLIN

But the technical developments were all leading towards counter force, rather than counter value, that is that you could aim a smaller

warhead so that it landed on the opponent's missile silo or headquarters or whatever, rather than destroying Moscow or London.

**QUINLAN**

Certainly. This was part of a debate about how to give reality to flexible response underneath the overwhelming shadow of the fact, and I say again the fact, of capability for each of us to destroy the other completely. Certainly we were in that debate, I was part of it.

**HESELTINE**

There is a very interesting question that flows from this. How long does it take to develop a weapons system? Someone has a bright idea. They say we have got an intermediate range missile or a short range missile, or whatever it is. The decision to develop is taken. Years go by. The industrial machine produces, with the aid of the ministry, weapons, weapons for every purpose to fit, any conceivable budget. The theory as to how it fits into the defence strategy can come later. But you have been working on the weapons long before anybody has worked out the theory.

**PANTON**

What you do is you start out with some theory or some specification for the weapon you want and by the time that twelve years have gone by in development the situation has changed completely. You have still got the weapon, with some amendments to it along the line, and then, you are quite right, you have to work out how it fits into your armoury and how you are going to use it. But coming back to the nuclear bit, I think that since 1972 the British position has been to preserve the ABM Treaty at all costs and alongside it to defend the non-proliferation treaty. Those are the two sort of touchstones that you would use to look at any kind of proposal like flexible response. When Star Wars comes along, the best argument for that is moral: instead of being offensive you are being defensive and you are not attempting to kill anybody at all, your defence is not that you are going to flatten Moscow after you have been killed yourself more or less, your defence is that you are going to stop them from doing it altogether. A very big moral issue, but it does absolutely rubbish, or could rubbish, the existing deterrent system.

**QUINLAN**

Aleksei Kosygin (1904-80), Soviet politician. One of a Soviet collective leadership that succeeded Nikita Khrushchev. He was the chairman of the Council of Ministers.

This is exactly the argument that Kosygin\* used at Mitterand at Glassborough in 1967.\*

**PANTON**

A US-Soviet Summit was held in 1967 at Glassborough, New Jersey.

Yes, yes, it is.

**HESELTINE**

That is a very charming way of explaining it, but you would never persuade me, if I was your enemy, that you hadn't got a offensive capability linked in with your defence system.

- PANTON** That's the downside in this! I was speaking about the upside.
- QUINLAN** To come back to the continuity of policy; from 1972 onwards and the SALT I agreement there was at least a common understanding, which 1983 began to disrupt and which people wanted to hold on to, seeking to recognise the fact of MAD and manage it as stably and as cheaply as possible.
- PANTON** But from 1972 to the time that SDI comes up in 1983, as I think I remarked earlier, scientific progress had been made and the big progress was microchips. Microchips enable you to have smart weapons of very small size with their own control and their own sort of guidance system in them – not wire control or whatever – and that changes you to look at the possibility of having a real ABM set-up. I believe that one of the reasons why an ABM Treaty could be agreed at that time was that the technology for a really successful ABM system had yet to be developed. Twelve years later the technology becomes perhaps closer to being probable and you could then think at least of land-based ABM systems which might really have some credibility.
- HESELTINE** Well, wait a minute. The micro circuitry and the seek-and-destroy capabilities and the miniaturisation processes are the method by which you invent a huge range of other ways of attacking.
- PANTON** Yes, attack advances are possible, as well:
- HESELTINE** So the terrorist, the aggressive country, whatever, doesn't need to worry about the ABM business – just go in there and zap 'em.
- PANTON** Well, it could be.
- CAPLIN** Could I emphasise also the imbalance on the micro circuitry that there was between the Soviet Union and the West. The Soviet Union had perfectly capable scientists who could design and make one-offs, but being able to mass-produce was way beyond them, they had terrible trouble with that kind of thing. That was I think the issue: it's about the production, not the ideas.
- FREEDMAN**  
Marshal Nikolai Ogarkov (1918-94), Russian soldier. Chief of the General Staff, 1970s and 80s, exponent of the need for Soviet military supremacy and expansionism.
- CAPLIN** But could I ask in that case what was the red team, or whatever you civil servants call it, who were playing the role of the Soviet Union,

going to do about SDI? What were people here anticipating the Soviet Union would do?

**HESELTINE**

I had a very interesting experience when I first went to the Ministry of Defence. Wherever you go as Secretary of Defence you are briefed on the threat. You sit there and the chills are put into you as the horrendous capability of this or that enemy is paraded. It is easy to believe that the whole world is about to be obliterated around you. That gets you in the right psychological state to sign every budget for every weapons system! Anyway, very early in my days as Secretary of State I said, 'Look, I am totally on your side; I believe in credible defence but, just so that I understand the full psychology of these Generals, Admirals, Air Marshals, I want you to pretend that you are Russians. I want you then to brief me on the threat as you see it, or would see it through Russian eyes'. Now I would have thought this was very amateurish suggestion: to try and think through the enemy's point of view was not that difficult to implement. But they couldn't do it. They had *never* put themselves in the position of trying to think what we looked like to the Russians.

**CAPLIN**

I am glad we survived.

**HESELTINE**

Well we did more than that, we won.

**POWELL**

There is another answer also to David Caplin's point, because certainly the Foreign Office never bought into a red team strategy anyway, the Foreign Office was deeply attached to *détente* and it continued to be deeply attached to *détente* after Reagan came to power. It never bought into the 'evil empire', never bought into the goal of bringing down the Soviet Union. To be honest, there was a complete disconnect between the views of the Soviet Union and the way to treat it across Downing Street.

**CAPLIN**

But my point is, let's assume there is *détente* there, but there is a *détente-ish* red team. What does the *détente-ish* red team do in the face of the SDI proposal?

**POWELL**

Well, it writes Geoffrey Howe's speech!

**HESELTINE**

I think they'd write Geoffrey Howe's speech. But don't ignore something else that would happen. Faced with SDI, the other side – whoever they were – would develop their own system. They would find ways of circumnavigating our system by going in underneath. They would also develop an offensive capability to take out the ABM system before it was used. That's what will happen. We won't name any countries, but the idea that any one country is

going to be given a monopoly of defensive systems in space spits in the wind of human history.

**KENYON**

Star Wars is going to be a two-sided or multi-sided thing.

**HESELTINE**

Absolutely. Or it will just be incredible because there are so many ways round it. We can all think who they might be, but there will be all sorts of countries who will work out how actually to preserve their independence. If I was highly controversial, the invasion of Iraq s the greatest incentive for people to develop an independent nuclear capability that we have ever seen. Playing to the crowds!

**PANTON**

That could be.

**FREEDMAN**

Is there anybody who would like to ask questions?

**DR CHRIS PHILIPIDES**

There is one thing that hasn't quite come across as clearly as perhaps one would have expected it would and that is that we all know, and we have heard some evidence from David Caplin, that there was well-informed and scholarly dissent on this programme. What one doesn't get a sense of is how this dissent was handled by the scientists, by the politicians and by the civil servants. Was it listened to and they turned a deaf ear to it, or was it somehow evaluated in some way?

**FREEDMAN**

Talk to the Foreign Office.

**KENYON**

The Foreign Office in fact was very concerned about that aspect. I recall that David Saumarez was brought in specifically with the remit to talk to the NGOs and the academic community, to try and find out exactly what everyone was worrying about and try and sort of feed the line back to them.

**FREEDMAN**

E. P. Thompson (1924-93), historian. Mainly linked with European Nuclear Disarmament (END) (1980-9), he was also one of the founders of the Campaign for Nuclear Disarmament (CND) in 1957.

26th Annual Conference of the International Institute for Strategic Studies (IISS), on new technology and Western security policy, held in Avignon, France, 1984.

The RAND Corporation is a think tank based in Santa Monica, California, founded in 1948 to research American national security and public welfare.

I had been tarred as being terribly pro-nuclear and so on during the INF debate and when SDI came along, which I thought was nonsensical, I said so. And I remember E.P. Thompson\* clearly being absolutely horrified that someone as dubious as Freedman seemed to be on the same side as him on an issue like this. I think it was very different, because a lot of the academics took the view of SDI that this was a fantasy, it was a silly idea, and whatever the politics of it, and you could understand how it would have to be played politically, there was no requirement on us to have any restraint at all. The IISS conference of 1984 I recollect as being absolutely dominated by arguments going back and forth across the Atlantic on this.\* I did the panel with Fred Hoffman of the RAND Corporation\* and the bizarre thing about that was that Fred Hoffman was defending a completely different system from the President's vision

– he was defending a very narrow limited defence. So I think there was a very lively debate and I don't think there was any attempt to control it or deflect it at all. What we have gathered from Michael Heseltine and Charles Powell is that there was a problem of alliance management here that was handled in those terms, without ever being particularly swayed by the substantive case that had been made.

#### **POWELL**

I would like to add two comments. One is that you have to remember that we had a government led by a lady who famously defied the advice of 365 economists in a letter to the *Times* about her Budget, so she was not going to be terribly impressed by 365 physicists. And secondly politically, I am afraid, it was frankly too easy to identify any sort of dissent on this issue with CND, Kinnock, 'take to the hills' defence policy and all that sort of thing. You could roll it all up into one phenomenon. So I think the substance of it got lost at the political level. I am sure that at the level Lawrence Freedman is talking about it was a very serious debate, but at the political level I think it was just sort of taken as part of a lot of lefties with beards and sandals who were pushing prams from Aldermaston and all that.

#### **HESELTINE**

I think I take a slightly different view of that Charles [Powell]. I think that what we have all said today indicates very clearly that sitting round that seminar at Chequers all these arguments were known, were rehearsed and expressed. But what was the purpose of the seminar? We had an invitation from our principal ally as to whether or not we would respond to this particular offer. So however one agonised, and you could go on agonising because it is an open-ended debate in a sense, at the end of the day the Prime Minister has to conclude the meeting. And it is no use in politics concluding meetings by saying 'well, we'll have another discussion', you have to answer the question: do we respond – so the answer was yes, and on what terms – keep it to research. The Prime Minister sums up, Whitehall disperses, ministers expand. That's politics.

#### **QUINLAN**

The question was never, 'Is this a good idea.' It was, 'What are we going to do?'

#### **FREEDMAN**

Yes, it goes back to your damage limitation point.

#### **CAPLIN**

Could I just come back a bit on that question. I think as far as the US research community was concerned Star Wars encompassed all kinds of technologies, from the kind of multi-purpose things like the sensors that were referred to earlier to exotica like the X-ray lasers. The X-ray lasers were in one place, they never actually worked, they were in a military lab and that was high-profile, but there was a lot of mundane work on sensors that got bootlegged



into an SDIO label. That went on, people did it and they got extra money for doing it.

**FREEDMAN**

Dr Robert Jastrow, American scientist. Founder, Goddard Institute for Space Studies 1961.

Yes, I think that is right. I think you mentioned before, the American scientific community, when it went public, was constantly against it. Was it Robert Jastrow\* or somebody, the one scientist they found who would speak up at a Congressional Committee for it?

**CAPLIN**

Teller, of course.

**FREEDMAN**

But Teller wasn't happy, because it wasn't Teller's system that was approved. Are there any other questions?

**DR SUSAN WILSMORE**

To what extent did Margaret Thatcher appreciate that the notion of realistic had been turned on its head and that it was no longer a matter of was Star Wars possible or not, but was Star Wars a good idea given that it was going to deter the Russians from going ahead?

**POWELL**

I think I tried to answer that by saying that she grew to believe it *was* a good idea.

**WILSMORE**

For that reason?

**POWELL**

For the reason that it was clearly putting the Soviet Union under great pressure and because she believed it actually reinforced deterrence rather than undermined it. I think those are the two principal reasons. I wouldn't say they were instantaneous, but that is the view which developed over the period from 1983 to 1987.

**HESELTINE**

I am sure what you say is right, but back to that seminar. She had to reply to a letter and whatever doubts she may have had, was the reply going to be, 'Dear Mr President, we don't think your system is well-founded or well-researched, so we want further and better particulars'? Well, you would have got a very sharp response from the American Embassy the next night. So, the question is do you want to participate. That is all the President asked. *That* is the question she had to answer and she did answer it, 'yes, on these terms'.

**PANTON**

Yes, and I think it was the right answer.

**HESELTINE**

It was the only answer, in the circumstances.

**FREEDMAN**

We could perhaps have one more question.

- DR STEPHEN TWIGGE** We have heard about managing the Anglo-American relationship, we have briefly talked about France and Germany, but how was the NATO relationship managed? There was obviously debate within NATO, how did that affect the British position?
- POWELL** It is a great pity that John Weston has gone, because John was really the expert on that.
- FREEDMAN** NATO was more compliant in those days I think.
- HESELTINE** I don't remember specifically, because as I said I got the phone call when we had all come back from a NATO conference and there wouldn't have been another NATO conference for probably six months. By that stage the die was cast. We had taken a decision. The Foreign Office would have briefed us on what our colleagues around the alliance were saying, but I am sure that Britain did not take a view that we would decide collectively within the alliance. I think the French wanted, if I remember correctly, a European response, but Britain wanted a British response and that is what they got. I don't think that NATO played a big role in our decision.
- PANTON** I would only add that in the middle years on the SDI programme the SDI office was explaining that they had support and contracts with NATO countries like France, Germany, Italy, Belgium and the Netherlands, so despite what they may have said either their commercial people or their scientific people were co-operating in some way with the SDI programme. I rather doubt that it could have been at all in the depth or the degree to which we formed up the system of areas of discussion, which were really joint enterprises. I think it would have been in contracts of some type or other. But nevertheless, the NATO countries, not collectively but individually, whatever they said, apparently did have some part in the development.
- HESELTINE** But that would have been because General Abrahamson turned up and made an offer they couldn't refuse. And it wasn't just NATO, he went all round the world.
- PANTON** No, it wasn't just NATO, but as I say NATO countries nevertheless did do something.
- POWELL** I think the main concern in NATO, and I don't recall how openly it was expressed in the meetings in NATO itself, was the de-linkage one, that this was going to be a system which defended the United States and therefore left Europe much more vulnerable. That was what people sort of wrung their hands over, that was in reporting telegrams from embassies in Paris and Rome and everywhere, that

was the theme which came through most strongly: we are going to be left on our own if this thing goes ahead.

**FREEDMAN**

But that was a theme of most issues at that time, which again turned out to be a continuity in transatlantic relations, that the Americans will look after their own interests at the expense of the Europeans. At this point, because I think these things should finish when they say they are going to finish, I would like on your behalf to thank all of those who have taken part and all of those who have organised this event. It has taken us back twenty years to a period that doesn't seem that far away and, I promise you I am not going to attempt to summarise it. It has brought out very clearly how these things have to be handled in the realm of practical politics. As Michael Heseltine said, you have got to come up with an answer to a request from the United States, you have got to think what this means for your alliance relations, while at the same time operating in an area where people do conceptualise and theorise more than most, because that was the nature of deterrence. I think this afternoon's discussion has brought out very neatly the tension that that created, as well as of course those basic questions about where it would lead to and whether it would fit in with the laws of science. So thank you all very much for coming and thank you very much again to the panel.

**HESELTINE**

I must tell you the most reassuring thing about this whole saga of deterrence and talk of blowing each other apart – I am going back ten years now. I had to entertain on two separate occasions the President of Azerbaijan and the President of Kazakhstan. I think I was Deputy Prime Minister by then. We got to talking about the good old days, as everyone does, and I said, 'What were you in the old days?' One of them was a general in the Soviet Army and the other was secretary-general of the local Communist Party in one of the Soviet republics. The conversation led on to talk about the nuclear threat. As the evening went on, the government hospitality and the French wine flowed, we were exchanging nuclear weapons, flinging them back and forward with much mirth. Well, we survived to do it.

**FREEDMAN**

Thanks very much.



# Interview with The Hon. Sir Michael Pakenham, KBE, CMG

edited by Daniel Crewe and Michael D. Kandiah

This interview was held on 30 January 2004 in the Spain and Portugal Room, Institute of Historical Research, Senate House, Malet Street, London, WC1E 7HU.

**DR MICHAEL D.  
KANDIAH**

Good morning. It is 9.45 am on Friday 30 January 2004. I will be interviewing Sir Michael Pakenham. Other people present in the room are Daniel Crewe, MA student at the CCBH, and Gillian Staerck, at CCBH. Could you first of all briefly give us an idea of your background and your history and how that relates to SDI?

**SIR MICHAEL  
PAKENHAM**

Background: Foreign Service between 1965 and the end of last year, when I retired. During that time I spent a long period dealing with defence and politico-military issues and the nuclear debate. It started back in the 1970s, then in India, when the nuclear India issue arose, then for six years in Washington at the time when Ronald Reagan made his March 1983 speech, then for four years as Head of the Arms Control and Disarmament Department at the Foreign Office, during which time we were responsible for space and missile defence policies and eventually responsible for the INF and START negotiations. After that I went to Brussels and finally, after travelling around Western Europe – Luxembourg and Paris – I became Chairman of the Joint Intelligence Committee and Intelligence Co-ordinator and Deputy Secretary to the Cabinet for overseas and defence issues. I finished off last year as Ambassador in Warsaw.

**KANDIAH**

Clearly your knowledge of events is extensive. Could you tell us something about your time in Washington and the immediate British reaction, in your view, to the Reagan speech?

**PAKENHAM**

James Earl (Jimmy) Carter, American politician. President, 1977-80.

My time in Washington began in 1978, that was halfway through Jimmy Carter.\* At that time the big issues were NATO, burden-sharing, the 3 per cent real increase in spending requirements, the role which Congress wanted to see the allies playing and the attempt by Carter to build on the SALT 1 and 2 arms control agenda. At that time arms control was very much a 'Good Thing' and the process of moving forward with the Russians was very active. At one point I believe in 1978-79 there were some eleven negotiations of one sort or another, bilateral and multilateral, in play. With the arrival of President Reagan and a new team, both at the White House and at DoD [the American Department of Defense], not to mention people like Ken Adelman\* at ACDA, the landscape obviously changed - inevitably changed. There were

Kenneth Adelman, American politician. Assistant to Secretary of Defense, 1975-7. ambassador to the United Nations and Director of Arms Control, 1981-9.

many in the new Administration starting in 1980 who believed that arms control required a good deal more caution. I put that rather gently – there were some who did not believe in arms control at all, particularly as part of a bilateral relationship with Moscow. So, as we all know, the process of negotiation with the Russians and internationally in Geneva and elsewhere came rumbling to pretty much a dead stop. However, there were negotiations still in train between 1981 and 1983 and if my memory is correct Reagan's speech was on 23 March 1983 and took place exactly the day before I left Washington to return to London. So my own reaction I think was 'Well, this will be very interesting when I get back to London tomorrow'. That was about as much as I could say I reacted, but I think there is a more serious point there as well: there was not a huge outpouring of public or official response, either negative or positive. It was a theme which indeed the President had deployed some months earlier and there were people in the President's circles who were known to have these ambitions. That meant that at that point in spring 1983 there wasn't an enormous amount of interest in Washington and I don't think there was a great need in London to respond to this, nor in NATO for that matter. Fast-forward to the end of the year: the Russian walk-out in Geneva, which takes us through to 1985 and at that point the Russian decision to come back into talks. During this period, my memory is that there was no anguished public debate either in Washington or in London, or indeed in Brussels at NATO. There were a lot of discussions going on behind closed doors or semi-closed doors, but it was not a subject for major debate. And by the end of 1984 when Margaret Thatcher went to Camp David and we had the Four Points it didn't make a great splash in Washington, because people didn't really think that it was one of those events like Camp David and the Middle East Peace Process, or Bosnia and Dayton, it was not an epoch-making event in itself. Again, because the debate had been taking place among the specialists without an enormous amount of public interest or engagement. That brings us to March 1985 and Geoffrey Howe, which of course is where I was very closely involved, and then it takes us through to 1986 – Gorbachev, Reykjavik, we have Iran Contra, we have changes in the White House. Above all – and this is perhaps the one point which I would like to register for the purposes of your record – the mood in Congress, which had been on the part of the Republicans favourable but not terribly impressed by the concept and on the part of the Democrats agnostic at best, sceptical probably, changed and at that point Congress, which *always* plays a crucial role in the formation of any Administration policy, actually started to lower the boom on SDI. In my view the Congressional decisions on funding in the late 1980s are what *really* pulled the plug. It wasn't that the scientists decided it couldn't be done, whatever 'it' was, it wasn't that the Pentagon lost their nerve, it wasn't that Reagan was replaced by Bush. There were lots of things that can point in that direction, but actually if you haven't got the money and Congress doesn't vote it you

haven't got a policy. That's my historical overview. I'm afraid that like all such overviews it's highly personalised: how you look at something depends on where you sit.

#### KANDIAH

Actually that personal view is one of my next questions. You were, as you said, Head of the Arms Control and Disarmament Department from 1983 to 1987 and clearly SDI and indeed what it all implied had an impact on what you were doing and what you hoped to do. Did it?

#### PAKENHAM

Yes, perhaps a word on why the Arms Control Department should have taken the lead within the Foreign Office and jointly with the MoD at official level in evolving our policy. The reason was one of those curious accidents. Of course in 1983 there was no particular arms control content in ballistic missile defence. You had the ABM Treaty, unquestioned as a corner stone, a lynchpin, of defence and arms control relationships. What you did have however was an increasing interest in anti-satellite systems, highly specialised, classified material, and you had a debate breaking out in the Conference on Disarmament in Geneva, and my Department was responsible for dealing with that debate. These were the only public issues: whether anti-satellite systems should be controlled. Now the read-across from ASATS to BMD was obvious – space-based weapons, there would be some of the same technologies. But there was a quantum difference between an anti-satellite system which could be simply a lump of metal running into another lump of metal at high speed, and knocking out a missile in boost phase, which would require the most stressful sort of technology and funding and years of development. Nonetheless, ASATS required a policy response and that is what we started working up, and in early 1984 we put a joint MoD-FCO paper to Ministers, suggesting ways in which British policy could evolve. That sat on the table. Ministers, my memory suggests, thought that these were generally okay ideas, but there was no reason for a policy response. We did not have a capability ourselves, the Americans had not got one, the Russians were doing work on one, so it was an interesting exercise, but that was as far as it went. But because we had done this work, when in mid-1984 BMD and the ABM treaty and all that became more active, it fell to my Department to deal with that, rather than the Defence or the Non-Proliferation Departments, who were two other separate segments of the Foreign Office. That is a little bit of history of why ACDD rather than the Defence Department or NPD got involved or took the lead. At the same time of course we had the Under-Secretary in the Foreign Office for defence and politico-military affairs, who in 1983 was the late David Gillmore.\* It then moved to Bryan Cartledge\* and then to John Weston, and you have already had evidence from John Weston in your earlier seminar. That was at official level the people directly involved, and of course as Foreign Secretary we had Geoffrey Howe.

Sir David Gillmore (Lord Gillmore of Thamesfield, 1934-99), diplomat. Head of Defence Department, FCO, 1979-81; Assistant Under Secretary of State, FCO, 1981-8.

Sir Bryan Cartledge, civil servant and diplomat. Assistant Under-Secretary of State, FCO, 1983-84; Deputy Secretary of the Cabinet, 1984-85; Ambassador to the Soviet Union, 1985-88.

**KANDIAH**

You mentioned Geoffrey Howe and Geoffrey Howe's speech. Could you tell us a bit about that?

**PAKENHAM**

I think there are two things I should say about that. The first is that it didn't come out of a clear blue sky. We had had in the autumn of 1984 some discussion between officials and then with ministers about whether it would be useful to put on record a Government view. This was thought premature, not least when the Russians pulled out of Geneva. Ministers did not want to appear in any way either creating trouble for the Americans or giving freebies to the Russians in the form of propaganda. Ministers really didn't at that stage know where they wanted to be. As I say, the public debate in 1984 about SDI was not really active, certainly at that broad political level. Nonetheless we were working up some ideas about how to move forward with a policy. Then we had Margaret Thatcher going to Washington and Camp David just before Christmas 1984: the Four Points. This provided a really very useful basis, because here we had in a sense the skeleton of a policy, which our Prime Minister had personally created and which the President had endorsed. That provided as good a basis as you would ever get. So early in 1985 we had a meeting with the Foreign Secretary and discussed ways in which we could perhaps use that, flesh it out a bit, for an important speech, which he was keen to make. That got put back a few weeks as far as I remember, until February. There was another visit by Margaret Thatcher to Washington, when she went and addressed Congress, in February. But we were looking at a speech to be made in mid-March by this time and the outline of it was being discussed among officials, various drafts were going forward to senior officials and Ministers within the Foreign Office, in consultation with the MoD. I should emphasise at this point that what was being done in the Foreign Office was being done in very close consultation with MoD officials. Margaret Thatcher comes back from Washington, the speech is almost ready, we finally put a formal draft to the Defence Secretary, Michael Heseltine, who approves it and it is now ready to go to Number 10, at which point the First Secretary of the Soviet Communist Party died in mid-March, inconveniently, and so everyone went to Moscow, the Prime Minister taking with her the draft which had been put to her for approval of this speech by Geoffrey Howe. I think Charles Powell has already covered this point in the seminar: he returned bearing said speech and said 'The Prime Minister is content' and there we were. The speech was made two days later. It was very important from the start to set out what we saw, the Foreign Office and the MoD, as two factors. One, that the Russians were up to no good, that the Russians had a preponderance of threatening forces, which was not true as seen from either Washington or London of the Western nuclear forces, that the Russians were doing things in the area of ballistic missile defence which justified a countervailing activity on the American part. That was the first part. Now some people have



said that was pretty boring, it certainly wasn't original, and that may have caused attention to drift. The second part was: we are going to move forward, and how can we move forward in a way that we balance the risks against the advantages? That was a series of questions, which discussed what were the risks and how could we get around them. They were deliberately questions, they were not statements. That was the way it was drafted, it could have been done as statements and I doubt whether many people in London would have felt very comfortable. It would have been, I think, arrogant at that stage to have said 'here are a lot of questions, and here are the answers', because we didn't know and probably we still don't know what the answers should be. So it was an exposition of future potential possibilities. The questions which were raised in the speech were designed to ensure that as the research programmes moved forward the underlying factors were not lost sight of. Because, and here is my second point about the speech, there was a risk I think in the view of some people in London – and in Washington – that such programmes, run by technicians, build a political momentum of their own, which makes it impossible thereafter to as it were claw back advances. The most obvious example is MIRVing on ICBMs. Kissinger,\* when he negotiated SALT 1, was given the opportunity to close off MIRVing, but because the Americans were ahead in MIRVing technology at the time they were reluctant to do that. Actually MIRVing turned out to be a very nasty thing indeed for the Americans, because the Russians had these enormous SS18s, which could carry a much bigger throw-weight. The American technology was clever and more advanced and they didn't need such big, fat warheads. Consequently, MIRVing turned out to be bad for the Americans; it gave the Russians bigger throw-weight on top of their biggest ICBM. Had they thought about this back in 1972 they might have closed it off, but they didn't. It was crucial in the view of people in London that we didn't simply tell the technicians 'go away, come back in three or four years' time and show us what you have got and in the meantime we can all sit on our hands'. You must keep the political debate going in parallel with the technical progress.

Henry Kissinger, American academic and politician. Secretary of State, 1973-7.

## KANDIAH

You mentioned external threats, the perceptions and counter-perceptions of what the Soviets were doing. What in your opinions were the threats?

## PAKENHAM

Paul Nitze (1907-2004) American statesman. Special Adviser to the President and Secretary of State on Arms Control, 1984-9.

I think you have to be very precise now in defining not just the threat, but who 'you' were. There were people in Washington with the arrival of the Reagan administration, such as my friend Paul Nitze,\* who believed the threat to be real and actual. The Committee on the Present Danger was after all referring to a present danger. There were many people in the Pentagon at that time, and we shall no doubt mention Richard Perle's name as time goes by, who believed that the threat was actual in the military sense, that

the Russians could be stupid enough to think that a first strike would not create an American response, or, more sophisticated and more likely, that the threat of a first strike would cause the Americans to back down at the policy level, whether in the Middle East, Far East or in Europe: that the Russians might convince themselves that the Americans had convinced themselves of de-coupling. So that was the threat. It was two-sided – both physical in terms of the numbers perceived on both sides and, if you like, psychological-political on the part of the Americans. I say you must define ‘you’, because there were of course people in Washington who didn’t believe this at all. They said all this is stuff we have been through before, the bomber gap of the 1950s, the missile gap of the 1970s and so on. And, let’s be honest, the Russians may say that they have got this stuff, but it probably won’t work, and Russian tanks will freeze up because they haven’t got enough lubricants and the Russian soldiers are all hungry and don’t want to fight, and so on: things which perhaps now are a good deal more familiar to us. There were people in Washington, and indeed in Brussels, who took, you might say, a more emollient view of the threat. That debate occurred in London as well. I have to say that there were more sceptics of the threat in the NGO and the academic communities than there were in the then Thatcher Administration or in the Whitehall community, but it was not cut and dried, it was not black and white. There was not ‘a’ British view that this threat was X and that the Americans were being driven down the de-coupling path, that was certainly not a consensus view at the time. What had to be remembered at the same time (and I haven’t touched on this yet except very briefly) is that the big debate was Greenham Common. The big debate was INF deployment, it was *Cruise* and *Pershing*. BMD was a long way, if I may use the expression, far out in space. The actual ministerial focus was on how we could get the Germans to accept what they had said they would; how do we prevent, at a time when you had the miners’ strike and you had the good ladies of Greenham Common – and others – marching up and down, how do you prevent this becoming another major political thorn under the saddle. So those were the big political issues as the time, INF and perhaps the miners, it wasn’t BMD. In writing the speech you needed to set it in the context, as I hope the first part of the speech did, that we lived in a difficult world and that we owed the Russians no favours and we certainly should be cautious and sceptical about their promises. A final point under this heading. There was the debate beginning, it had just about started to become heated, about Russian compliance. The Reagan Administration had by this time started to focus on the lack of compliance with arms control agreements. As a result, the untrustworthiness of the Russians had become a new and active feature. It was not just Krasnoyarsk\* and the phased-array radar, it was chemical weapons, biological weapons, lots of other things. So there was, and this was part of the debate and most people I think accepted it, a case for the Russians to answer. It wasn’t as extreme as some people in

During the late 1970s the Soviet Union began constructing the radar station near Krasnoyarsk, Siberia, in violation of Treaty obligations and, following protests from the USA, the installation was dismantled.

Washington painted it – I think at one point there was a document saying they had broken fourteen arms control agreements. Well, you could refine that pretty quickly down to three or four really dodgy cases, but there was a case to answer. And that played into the issue of whether there was a future of co-operation with the Russians. There I think I will pause, because it will lead us into a much bigger issue, which is the dichotomy of view within Washington (but not in London) between those who believed that arms control was a snare and a delusion and that the Russians, because they cheated, were not people you wanted to cut any deals with, and those who said yes, you need to ensure compliance, but that requires better-drafted agreements, tighter controls, and the whole process in itself is not riven with potential failure from the start.

## KANDIAH

Could I just take you back to a couple of points you made, the ones about the issue of de-coupling and, indeed, Germany and Europe. Arguably one of the issues underlying some of the debate, at least that some of us in the academic community perceive, is loyalty between Britain and America and between Britain and Europe. Was there really a dichotomy in this area?

## PAKENHAM

No, I don't think so. We are now looking at 1983-85. I had friends in Bonn and in Paris and in Brussels who had their personal doubts, in some cases very strong, about whether the American case for BMD stood up, whether the argument for going beyond the ABM Treaty was compelling. But this was not an issue where the Europeans wanted to gang up on the Americans or saw a need to gang up on the Americans. The Europeans, by which I mean Germany, France and to some extent Italy, once the Four Points had come out were all very happy. They said hurray, we have got a basis, something that constrains the American ability to go forward. Many people in Washington, even at the time, and certainly later, when asked, 'What do you think of the Four Points?', would say, 'What Four Points?'. There is always a tremendous temptation, if you read Strobe Talbott's\* books or John Newhouse's\* books, to believe that Britain was central to all these debates in Washington, or that the French were central, or that the Europeans as a whole were central. Well, if you read Strobe's books or John's or anyone else's of the time or later, what really strikes you is how small a part, seen from Washington, we actually were thought to be playing. Margaret Thatcher played a part well ahead of, let us say, Mitterrand and Kohl, or indeed anyone else. But even then, when the Camp David Four Points came out and Weinberger and Perle and other people were extremely unhappy that they had been bounced into this, it wasn't the end of the world, because this was just part of the Washington debate. You lose a battle, you fight another one; you roll with the punch, you keep going, the war is never over. The moment the President takes a decision you re-open it: that's the way it works. PPD or NPD number x, y, z really means that either you

Nelson Strobridge Talbott III, American diplomat and academic. Deputy Secretary of State, 1993-2000. President of the Brookings Institution, Washington, DC, 2000-. Author of *Engaging India: Diplomacy, Democracy, and the Bomb* (2004); *The Russia Hand: A Memoir of Presidential Diplomacy* (2002); *Master of the Game: Paul Nitze and the Nuclear Peace* (1989).

John Newhouse, American academic and politician. Senior Policy Advisor on European Affairs to US Deputy Secretary of State, 1998-2001. Assistant Director of the US Arms Control and Disarmament Agency with responsibility for East-West matters, including Strategic Arms Limitation Talks, 1977-9. Author of *Europe Adrift, War and Peace in the Nuclear Age, and Cold Dawn: The Story of SALT*.

Sozialdemokratische Partei Deutschlands, the centre-left party in Germany.

have won a round in this endless war or you haven't, but it doesn't mean 'shut up and do what you are told and stop thinking anything to the contrary'. So the answer to the question how did the Europeans play in all this is: not very hard. But again I come back to the point I made earlier. For Europeans, particularly the Germans, INF was the only game in town: how did they prevent this cutting a swathe through political consensus, how did they prevent the Russians really splitting the SPD\* and the centre-left off from both the Alliance and the rest of German society? That was the crucial issue of the time. BMD was something some mad scientist thought up, it was not something of today.

**KANDIAH**

But the interesting thing of course is the implications.

**PAKENHAM**

Strategic Arms Reduction Treaty.

The implications were, as we move down the track, extremely important. The implications for Germany, wedded to the need to keep in touch with the Russians, when the Russians walked out in Geneva in late 1983 were unpleasant. But by the time the Russians had walked back in again, the whole START\* process had started. That as far as the Germans were concerned was fine, good. We had got the show back on the road, all these scientists can go away and fiddle with their computers, but basically it is about relationships with Russia and they are now back, active, and may produce something useful.

**KANDIAH**

Could you comment on relations with France?

**PAKENHAM**

The *force de frappe* was the French Nuclear Forces (land, naval and air).

Captain George Mainwaring, played by Arthur Lowe, was a character in *Dad's Army*, a BBC comedy programme about the Home Guard during World War II, which was broadcast between 1968 and 1977. The refrain 'Don't panic!' was actually the signature line of another character, Lance-Corporal Jones (played by Clive Dunn).

The French, Mitterrand and his officials, at the time were much more concerned about losing Germany and about the split in Germany over INF. They were much more concerned about, what was Kissinger's phrase, 'Finlandisation' of Germany. That was Mitterrand's absolute bottom line. And remember, Mitterrand was always very solid when it came to dealing with Russia. He was also canny enough not to poke a stick up the American nose for no good reason and at this point, again, there was no good reason, because this thing was miles away. If you said to him: 'If this works, or even if it doesn't work but a third of it works, then your *force de frappe*\* is going to be left looking pretty silly', he would say 'My scientists tell me we can get round this, it is not going to work a hundred per cent, it is not even going to work 30 per cent, and in the end the Americans will come to their senses, so 'Don't panic!', as Captain Mainwaring\* would say. Mitterrand was a great man for 'Don't panic'. Anyway, I think we and the French would sit down and share an analysis, but it wasn't something where we needed to get into bed together and hug each other close. The other thing to remember about all this debate was that we were on a more inside track than all our other partners, friends, allies, with Washington, by virtue of the 1958 nuclear sharing Agreement. We had access to things which others didn't. More important than that, we had a

The 1946 Atomic Energy Act, often known as the McMahon Act, proscribed the transfer of nuclear technology information to any other country.

The 1958 US/UK Mutual Defence Agreement.

long (going back to 1948 and even to the Manhattan Project) tradition at the practical level of working with the Americans on this sort of hi-tech, very highly classified subject. So if we were to get into bed with the French, we would either be revealing things which it would be quite wrong of us to reveal, or we would be dealing with them on false pretences. There was no real technical advantage in talking to the French about all this. We stood to lose an enormous amount if the Americans ran scared. You will remember, immediately after the War the Americans cut us out of nuclear technology,\* and then cut us back in again a bit later.\* We never would, either in this context or any other, trade a possible advantage, a transitory, low-level advantage, with a third party at the risk of jeopardising what we were up to with the Americans.

**KANDIAH**

So in that sense the 1958 Agreement is quite central.

**PAKENHAM**

It represents something which other people don't have. It represents a platform from which, in the way that scientists do, you can extend practical co-operation. I do not know, and I certainly couldn't tell you, the extent to which British scientists were doing things which were covered by specific Protocols in the 1958 Agreement, but one assumes, because scientists love talking to each other, that some of it was of interest.

**KANDIAH**

One of the points you made was about the setting and opponents of SDI and the sort of wider sense of opposition to a whole number of things.

**PAKENHAM**

Are we talking here about the Perle syndrome?

**KANDIAH**

What is interesting about this period is that, as you have pointed out, it was a period of heightened Cold War tensions. There were the women at Greenham Common; CND campaigning against *Cruise* missiles; and so forth. Arguably, SDI could have undermined the UK's need for the maintenance of her nuclear deterrent.

**PAKENHAM**

Michael Foot, Labour politician.  
Leader of the Labour Party, 1980-3.

Frank Barnaby, nuclear physicist.  
AWRE, 1951-7. Lecturer, University College London, 1957-67; Director of the Stockholm International Peace Research Institute, 1971-81. Books include: *The Invisible Bomb* (1989), *The Gaia Peace Atlas* (1989), *The Automated Battlefield* (1987), *Star Wars* (1987), *Future Warfare* (1986) and *The Role and Control of Military Force in the 1990s*.

Funnily enough, I never found such as Michael Foot,\* or indeed Frank Barnaby\* or any of these people on that side of the argument making the case that we must all be in favour of SDI because this is a good way of getting rid of nukes. The coalition would have been so thin and incredible that I think it was beyond even the most imaginative opponent to INF!

**KANDIAH**

One of the things which many of us find interesting is whether people in your position take account of those views when you are advising, the views of the people potentially opposed outside the government?

**PAKENHAM**

Good Lord, yes. I wrote a paper for Margaret Thatcher shortly after getting back from Washington on why do we and the Germans have all these problems, while the French and the Italians and the Spanish don't. It was a masterly piece of analysis, which concluded that it was because of our deeply sinful Protestant heritage that we felt that there was a good risk if we were all blown up we wouldn't go to heaven, whereas Mediterranean countries being largely Catholic knew they were saved whatever happens!

**GILLIAN STAERCK**

Did she accept it?

**PAKENHAM**

Compagnie Républicaine de Sécurité are mobile units of the French police. The CRS is noted for its brutal crowd control techniques during riots.

Richard Luce (Lord Luce of Adur), Conservative politician. Parliamentary Under Secretary of State, 1979-81, Minister of State, 1981-2, and 1983-5, FCO.

Lady Olga Maitland, Conservative politician. MP for Sutton and Cheam, 1992-7. Founder and Chair, Families for Defence, 1983-.

Julian Lewis, Conservative politician. MP for New Forest East, 1997-. Research Director and Director, Coalition for Peace Through Security, 1981-5.

I seem to recall she had a discussion with Mitterrand about this and Mitterrand said something to the effect that the reason you have a problem and we don't is that we have the CRS\* and you don't, and that if you go out on the streets of Paris you end up with wet trousers at best, or being treated rather harshly, is the way I would put it. There were lots of other reasons as well. But yes, we were very, very conscious indeed in mid-1983 as Greenham Common started (I use Greenham Common as a shorthand) hotting up. We formed in the Foreign Office, under the then Minister of State Richard Luce,\* a special panel in which every six weeks we met representatives of NGOs, from the whole spectrum. We had Olga Maitland\* from Families for Defence – I am giving you the flavour of the spectrum – and Julian Lewis,\* and then on the other end we had CND and a whole range of other people. I have to say that the other end, what I would call the Left end, was rather more fully represented than the Right end. It was easier to find people from that end. But we had these discussions, I remember it very well, for two hours every six weeks and people would have their say and question the Minister and say 'Now, why are you going this route, explain yourself'. People obviously didn't all fall into each other's arms and say thank goodness you told me that, now I understand and support the Government, but it was healthy. It was particularly healthy, I have to say, for Ministers, because they didn't always get that exposure to thoughtful, intelligent people who followed the debate closely.

**KANDIAH**

One of the things in which I was quite interested was what you were saying about the French and the Germans being somewhat sceptical about whether SDI was actually possible. From your position, what did you think? Did you think that the Americans would be seriously able to do it within a foreseeable amount of time?

**PAKENHAM**

Dan Dare was a British science fiction comic book hero.

George W. Bush, American politician. President, 2001-.

The Bug River flows through Poland, Ukraine and Belarus.

That comes back to something I think I have mentioned twice already: will SDI work, will it work, whatever 'it' is. This was of course the great issue from the very start, what is 'it'? We had the technology of the 1960s, which produced Grand Forks in the US and Galosh around Moscow – a primitive, avoidable, penetrable system for point defence. So that was what 'it' was, it was knocking down a hundred incoming warheads before they could get to your command centre. Did it work? Probably not. It was never tested, we will never know, but probably not, which is why in the end the Americans folded it up and why up to the very end we British were confident that with upgrades our own systems could do what they needed to do in the form of penetration. So that's a very crude, small-scale, primitive 'it'. SDI, the Shield, Brilliant Pebbles, lasers in space and all that – the vision – never would work and nobody ever thought it would. Even I suspect President Reagan, although no-one really did ask him. They just assumed that the vision was some wonderful Dan Dare\* concept, but 'it' couldn't work because of all the reasons which were thrashed around between 1983 and 1986: counter-measures, cost, technology failures, simpler other measures of delivery, air breathers, depressed trajectories, the whole realm of technical tricks. Was SDI somewhere in between these two? Clearly yes. What could it do, was it point defence, was it population defence, was it protecting the East Coast against submarines, was it protecting the Mid West, the missile holes, the *Minutemen* – what was it going to do? It would certainly do something and five years on it would have done more and ten years on it would have done more. I think that is an important distinction to make, that SDI pure hundred per cent was never going to work within the lifetime of any of the people discussing it. Because when you come back to today, and I notice this in Holger Nehring's paper, he says the whole Star Wars, SDI, debate went to sleep and remained asleep until after the end of the Cold War and is now being revived under George Bush.\* Now in one sense that is true, but I think you have to distinguish between the SDI Reagan envisioned and the George Bush vision of BMD, which is a different animal. And we mustn't muddle those two up, we mustn't say that George Bush is thinking in terms of a pure Reaganesque, Telleresque, visionary shield, not just over the United States of course, but over Western Europe, which now extends as far as the River Bug, with Poland\* in NATO, and up all the way through the Baltics. So the shield gets awfully large. We were just talking about distinctions between what was SDI and what 'it' was and would 'it' work, and I think most people had a good deal of scepticism about the vision itself. But that didn't mean that in the process a lot of things would not be developed which would work, as we have seen. Can I come back to one point, which is the Congressional point? Again, only because I think that your previous discussion didn't devote enough attention to it. It fits with what I was saying earlier about the role of Britain and Europe in a Washington debate. In crude terms, there are always four or five players in this game: there is DoD, which is itself split probably

Gerald C. Smith, American politician. Director of the Arms Control and Disarmament Agency, 1969-72.

Paul J. Warnke (1920-2001), American politician. Director of the Arms Control and Disarmament Agency, 1977-80.

Ronald F. Lehman II, American politician and academic. Director of the Arms Control and Disarmament Agency, 1989-93.

T-72s were front-line tanks used by the Soviet Arm from the early 1970s.

Fulda Gap refers to that terrain corridor that ran from East Germany toward Frankfurt, which would possibly have been used by the Eastern bloc as a route for the invasion of Western Europe.

three ways; there are the military, who tend to be rather cautious; there is OSD, which tends to be rather vigorous; and sometimes you get the technical side, or indeed the intelligence side, who play a slightly different game. But you have got one boss, the Defense Secretary, so you can as it were get him to represent that side. You have got State, you used to have ACDA (Arms Control and Disarmament Agency), you have the White House itself. ACDA was Gerry Smith\* originally, who negotiated SALT 1, it was then Paul Warnke\* under Carter, it then under Reagan moved into the hands of Ken Adelman and Ron Lehman,\* and later it was basically abolished, it was merged into the State Department. But it was always considered in the 1970s and 1980s, the time we are talking about, as constitutionally having the lead on arms control. That didn't mean it was made up of soft lefties all the time, because people like Adelman and Lehman were hard righties. Anyway, those are the players. Now the Europeans, with the British for the reasons I have suggested having a rather special role, not just a Thatcher-Reagan role, but because of the way we were integrated in much of the intelligence-technical side. The British had a special part, but the Germans also had a special part. There were many people in Washington in the 1980s who thought that the Germans were the only Europeans who really counted. The Brits could always be relied upon, but the Germans were *the* big European country, they were the ones who you talked to, because if you lost the Germans that was the end of the game. And if you kept the Germans on side, they were the people with all the troops on the ground, they were the country with the massive, successful economy, and they were the people on the front line, and the T-72s\* streaming through the Fulda Gap\* was much more an active threat to American strategists than say submarine warfare in the North Atlantic, in which we were very primary. So there you are, all these players. People wanted the Europeans on side, the Pentagon would want you, because you were another player on their team. But we were not primordial at any point. That is my fundamental view about the way that the Washington game was played. We were always useful, and sometimes, as in the case of the Camp David Four Points, we could actually set new parameters. But as I have also said, if you didn't like the parameters and you were Cap Weinberger, the fact that the Brits had signed up to them didn't impress the hell out of you. It wasn't a determining factor which meant, 'Oh gosh, I can't undermine the Four Points, because Maggie will get angry!'. That wasn't the way in which the game was played, or indeed is now. I wanted to come on to one more point if I may. It takes us into what some people have called the Perle syndrome and it's a fairly fundamental point about why in the early 1980s people in Washington embraced SDI and the President's vision, which *was* visionary and wasn't going to happen for a long time, with such enthusiasm. Again you have to see this in the political context of the time. In 1983 these negotiations with the Russians are going forward, there are some people who think it is a thoroughly Bad Thing, including Richard Perle – I use him as



an example, but there were many who took this view that arms control was a snare and a delusion. The beauty about SDI was that it could be used to call a halt, not just because, if 'it' worked, eventually you wouldn't need arms control because you wouldn't have to trust the Russians because you would have the shield over you high in the sky, but because it would drive the Russians away. It might drive the Europeans away, that would be a pity, but the process of arms control would be called into doubt. And indeed that is what happened, in autumn 1983 the Russians pulled out. Now this was very good news for those who believed that the process of arms control was delusory and dangerous. So there were people who had no more faith in SDI and the technicians than the sceptics, but who embraced it because it served their political purposes in the international process. To fast-forward that to the Howe speech, there was that extraordinary ranting response from Richard Perle, who came over here and, I think unwisely, attacked the Foreign Secretary in a personal way publicly, causing the Prime Minister to say to Neil Kinnock in the House, I think, the day after that that she had complete faith and agreement with the Foreign Secretary – a phrase she no doubt let roll off her tongue with pleasure. It was unwise, but it was Richard Perle and people who thought like that (including the then Editor of *The Times*) who could see that the Howe thesis, the Howe questions, would reduce the weight of the argument 'well, we have debated SDI, we are now going to move forward'. In turn, the Russians had just decided to return to the negotiating table, so the thesis that we don't need arms control was again under question. And I think all of this contributed to that very sharp response.

**KANDIAH**

A lot of people make extraordinary claims for SDI, one of which is that it was in among the key factors which helped bring the Cold War to an end, because it forced the Russians to spend a lot more money, which compromised their economy.

**PAKENHAM**

I don't hold with that view at all.

**KANDIAH**

What is the importance of SDI then in your view?

**PAKENHAM**

I am tempted to say it was rather unimportant. It looked terribly important 20 years ago, but the collapse of the Soviet Union was not caused by putting more money into the R&D budget of the Ministry of Defence in Moscow.

**STAERCK**

We did a seminar on the Helsinki Accords and it seemed to be the view of some in the Foreign Office that they were one of the key factors in bringing the Cold War to an end. Would you agree with that?

**PAKENHAM**

Joseph Stalin (original name: Ioseb Jughashvili, 1879–1953), Soviet leader. General Secretary of the Soviet Communist Party, 1922–53.

William Henry Gates III, American businessman. Co-founder of Microsoft Corporation.

No, I cannot agree with that. To avoid being too economically determinist or Marxist, the truth is that the Russian economy fell over the precipice. If the Russian economy had continued to offer food, warmth, transport, the prospect of a better life, the Communist Party would still be in power. And the reason it fell over the precipice was because it was a self-destructive process. It was kept going in the 1930s by Stalin's\* work camps, in the 1940s post-war they had nothing and they didn't feel the lack of it. This is not the time to give you my own view on the collapse of the Soviet Union, but no, spending money on SDI (and let's face it, the amount of money that was being spent was tiny) did not cause that collapse. I know there are people in Washington who take a different view and that is fine, but I don't think that was what caused the collapse in the Soviet Union. It may have been that Gorbachev decided that unless you opened up a society you would not be able to compete technologically, but that is quite a different thing. You are talking there about whether you can get a Bill Gates\* in Sverdlovsk, whether you can create a computer culture in Vladivostok, you are not talking about whether you can knock down an incoming re-entry vehicle at 28,000 miles an hour with a laser beam. The two don't even pass in the night: one is enormous and one is very, very focused. So sorry, no, I don't buy that, but I do want to add one point, because it plays directly into why SDI disappeared. I mentioned this earlier, it disappeared because the Congress said we can't afford it, this is silly, we cannot go on spending tens of billions of dollars in a defence budget now under pressure on something that isn't going to work and which has bad interim implications. I meant to attach this to the previous comment about the players in Washington. The Congress is *the* big player, you can't do it without the Congress. I wanted to come back to that, because it is all about money in the end. The Joint Chiefs will say if we haven't got money to fly in our aeroplanes or fire our practice shells or pay the pensions for retired generals we haven't got an army, and if you think we are going to give it all to the people in Los Alamos to buy another Kray II computer, then that is not the way to run a military. And that is where the crunch comes. The upper and the nether millstones are the military and the Congress, and the technologists tend to get squashed in between. It is not the only country where that happens.

**CREWE**

You mentioned the witness seminar, is there anything else that you thought had been missed out or that you had a view on?

**PAKENHAM**

No, I read it with fascination. It is always wonderful to see how people, particularly those who weren't actually closely involved, assessed it all. But also to see whether people who *were* closely involved felt able to speak very openly and directly, or whether like good bureaucrats or former politicians they tend to hide behind circumlocution. It was all very open in my view. Heseltine said one

crucial thing. 'You have to remember Ministers are terribly busy.' People like me spend hours discussing, debating, the relative advantage of defence/offence and the technical way in which you can knock down things. This didn't go anywhere near Ministers. They were grappling with the miners, they had Greenham Common. If asked, 'What's the big defence issue?', it is how do we get INF on the ground without breaking up society. And if you asked Margaret Thatcher, Charles Powell I think suggested quite clearly how she reacted, half of her would say, 'I'm a scientist, scientists – we can do anything, gives us the money and we will turn it up, never ever say it can't be done'. But the other half of her said 'actually, in the process, a lot of crockery is going to get broken, so let's move forward carefully'. There was that ambivalence in our policy, in her mind, in many people, particularly in the Congress, all the way through that 1980s debate. I don't think that is so true nowadays, because the new BMD (whatever we are going to call it) is not SDI, it is something quite different. Someone once said that there were two major developments in strategic thought between 1945 and 1985. The first was the labelling of deterrence by the anti-deterrence faction as 'Mutually Assured Destruction', i.e. MAD, and the second was the labelling of the Strategic Defense Initiative as 'Star Wars' by the anti-SDI camp. Both thus created in the mind of 98 per cent of the population a very clear picture – they were both idiotic, they didn't work, they were loony, it was all George Lucas\* and 'bang, bang and you are dead'. And those were very important political things. I thought the transcript was fascinating.

George Lucas, American film-maker.  
His film *Star Wars* was released in  
1977.



# Interview with Professor A. David Caplin

edited by Daniel Crewe and Michael D. Kandiah

This interview took place on 14 February 2004 Spain and Portugal Room, Institute of Historical Research, Senate House, Malet Street, London, WC1E 7HU.

**DR MICHAEL D.  
KANDIAH**

It is 12 February 2004 and today we are interviewing Professor David Caplin of Imperial College, London. In the room with me is Daniel Crewe, who is an MA student at CCBH and who will be the principal interviewer. Also in the room is Gillian Staerck.

**DANIEL CREWE**

Could you give us an outline of how you came to be a founding member of SANA?

**PROFESSOR A.  
DAVID CAPLIN**

I am just casting my mind back as to when it all started and I guess it was 1979-1980, just at the time when there was the question of the SS-20s being deployed by the Soviet Union in Eastern Europe. The Americans, supposedly in response, were going to deploy *Cruise* missiles - that was when the *Cruise* missile issue came up. Scientist Against Nuclear Arms (SANA) was started by a guy called Mike Pentz,\* who was a South African who had been at Imperial and then went on to become Head of Physics and then Dean at the Open University, and who I suspect had at some time been a member of the C[ommunist] P[arty], although I don't know if he still was at that time. Anyway, clearly what was happening was that more sophisticated weapons were being developed on both sides and it was felt that it was a move away from mutually assured destruction and towards more fighting postures. A lot of us were very concerned about it and particularly it comes back to another issue that will be addressed later on, that when it comes to advanced technology and software and so on the Americans tended to be rather ahead. So it was that. It had already started and the British were already at that stage, if I remember correctly, agreeing to the siting of Cruise missiles at American bases here. But concurrently the Home Office very unwisely did two things. It updated the civil defence emergency planning regulations and also for the public published a little pamphlet called *Protect and Survive*, which turned out in fact just to be a reprint of a Second World War civil defence pamphlet with little things tagged on, and it just got ridiculed. I think that it was the civil defence issue particularly that was influential in setting up SANA. All the NHS had been issued with emergency planning guidelines. The British Medical Association had a Board of Social Responsibility and a number of people within the BMA got rather upset by these emergency planning guidelines as to what to do in the event of a run-up to nuclear war and certainly were very concerned about the survival of the civilian

Mike Pentz (1924-95), scientist.  
Dean of the Science Faculty, Open  
University.

population. They decided to prepare a report, which when it came out in 1983, but it had been in preparation for a couple of years, was highly critical of all the civil defence measures. SANA meanwhile had done something similar and had published *London After the Bomb* in 1982. The first author is Owen Greene and it was published by Oxford University Press, a respectable publisher. So I think the feeling around was that the government, and particularly the Home Office, was trying to con the great British public into thinking that nuclear war was survivable. It didn't require too much analysis of nuclear weapons effects to realise that what they were proposing was totally unreasonable and unworkable. That actually was linked to the formation of Nuclear Free Zone local authorities, which was not about what they did about nuclear weapons, but about what they did in response to emergency planning legislation. Because the Home Office issued emergency planning and there was no compulsion on local authorities to plan for civil emergencies, but there was compulsion to plan for nuclear war. I suspect it was all stuff that had been around from the Second World War and so this was refurbishing to some degree the kind of local emergency planning centres and headquarters that had some degree of protection – nothing like the degree of protection that the Regional Seats of Government had (I think there were 14 Regional Seats of Government at the time), those were properly protected. These local authority ones were, again, somewhat farcical. What then happened was that the local authorities, who were less than pleased with being instructed to spend money on these emergency planning headquarters, tried to get in scientific advice. There *were* scientific advisers to the Home Office, but they were a coterie. These were part-time academics mostly, people who had been recruited and were of good intention, but distinctly uncritical of Home Office plans. In fact one of my colleague, a radiation adviser at Imperial College, was the London scientific adviser to the LCC [London County Council]. Anyway, they were totally uncritical. They used to meet in the basement of County Hall and plan this and that with the Home Office, and when Ken Livingstone\* came in in 1980 he discovered about this and immediately slapped some locks on the doors of the room in which they met and didn't let them back in. He then got people to go in and start going through the filing cabinets, and got some of the government plans for what to do with London. That was all about making sure that civilians didn't block exits and so on and didn't interfere with military dispositions and things of this kind. So that was the background to SANA. By 1982-83 it had, I think, got a fair degree of public prominence, in the sense of on emergency planning and civil defence. The Home Office in 1982 had planned some major civil defence exercise (was it called Hard Rock?) and CND, with advice from SANA, decided to run the same scenario and told the Home Office that they were going to do this. The X-6 division in the Home Office was the emergency planning directorate and I used to chat to this friendly guy, Stuart Horlock I think his name was, at the Home Office about

Ken Livingstone, Labour politician.  
Leader of the Greater London Council, 1981-6.

what scenario they would adopt. They kept downgrading it to make this simulated nuclear attack survivable and eventually I think it got called off, it was just so ridiculous. So I think that that had established some credibility for SANA, which had these links with Nuclear Free Zone authorities and with CND. Not everybody who was a member of SANA was a member of CND and I think on the whole it was a pretty apolitical organisation. I don't think there were any Thatcher supporters in there, I think it was Labour Party, Liberals, we had a lot of SDP people, there may have been some C[ommunist] P[arty], I don't know, but it was not overt or apparent. That roughly takes us up to 1983. It had become an organisation that would get called on if there was some issue in the press or on TV and they wanted an opinion. And let me say it would have nothing whatever to say about nuclear power, because there certainly were people who had opinions both ways and we made a decision early on not to get involved in the pros and cons of nuclear power. It was specifically against nuclear weapons and kind of based itself rather closely on American organisations – there's the Union of Concerned Scientists and the people that publish the *Bulletin of Atomic Scientists*, very respectable ex-Manhattan programme high-profile scientists who were very concerned. I think that is still published.

## CREWE

I know you were vice-chair later on, can I just ask what your role was then?

## CAPLIN

Thomas Kibble, scientist. Professor of theoretical physics, 1970-98, Imperial College, London. Vice-Chairman, 1981-5 and Chairman, Scientists Against Nuclear Arms, 1985-91.

General Sir Hugh Beach, soldier. Chairman: SPCK, 1994-9.

Sir Nevill Mott (1905-96), scientist. Cavendish Professor of Physics, Cambridge University, 1954-71; Senior Research Fellow, Imperial College, London, 1971-3.

Maurice Wilkins, scientist. Professor of Bio-physics, 1970-81, Emeritus Professor of Biophysics since 1981, King's College, University of London.

## KANDIAH

I don't think it was an organisation that we had roles assigned. I should say there was a lot of activity around Imperial College. My colleague Tom Kibble\* also became chair. But we ran quite a lot of conferences and workshops. Also, there were quite a lot of retired military who were sympathetic at least. Sir Hugh Beach,\* now ex-Master of the Royal Ordnance and who runs the think tank that meets in Windsor. Solly Zuckerman, who had been Chief Scientific Adviser to the Ministry of Defence, had been at a meeting of the Royal Society I think, somewhere like that, in the early 1980s, where he had been very highly critical. SANA had, as patrons probably, Nevill Mott,\* Maurice Wilkins\* certainly, senior people with FRSs.

You mentioned an Imperial connection. Was it sort of a college- or London-based activity, or was it less clear-cut than that?

## CAPLIN

It is quite odd, the way these things socially nucleate. I don't know quite why, I have no idea why, but it did nucleate around there. I am not sure if anybody has looked at the sociology of this, but physicists tend to be quite highly politicised in this sense, more so than chemists or engineers I think. I don't know why, but I think there is

William Penney (Lord Penney of East Hendred, 1909-91), scientist. Principal Scientific Officer, DSIR, Los Alamos Laboratory, New Mexico, 1944-5. Rector of Imperial College of Science and Technology, 1967-73.

Brian Flowers (Lord Flowers), scientist. Anglo-Canadian Atomic Energy Project, 1944-6. Atomic Energy Research Establishment, Harwell, 1946-50. Rector, Imperial College of Science and Technology, 1973-85; Vice-Chancellor, University of London, 1985-90.]

## CREWE

a background of that. And of course there was always the feeling that Imperial had had very strong MoD links over the years. Bill Penney,\* who was in charge of the British bomb programme, was a Rector at Imperial. Yes, there were various quite strong links. Brian Flowers,\* another Rector, had been very much involved in the theory of physics I think in the Manhattan programme and certainly returned to be Head of Theoretical Physics at Harwell when Harwell was set up – I don't know how much he had to do with bombs then. So yes, there were quite a lot of people with these connections around.

Had many of the people in SANA had connections with government programmes or politics in the past?

## CAPLIN

No, I think that most of the work was being done by young post-docs and graduate students, people in their mid-twenties at the time. I was 45 or something and Tom Kibble a bit older. I think what motivated most of them was the dishonesty of the Home Office planning guidelines, it was just so blatant, and then the realisation that the scientists within the Home Office were being constrained to produce results on the impact of a nuclear war using input parameters that were totally unrealistic, essentially to make the numbers come out not too bad at the end. They were in the unfortunate position of being unable to speak very freely, they had a hard time of it, because they were being constantly criticised by people like us who could openly say 'this is an absolute nonsense, what is being said'. They were essentially being forced to produce nonsense. So you might say the adrenalin was up by the ton in terms of criticising British government nuclear weapons policy and, perhaps much more so, civil defence policy. That was high-profile at that stage.

## CREWE

Moving on to SDI and President Reagan's speech, could you take us through what the reaction of SANA was?

## CAPLIN

We were very aware of the US reaction, particularly through things like the *Bulletin of Atomic Scientists*. People even then were going back and forth frequently enough to conferences, sabbaticals, people coming in and out, that knowledge of the reaction within the US came through pretty quickly. A lot of it was being reported in the English journal *Nature* – if you look in the indices for those years you will find quite a lot in there. I think that fairly early on there had been criticism from within the weapons labs and military labs in the US of the SDI programme, because there tends to be a rather more open attitude than in the British military, with people coming out and criticising. So there were people from Los Alamos or wherever, criticising. Also, a lot of the funding for university research in the physical sciences did come and continues to come from the American military. In particular the Office of Naval Research had prided



itself since the 1930s on having supported fundamental research. I work on materials called superconductors, pretty far away from any direct military application, but in the States almost all of that work was funded by the Office of Naval Research. That Office of Naval Research in fact has an office here in London and it has people on secondment, often from academia, or from US military labs, but very much at the scientifically-respectable end of them. At about that time, I can't remember whether it was actually in that period, but around that period, I would have been seeing somebody who was on sabbatical here who worked in a US government lab, but was on leave here attached to the Office of Naval Research. So what happened was that when the Cornell people organised a petition, signing up the US physicists critical of SDI, it was a pretty obvious thing to imitate. We wanted to draw it much broader than SANA, set up some front organisation I suppose, but there was a grouping that went round – I can't remember what we called ourselves - because there were obviously people who signed up who would not wish to be members of Scientists Against Nuclear Arms. I don't think we pretended we were other than members of SANA in organising the signatures. But a lot of people signed up. Again, it was offensive scientifically in the sense that it appeared to be manipulating unreliable scientific data for political purposes. I mean the whole scientific-technical concept was deeply, deeply flawed, yet it was being used to try and persuade the great American public that there was going to be this rainbow-coloured shield. It wasn't just the physicists that time. I remember I went to a crowded, really crowded, lecture, there must have been three or four hundred people, by some guy who worked in the States and was a software consultant to the Department of Defense – his name may have been Rynes, I'm not sure. He had resigned because he said this idea of some kind of automated response computer, an automated response to an incoming attack, was just so dangerous, so nonsensical and so untestable. The software was going to be so huge and how could it have been validated. He had resigned and a whole lot of other people had resigned. I remember him giving a very nice example of somebody who had designed and written the software for some American fighter jet. It was to do with control of the attitude and direction and everything and if the aircraft rolled it had something to bring it back level. The only trouble was that if it had rolled over exactly 180 degrees the software couldn't decide what to do! It had no way of bringing the aircraft back. Maybe it is apocryphal, but, you know... So there were a whole load of things that made the project appear disreputable in the extreme. We got about eight hundred signatures or something and got some publicity on this. There was never any counter to it in Britain from MoD scientists or anybody that I know of. There had been an attempt in the US to counter the three thousand, or however large it was, petition from Cornell. I think it was the American Union of Concerned Scientist which produced a report highly critical of SDI and the Department of Defense did attempt a response to that, at which

point the American Physical Society offered a session at its next big annual conference to debate the issue, and the DoD never came, or withdrew or declined to come or whatever. So the feeling was that it was just a technological fantasy in terms of a shield. When one drew back from all this, having poked fun at it for six months, there was serious money behind it and there were obviously some serious people around who had more understanding of science and technology than Reagan, and one had to ask why they weren't killing it and what might be the reasons for that. There are people in US policy making who claim that the motive was to spend the Soviet Union into the ground and Richard Perle has said 'there you are, we did it'. So there may well have been a mix of motives there.

#### CREWE

From the witness seminar and speaking to Sir Michael Pakenham, it is clear that there were various reasons why different people were opposed to SDI. Did you have any discussions with any of the other groups who opposed it for different reasons, or were there different reasons for people within SANA for opposing SDI?

#### CAPLIN

As I say, I think the first reaction was one of 'this is technological dreamland'. The second stage was then that it certainly could give every appearance to the Soviet Union of being part of a war-fighting strategy: this war-gaming stuff of who can do what first, what can they achieve, who is going to have control of space, who has got satellites, who can pass information quickly, who has got better sensors. And on the whole I think the Soviets would have regarded the US as being much better than them, therefore the Soviets would have to respond. Not in the same fashion, but in some different but equally dangerous fashion, that is by putting all their weapons on a higher status of alert, launch on warning stuff, or yet more massive numbers of missiles. I think a more thoughtful analysis showed that SDI would be deeply destabilising. I think that was the real criticism, the real danger that was perceived. The people within SANA, most of them, would have had both reasons – the kind of scientific feeling that it wasn't being done reputedly, but also the fear of escalation. I think certainly that fear of escalation, yes. The cover of the *Bulletin of Atomic Scientists* has traditionally had a clock on it, a Big Ben style clock. It showed minutes to midnight and the minutes to midnight certainly got down to a rather low number, like one or two, at the time of SDI, whereas in the McNamara period of mutually assured destruction the minute hand had gone back to closer to 11.45 or something. It advanced very close to midnight in that period, because it was seen as deeply, deeply dangerous. We have seen it with Cruise missiles. The claim was that Cruise missiles were going to be pinpoint – and I guess recently they are in fact capable of pinpoint, a very high degree of accuracy. I don't think they were then, but it was perceived that they were very highly accurate weapons and therefore they could knock out command and control centres, so an opponent like the Soviet

Union would not be able to respond in any coherent fashion, at which point the instructions to commanders must be to let off all weapons that they could if they lost contact, hence global nuclear war. So I think this was seen as the danger.

**CREWE**

In the witness seminar you mentioned a meeting with scientists at the MoD. I wonder if you could tell us a little more about that meeting?

**CAPLIN**

There were four or five people on the MoD side and I think two or three of us went from SANA – Tom Kibble went, I went, and I can't remember who else. And I think there was one person there from the FCO arms control unit. We were given a slightly paternalistic kind of spiel. It was, 'We are all grown men here, yes of course we all understand that this isn't going to work like that idiot Reagan's pictures of rainbow-coloured shields; yes of course the Americans have gone over the top on this, but that is the way they do things and really it would be counter-productive to be publicly critical of them. We talk to sensible people in the Pentagon, we talk to sensible people in the State Department, it will be far more useful if we can make sure that the Soviets don't get to alarmed about this and if we keep channels open' etc., etc. This except for the one man who I mentioned in the witness seminar, Stanley Ormond, a kind of small-scale British Edward Teller. We were told this was under Chatham House rules, but hell, Chatham House rules, what was the point. It was interesting us to know why they had decided to ask us in there, it must have been to spread the word around, otherwise why us – so for reassurance. I think that was it and it gradually, gradually faded away. I was interested to hear at the witness seminar Roy Dommett say that they were capable of making major technical contributions to the SDI programme. That was all new to me, but it would be interesting to know a bit more about that. Clearly British facilities, in terms of radar facilities and so on, would have been important. Then there was the promise of \$1 billion for UK industry and research and there was somebody with a double-barrelled name who I mentioned at the witness seminar who did go round universities trying to encourage them to participate, but I know of only one or two little programmes. I did hear from the US, close friends who worked in the naval research lab in Washington and others, who said that various programmes that had nothing really to do with SDI were re-labelled SDI. There was a rather deep pocket, so in budgetary terms it was advantageous for lab managers to shift something over to SDI and release funding for other things, but also it would look as: if the money is being taking up, then the research is being done and it is moving forward. There were quite a number of programmes that got taken aboard, so you will see all kinds of papers in journals acknowledging financial support from SDIO and the linkage to SDI, well, it escaped me.

**CREWE**

Were there similar meetings at the FCO?

**CAPLIN**

Not that I know of. I am just trying to think what was said at the witness seminar about that, because the FCO and the MoD had rather different agendas thereon. But the FCO didn't make any approach to us that I am aware of. It all faded away, not many years post-Gorbachev I think. It would be interesting to look at the budgetary allocation to the SDI within the US. Some of it will have carried on just because there were research contracts that had been put in place and I am sure that Boeing and General Dynamics and British Aerospace, if they could get anything of that action, would have wanted to continue.

**KANDIAH**

Congress began putting the squeeze on as the 1980s progressed.

**CAPLIN**

Yes, Congress was always very sceptical. One of the important things was, back-tracking, that the Congressional Office of Technology Assessment (OTA) had produced a report that was highly critical of SDI and the OTA had a very respectable history. And when the Republicans took control of Congress in about 1992, the thing they did was close down the OTA and there is now on the web the OTA Legacy Archive. They were very carefully, very well researched reports on all kind of things. Our parliamentary Office of Science and Technology has I guess the same stated goals, but it has about one-hundredth of the budget and just cannot do it. Another very important issue in the States, or influenced from the States, was that the Americans don't have an Official Secrets Act. People who had been in weapons programmes and then come out for whatever reason – not necessarily resigned because they disagreed with them, but just retired or whatever – would tend to be much more public in what they said about things. One of those people is a man called Dick Garwin,\* initials R.L., who had left the weapons programmes and went to work for IBM, he must be in his eighties now. He has his archive on the, I think it is the Union of Concerned Scientists but it might be the Federation of American scientists. He was an early critic of SDI and contributed to the OTA assessment twenty-odd years ago, and he has been a recent and vociferous critic of missile defence, the Bush programme. He comes over for meetings and things. I think that is in a way what we missed here in Britain, and this is one of the things that always reflected rather sadly, because government scientists and engineers have been under this lifelong obligation to keep quiet and have always been threatened with the Official Secrets Act. People who had worked on, say, weapons programmes or military strategic planning on the whole are much less open about what they say post-retirement. There are a few people I can think of, Timothy Garden, ex-Air Chief Vice-Marshal,\* and I suppose Solly Zuckerman as a Chief Scientific Adviser, but most of the people who have been at Aldermaston or elsewhere tend to be very quiet. And one

Richard L. Garwin. Member of the President's Science Advisory Committee 1962-5 and 1969-72, and of the Defense Science Board 1966-9.

Timothy Garden (Lord Garden of Hampstead). Air Marshal, 1994-5.

of the saddest things I ever heard was from a colleague of mine who lives in Harwell, lived close to Bill Penney, and just before Penney died he saw him with a huge bonfire in his garden. There were papers. So it's very difficult to find out. I don't know what the MoD do with their papers under the thirty year rule.

**KANDIAH**

It depends on the kind of material. If it relates to actual weapons design and so on they withdraw it.

**CAPLIN**

But policy and strategy?

**KANDIAH**

That depends on what aspect of policy and strategy.

**CAPLIN**

I just remember, there was the Oxford Research Group that published quite a few things in the early 1980s and attempted to talk to people who were senior military planners, and I am pretty sure Hugh Beach was associated with them. The other thing is that SANA kindly gave birth to an organisation called VERTECH (Verification Technology Centre), which is still around, looking at international arms control agreements, quite a serious thing; a woman called Patricia Lewis,\* who went to Geneva to run the UN arms control Institute, so a lot of people who moved into arms control. One of the most active people is a guy called Owen Green, who went to the Department for Peace Studies at Bradford, Paul Wood, who is a post-graduate, Paul Rogers, so a lot of younger people who had been associated with SANA went in those kinds of directions. I guess the other big thing that impacted SANA, just a little bit later, were nuclear winter scenarios, which in a way you could think of as perhaps the climate modellers who are into global warming were also looking at this very serious business of nuclear winter.

Patricia Lewis. Director, United Nations Institute for Disarmament Research (UNIDIR), 1998-.

**GILLIAN STAERCK**

So did you tie in with green groups at all?

**CAPLIN**

Not in any formal sense, nor as an organisation, but individuals did. The agendas were by no means identical. SANA decided to keep its focus very much on arms issues, it did not take a position on nuclear power or on intensive farming or anything it felt was outside its remit. In fact SANA folded about ten years ago because the arms issue seemed to have disappeared and the question was what then became of it, and it became an organisation called Scientists for Global Responsibility. That has become much broader and I have been on the verge of removing my direct debit without getting round to it, because on all kinds of issues such as over GM crops I don't agree with them. Anyway, SANA was essentially a single-issue organisation. I think it did take chemical weapons under its purview, it involved Alistair Hay\* at Leeds, who was a chemical weapons expert, and also another chemical weapons person at the

Alastair Hay. Professor of Environmental Toxicology, University of Leeds.

University of Sussex whose name I have forgotten at the moment. And I think had we known more about biological weapons we would have concerned ourselves. I think we were Scientists Against Weapons of Mass Destruction, in modern parlance, that would be fair to say.

**CREWE**

You mentioned links with others groups, or were these individual links?

**CAPLIN**

It was individual links, yes. There was a whole host of groups: Psychologists Against Nuclear Arms, the Medical Campaign Against Nuclear Weapons, which had been going for a long time, Lawyers Against Nuclear Weapons, every which one.

**CREWE**

I don't know whether there were attempts at influencing government policy making, but would that be done jointly with other organisations?

**CAPLIN**

I think that would suggest far too much organisational efficiency being in place! SANA was relatively well-organised, but others were much less so. No, I think that would have been quite difficult. I think that SANA would have been very successful over the Home Office civil defence planning; I think it helped to raise the profile over Cruise missiles – of course the government went ahead anyway, but with a much greater degree of embarrassment than otherwise would have been the case. It would be interesting to know from the other side, from the MoD or the FCO, as to how much account was taken. To some degree there was the feeling that the FCO felt it had to be seen to be listening. They used to run every month or two an arms control kind of session and people would come along from the United Nations Association and various key peace campaigners and so on. The links with other organisations were more kind of opportunistic or when there was a need. For example, at one stage the women at the Greenham Common camp thought that the MoD were using intense low frequency radiation, electro-magnetic radiation, to unsettle them, so we got some gear and went down there to see if we could find anything, but we didn't. Let me just say something that I didn't mention in the witness seminar, about my perspective of people working in weapons labs. About 1987 I went to Aldermaston to give a seminar about some interesting science that had come up at that time – nothing to do with nuclear weapons at all. The young guy who had invited me to give this seminar took me to lunch in the pub first and he said, 'Oh well, I'd better introduce you, do you want to tell me a bit about yourself'. So I said, 'You might like or you might not like to tell them that I am currently vice-chair of SANA', and he said 'Oh, I'll tell them, that will be interesting'. At this seminar with 30 or 40 people he mentioned this and a kind of slight murmur went round, but of course they wouldn't say any-

thing: they couldn't say anything. The only thing I noticed was that in the car park there a lot of people had stickers in their cars for good causes, Oxfam kind of stuff. Perhaps I am over-elaborating, but I did get the sense that people were somewhat trapped in these weapons labs, unable for the most part to communicate with their scientific peers, so largely isolated. That is rather different from US weapons labs.

**STAERCK**

But they do talk to the US weapons labs, don't they. Certainly Roy Dommett did.

**CAPLIN**

Oh yes, sorry, *that* is their communication. But not with their peers in this country, so that in terms of their scientific reputations, they tend to be rather poor. That makes it rather difficult for somebody to migrate from Aldermaston into a post anywhere else, because their stuff will mostly be classified. The US weapons labs have always made it easier. I have been to Los Alamos two or three times I guess and there is no big deal about security clearance, at least there wasn't last time I went about four or five years ago. There are areas obviously that you can't go into, but if you go to the open science area, they have had to clear you in advance and they had to send your passport in or whatever, but it is just like any government lab in that sense. It behaves like a university lab and so people *can* go back and forth.

**CREWE**

I think you mentioned some scientists who were approached by the government about work and presumably they wouldn't be under the Official Secrets Act. Were they then able to discuss what had been said?

**CAPLIN**

Firstly, if you have MoD money here it would be far away from anything that was sensitive or secret, it would be generally supportive. I have never had any MoD money, but plenty of colleagues have. I doubt very much they have signed the Official Secrets Act and nobody is going to do any sensitive stuff on campus. Perhaps people who are consultants to the MoD do sign the Official Secrets Act. One of my colleagues is most certainly a consultant to Aldermaston and I presume in respect of what he knows about Aldermaston he signed the Official Secrets Act, although he has always claimed that he has never been told anything very much that is secret. My guess is that they tend to be overzealous in terms of the secrecy. That's my suspicion. So I think on the whole the US has tended to be much more open about it. It is always easier to find out what is going on in London by going to the US and there aren't many US researchers coming here to queue to find things that are classified in Washington. I doubt that, I think it is unlikely.

**CREWE**

Do you think there was a general relationship between government and scientists which was being played out in this debate? How do you think the history of the relationship between government and science affected the reaction of scientists to the SDI?

**CAPLIN**

To perhaps look at what I was just saying from another perspective, I think that government scientists on the whole had not been well linked into non-government scientists in this country, that there has been relatively little migration from one to the other. That was true, as I say, of the Home Office, people in the scientific research development branch in the Home Office. It was I think true of MoD. I can think of instances where MoD have paid for people to do research that would not get funded by a Research Council. So – a feeling that some of the MoD-funded research was of rather low calibre and that some of the MoD scientists were of low calibre or by not exposing themselves to the wider scientific public, their peer group, had fallen behind and were scientifically out of touch. There was this thing of getting blinkered by working within a closed environment. I think we have seen this more recently over the MAFF\* disaster over foot and mouth and CJD before that. The people who were outside the MAFF labs had a very dim view of the capabilities of people within the MAFF labs. And apparently a lot of research within the government labs gets done without peer review – you get people saying ‘what’s peer review’ – and that is what it needs. I thought, well, we struggle so hard and get great peer reviews and it still doesn’t get funded. There is this feeling that there is a barrier, there has been a barrier, and that is actually not to the good of government science, it is deleterious to government science. I think that the Home Office has wound up its scientific research and development branch, it ought to have done anyway, considering what it is doing at least in this kind of area. But one has the feeling people kind of fall asleep at the bench kind of stuff. And it is terribly difficult if you can’t exchange ideas with people.

Ministry of Agriculture, Fisheries and Food, now the Department for the Environment and Rural Affairs.

**CREWE**

Has there been any reaction from either people who used to be in SANA or other people to President Bush’s recent plans?

**CAPLIN**

I think as individuals, but not organisationally in this country, that I am aware of. Certainly in the States there has been. I guess the sense is that it is much more important to influence what goes in in the States than here.

**KANDIAH**

So quite a difference between the 1980s and now?

**CAPLIN**

In the sense of we can see what is happening in real time, we can tell people what is happening, we can encourage them and discourage, but feeling a certain degree lacking in emancipation – we have not been given suffrage in the sense that here decisions are being



Lord Sainsbury of Turville, Labour politician. Parliamentary Under-Secretary of State for Science and Innovation, 1998-.

taken by the US on an installation that will affect us all, but we have little direct influence. I am now involved in an organisation called Scientists for Labour, which is affiliated to the party, and over recent events, particularly Iraq and missile defence, I am aware of a degree of unhappiness within Scientists for Labour. It has been very much welcoming of attitudes towards science funding, very supportive of Sainsbury, or rather Sainsbury has been very supportive as science minister,\* but critical of Iraq, the government attitude over G[enetically] M[odified] crops, its being nervous of the green groups, and over missile defence issues. I suppose going back to that meeting at the MoD 20 years ago, it became clear that if as a civil servant you were going to get promoted within the MoD, at some stage you had to have spent a year or two in Washington attached to the British defence staff. Goodness knows how many people they have there, but there are a lot of people liaising with the Pentagon or DoD. So the transatlantic ties held very strong there.

**KANDIAH**

The final question is, was there anything that you feel wasn't covered in the witness seminar that you would like to note?

**CAPLIN**

I don't think so. Maybe you can tell me, was there anybody, any civil servant, who resigned from the FCO or the MoD over SDI? I don't recall any.

**KANDIAH**

No.

**CAPLIN**

So there was nobody who had been a civil servant at the time and who had resigned or made a big statement on this that you could have got to be a witness at the seminar. Weston, he was critical, but within the walls.

**KANDIAH**

Yes, but it is interesting that you should mention these aspects of culture. I think British civil servants are more inclined to criticise from within.

**CAPLIN**

Well, they argue that they will get a lot more done from within. But maybe by the time they come round to retiring they have forgotten what they intended to do from within and for the historian it is terribly difficult to discover whether they were in any way effective with what they attempted to do from within. Let me perhaps mention one thing. The DoD set up something called the Jason Forum, or something like that, which is a committee of people who have clearance, who have been in weapons programmes, that is a kind of critical think tank. Garwin has certainly been a member of that. That has published reports, often with an open version and a classified version. I don't know how long that has been in existence, but it is an interesting concept. Whereas Timothy Garden, he has been overtly critical of strategy, but he has done it from the platform of

where he is based. There isn't an organisation of senior ex-military gents. They may get together in the Athenaeum or something, but they don't run seminars as a collective, or publish reports as a collective and certainly the weapons technologists are not there at all as far as I know.