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The Establishment and Some Consequences of the Combined Threat Reduction Programme and Associated Programmes

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Abstract

In 1991 and 1992, on the collapse of the Soviet Union, newspaper readers in the West were warned of potential disaster from 'loose-nukes' and abandoned and dangerous nuclear-powered and nuclear-armed submarines. However there were no such disasters and this study set out to discover why.

Research revealed a series of projects in which over thirty countries contributed to making safe the Soviet nuclear legacy and where the reality was such that outcomes in terms of contribution and achievement bore comparison with the iconic Marshall Plan.

The initial direction of enquiry was to America seeking to assist Russia to comply with the terms of the START 1 Treaty: further research indicated non-US support in similar measure. It is argued that political acceptance in America owed much to the attitude and conviction of President Reagan and in Russia to the consequences of Chernobyl.

Evidence of the Law of Unintended Consequences is present. In 1991 most Americans would have disbelieved that for the next twenty years half the electricity generated in US nuclear power plants would be fuelled by re-engineered Soviet nuclear warheads, or that NASA would become dependent on Russian rockets to maintain its contribution to the international space station. By 2015 Russia, but not the United States, was a leader in the international nuclear renaissance. Inhabitants of the Murmansk Oblast could give thanks to Norway for their living in, by some economic indicators, the most prosperous region of Russia, consequent on commerce following environmental initiatives.

This is a 'work in progress'.

S. G. Guy
8 June 2016

For Lesley

with all my love

without whom I could have done neither my BA

nor 45 years later

my Ph D

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This thesis could have been written only with the help of a phalanx of friends and supporters, not all of whom, primarily for reason of their modesty, are mentioned here.

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Beyond its walls I am grateful to Sir Tony Brenton, UK Ambassador to Moscow 2004-2008, whose unparalleled knowledge of the Russian scene in the period under review was invaluable in my early stages, and Anna Sevortian, formerly of Moscow State University, who encouraged me, not always with success, to observe from a Russian viewpoint. An early advisor on Eduard Shevardnadze's work was the late Dr Alexander Rondeli of the Georgian Foundation for Strategic and International Studies

The paperwork to be scrutinised was weighty and amongst those whose help has contributed particularly has been Cathy Gwin of Senator Nunn's office; Kate McReady of the Nuclear

Resilience and Assurance Group of the Department of Energy and Climate Change; and staff at the National Academies Press.

The support and friendship of all members, administrative and academic, of the Centre of International Studies and POLIS has been warmly appreciated.

In conclusion, a proof reader without peer, Lesley

Thank You

Preface

Matters described in this study have given rise to many specialist terms and acronyms. Where appropriate military conventions have been followed – for example SSN refers to nuclear-powered submarines in the singular and plural.

There is apparent inconsistency in some references to the Global Partnership (GP) in describing the numbers of partners and contributors. In the literature 'partner' can refer to the number of contributing partners or to the number of contributors and recipients; there were contributors which were not partners, and some which were not states. There is not unanimity across analyses of the EU's contribution. Unless otherwise stated the EU is included as a state in GP totals.

Ranges of project costings have been published. For CTR, 1991-2002, where available, those published by GAO have been used; for the GP Annex A.

A variety of sometimes overlapping terms has described national and international programmes to make safe the Weapons of Mass Destruction (WMD) legacy of the former Soviet Union (FSU). For simplicity, and where the text does not indicate to the contrary, the term CTR (Combined Threat Reduction) has been used for all US projects (including those undertaken during the currency of the GP) and CTR-plus for the totality of programmes undertaken 1991-2012 in all FSU countries. Where direct focus is required on the original US Soviet Threat Reduction Act and circumstances surrounding and following it the term *Nunn-Lugar* is employed. For the purposes of this study Japan is regarded as a Western state.

The programmes were initiated by concerns of nuclear safety, which has been the recipient of substantially the greatest funds devoted to it. CTR-plus embraces nuclear biological and chemical weapons (NBC). Unless required for a particular consideration made clear in the text, this study is limited to the programmes' nuclear components.

The study commenced before the digitisation of many documents – for example GAO reports and Congress records. Wherever possible current digital references have been provided. Given the nature of audit reports pagination has not always been supplied for GAO references to avoid confusion from constant repetition.

This has been a lengthy project. Painstaking work to establish positions has been overtaken by memoirs from politicians and officials following the decision to end the GP in Russia in 2012. In any place where my arguments appear in parallel to theirs this is a consequence of my own research. My sources are identified and all referencing has been undertaken by me.

This dissertation is my own work and contains nothing which is the outcome of work done in collaboration with others, except as specified in the text. The word count is 79,296.

Abbreviations and Glossary

1540	References to UNSC Resolution 1540 passed in 2004 which declares the proliferation of nuclear biological and chemical weapons constitutes a threat to international peace and security
ABC Weapons	Atomic Biological and Chemical – the acronym used in the translation of the Russian equivalent of NBC
ABM Treaty	Anti-Ballistic Missile Treaty signed by the US and USSR in 1972; associated with the Strategic Arms Limitation Treaty (SALT I)

AMEC	Arctic Military Environmental Co-operation
Atomnadzor	Russian Federation Nuclear Regulator (see Rosnadzor)
CFE	Conventional Forces in Europe Treaty (1990)
Charge	Any nuclear munition (Soviet Union)
CRDF	US Civilian Research and Development Foundation for the CIS authorised under the Freedom Support Act 1992 and established 1997. Claims grants to 13,000 scientists totalling $105M by 2010.
CRS	Congressional Research Service (US)
CSIS	Center for Strategic and International Studies (US)
DEF	Defense Enterprise Fund; part of the Nunn Lugar provisions of the FY 1994 Defence Bill intended to foster defence conversion in the FSU
DNFSB	Defense Nuclear Facilities Safety Board (US)
DOD	Department of Defense (US)
DOE	Department of Energy (US)
DTRA	Defence Threat Reduction Agency (US) founded October 1998 and brigaded with the US Strategic Command WMD Center in 2005 with amongst other responsibilities the co-ordination of DOD activity on CTR and the lead for some other inter-agency activities such as Nuclear Summits
EBRD	European Bank for Reconstruction and Development

ERP	European Recovery Program – the formal title of the Marshall Plan
ESD	Environmental Safety Device – safety component of some nuclear weapons designed to ensure detonation only when certain conditions are present/absent
FAS	Federation of American Scientists
GAO	Government Accountability Office (US)
GARF	*Gosudarstvennyi Arkhiv Rossiiskoi Federation* - the State Archive of the Russian Federation
GIPP	Global Initiatives for Proliferation Prevention (US) – aims to take forward by commercial operations installations in the FSU that previously manufactured WMD
GP	The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction
GPO	Archive of the Government Printing Press (US)
GSN	Global Security Newswire – a daily newsletter published independently by the National Journal Group funded by NTI
GTRI (now GTRP)	Global Threat Reduction Initiative/Program (US) – Programme to reduce the nuclear threat of terrorists and rogue states
ICSANT (now NTC)	International Convention for the Suppression of Acts of Nuclear Terrorism (UN 2005)
IMEMO	The Institute of World Economy and International Relations (Soviet Union) which with ISKAN, State-sponsored Think-Tanks important entities in discussions between the US and Soviet Union

INF	Intermediate Range Nuclear Forces – defined as land-based nuclear weapons with a range of between 500 and 5,500 kilometres
IPPNW	International Physicians for the Prevention of Nuclear War
IPR	Intellectual Property Rights
IREX	International Research and Exchanges Board formed by the American Council of Learned Societies and the Social Science Research Council to represent the US academic and scholarly community in its exchanges with the SU and Eastern European States
ISAB	International Security Advisory Board (US) Provides the State Department with independent insight and advice on all aspects of arms control, disarmament, international security, and related aspects of public diplomacy.
ISKAN	Institute for the Study of Canada and the United States (Soviet Union)
ISTC	International Science and Technology Center(s)

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JVEA Joint Verification Experiments Agreement of 31 May 1998 (which permitted scientists technicians and observers from each state to observe nuclear test explosions in the other)

MIC	Military Industrial Complex or Commission (as appropriate) coined by President Eisenhower. (Frequently used in the Soviet context where the MIC (known in the SU and later Russia by its acronym of VPK) is an institution linking the General Staff, security and intelligence agencies, and industrial and commercial firms into a formalised militarised structure)
MID (and MFA)	*Ministerstvo Inostrannykh Del* Ministry of Foreign Affairs (Soviet Union and Russia)
MINATOM	RF Ministry of Atomic Affairs
MIRV	Multiple Independently Targeted Re-entry Vehicles
MNEPR Agreement	The NDEP (European) equivalent of the US Umbrella Agreement
MPCA	Material Protection Control and Accounting
MTS	Moscow Television Service
NAS	National Academy of Science (US)
NDEP	Northern Dimension Environmental Partnership - A partnership of 12 countries and the European Union funding and supporting (2012) 27 "clean up" projects at nuclear and environmentally hazardous sites in North Western FSU
NNSA	National Nuclear Security Administration - an agency of the Department of Energy (USA) - responsible from 1999 for co-ordinating all DOE non-proliferation programmes including improving security at RF nuclear warhead sites
NNSG	Nuclear Safety and Security Group established at Kananaskis to provide the leaders with "technically informed strategic policy advice on issues

	that could impact safety and security in the peaceful use of nuclear energy"
NPP	Nuclear Power Plant
NRDC	National Resources Defense Council. Significant US environmental litigation education and advocacy NGO. Nuclear is one of eight areas of interest
NSA	The Nuclear Safety Account was the first multilateral fund set up by the EBRD in 1993 to finance nuclear safety projects in central and Eastern Europe
NSF	Nuclear Security Fund. Voluntary fund operational 2002-2013 (IAEA)
NSF	National Science Foundation (USA)
NSG	Nuclear Suppliers Group - a multinational body (47 in 2010) the members of which are committed to limiting the export of nuclear equipment materials or technology
NSIAD	National Security and International Affairs Division of the GAO
NSP	Nuclear Safety Programme established under TACIS active between 1993 and 2006 with a role to concentrate on design safety, analysis, and on-site assistance to NPP in the FSU with the supply of equipment, regulatory and licensing activities, waste management, and contributions to international initiatives (Chernobyl Closure, Shelter Implementation Plan, (SIP), Nuclear Safety Account (NSA); and the GP NSP
NSSG	Nuclear Safety and Security Group – the oversight body set up by the G8 to supervise the GP

NRDC	Natural Resources Defense Council (USA) – An influential NGO
NTI	Nuclear Threat Initiative - A campaigning organisation, maintaining a major information and data service, founded in 2001 and based in Washington DC, co-chaired by Sam Nunn (of the Nunn-Lugar Act) and Ted Turner (founder of CNN) with an international board of directors which actively develops and finances initiatives – its own and others
NRRC	Nuclear Risk Reduction Centres 'The U.S. NRRC will provide a permanent, rapid, reliable, and private means by which the United States and the Soviet Union may transmit notifications agreed between two Parties, including those required under certain existing and possible future arms control and confidence-building agreements." – *National Security Decision Directive, (NSDD-301), February 22, 1988* "... another practical step in our [two nations'] efforts to reduce the risks of conflict ..." -- *President Ronald Reagan, September 15, 1987'* Proposed by Senators Nunn and Warner 1985. Agreed by Schultz and Shevardnadze 1987
PAL	Permissive Action Links – the electronic locks fitted to nuclear weapons preventing their unauthorised use, customarily at two levels - authorizing and enabling
PCC	Political Consultative Committee of the Warsaw Pact
PMDA	Plutonium Management and Disposition Agreement
RMA	Russian Munitions Agency – responsible for defence conversion and the disposal of conventional and chemical weapons

ROSNADZOR	Successor to Atomnadzor. Responsible for Environmental Industrial and Nuclear Regulation
SADS	Soviet American Disarmament Study Group
SALT	Strategic Arms Limitation Treaty – SALT 1 Treaty signed 1972; SALT II agreed 1979 but not ratified by the US because of the SU invasion of Afghanistan
SERP	Scientists Engagement and Redirection Program
SevRAO	Russian Nuclear Waste Handling Authority for NW Russia
SDI	Strategic Defense Initiative (Star Wars) (USA)
SIPRI	Stockholm International Peace Research Institute Authoritative Publisher of Military Databases and Periodic Reports
SLBM	Submarine-Launched Ballistic Missile
SME	Small and Medium Sized Enterprises
SNDV	Strategic Nuclear Delivery Vehicle The Soviet description of any vehicle that could deliver a nuclear weapon to the territory of an opponent
SSN	Nuclear Powered Submarine
SSBN	Nuclear Powered Ballistic Missile Submarine
SSGN	Nuclear Powered Guided Missile Submarine
START	Strategic Arms Reduction Talks – negotiations on the reduction of strategic (i.e. continental ballistic nuclear) weapons between the US and

	the USSR and latterly RF, resulting in the START I agreement (1991) and START II (1993)
TACIS	Technical Assistance for the Commonwealth of Independent States – the programme channelling European contributions to multilateral programmes in the field of nuclear safety between 1991 and 2006
TEG	Thermo-Electric Generators – radioactive elements used to generate heat converted into electrical energy and used widely by the FSU for lighthouses
TENEX	*Techsnabexport* - a subsidiary of MINATOM that acts as the RF agent in the Uranium Purchase Agreement.
Umbrella Agreement	The agreements between the US and RF setting out the liability and taxation arrangements under which CTR work was undertaken.
UPA	Uranium Purchase Agreement (‘Megatons to Megawatts’)
USEC	United States Enrichment Corporation - the US agent for the Uranium Purchase Agreement programme
VPK	Voennyi-promyshlennyi kompleks see MIC above
WMD	Weapons of Mass Destruction (Nuclear Radiological Biological and Chemical)
WNA	World Nuclear Association. The international organisation that supports commercial nuclear activity.
ZATO	The common Russian term for a Closed Territory (frequently a Closed Nuclear City). It is an acronym for Zakrytye Administrativno-territorial'nye Obrazovaniya,

Fuel Cycle	The nuclear fuel cycle is “Closed” or “Open”. Under the “closed” spent uranium NPP fuel is reprocessed to separate the resulting plutonium and reusable uranium from high level radioactive waste products. The plutonium can then be re-used in a new fuel MOX (Mixed Oxide) which reduces the need for enriched uranium. The plutonium from de-commissioned weapons can also be used to manufacture MOX. Under the “open” the original fuel is used once only and the stored for a period before being permanently disposed of in special safe repositories. Superficially attractive the closed cycle is technically complicated, not economically attractive without state support, and a potential proliferation risk. The processing of enriched uranium and plutonium are essential considerations in the UPA and PDMA.

INTRODUCTION

The programmes for making safe nuclear installations and weapons in the former Soviet Union, whilst generally unknown to the public, collectively may be counted as one of the significant events of the late 20th and early 21st centuries.

Their compass may be measured by reference to a wide range of characteristics including their impact on international security, as aid programmes, longevity, the creation of multi-national enterprises in a previously-closed society, and the modernisation of Russia.

The first part of the study is a longitudinal description. Bringing together the programmes in itself provides opportunity for analysis. The second is an attempt to measure the totality and some consequences of the programmes and to make a comparison with the Marshall Plan. The conclusion includes consideration of counter-factual possibilities.

The approach chosen represents a contribution to knowledge through the use of material little referenced in this area – for example reports of the US Government Accountability Office (GAO) and records of meetings of the G7/G8; the linking of US and non-American programmes not previously seen as a whole; the inclusion of elements not previously seen as integral to the issues under consideration; and a review as to whether the combined programmes may be appropriately compared with the Marshall Plan.

The topic is important because in addition to reducing the risks of nuclear accident and proliferation these programmes were a significant factor in creating the new order of relationship between Russia and the West following the collapse of the SU on 25 December 1991, and because the experience gained will be invaluable in any future circumstance requiring the rehabilitation of a broken nuclear-armed society.

The initial Research Question is, 'What were the circumstances that led the United States to establish its programme and to sustain it for twenty years, and for other countries to create associated programmes?'

The Research Hypotheses is, 'That the initiators of the process - the promoters of The Nunn-Lugar Act of 1991 - had no conception the Act would grow into one of the most significant programmes of US overseas aid in peacetime, would draw in the G8 and other countries, and might be credited with providing impetus for social and cultural changes in Russia, distant from those of the Act's stated purpose'.

The methodology for the study has been to review literature, legislation, and official reports. The latter has included reports from national governments, the IAEA, meetings of the G7/ G8, and debates in and reports from legislatures. There are many NGOs active in nuclear matters and the work of Bellona International, the Carnegie Endowment for International Peace, the Federation of American Scientists, the James Martin Center for Non-proliferation Studies and Nuclear Threat International have provided rich seams. Memoirs have proved important sources.
The literature search has been undertaken traditionally and electronically. Secondary texts have been checked for the sometimes incidental passages referring to relevant matters in "mainstream" accounts from or of the period. Much information relating to the 1980's and early 1990's must be treated with care based as they were on inaccurate intelligence assessments. The memoirs of senior FSU officials refer regularly to the falsification of Soviet official statistics and reports. Recently a flow of books as former senior officials have retired, or events have been revealed under Freedom of Information policies, have revealed valid information. This is often in duplication of work painstakingly undertaken for the study, and has rarely pointed to areas for further investigation.
There are other difficulties. The quality of record keeping varies widely and inability to reconcile accounts commonplace. Many records from the FSU no longer exist. It may be impossible to calculate total programme costs given the period and the number of countries involved with consequent complexities of labile rates of exchange and inflation. The GAO has stated more than once during the history of the CTR that it has been is unable to calculate US expenditure.
During the searches a series of taxonomies have been constructed including the names of many involved, locations, events, and approved and audited expenditures. From these it has been possible to establish the names of officials in contact with each other, to draw timelines and diagrams of events and issues to be fed into the cycle of enquiry, and to calculate possible expenditures against claims. These taxonomies have revealed that no less than 164 organisations claim to be involved in the programmes. This is likely to be an underestimate.
The nuclear programme has elements referring to the European FSU, Kazakhstan and the Far East. The situation in European Russia is the most complex, and the nuclear examples will refer primarily to that. By 2013 here were 34 countries funding plans under the overall programmes within which are many projects.
The study is clearly a 'Work in Progress'. The complexities revealed in this initial study have disclosed opportunities for further research across a range of topics. Some are referred to within the text. The most

important, deferred for reasons of space as well as difficulty of access to verifiable records, is the view from Moscow.

Definitional issues are evident. In terms of 'establishment' until 2002 many initiatives were subject to annual budgets or limited to short-term project life and the collective stream of endeavour could have halted at any time. Consequences are measurable throughout the twenty years following 1991, the year the passing of the Nunn- Lugar Act, rather than being evident only at completion. The foundations to the programmes it will be argued date not from the collapse of the Soviet Union in 1991 but some ten years earlier.

CHAPTER 1

ASPIRATIONS OF NUCLEAR WEAPONS ABOLITION 1981-1989

Reagan	**1981**
Gorbachev	**1985**
Stepping Out	**1985**
First Fruits	**1987**

Introduction
The First Quadrumvirate
The Summits
The Next Steps
Conclusion

Introduction

Accounts of Western assistance to Russia in helping it meet its disarmament obligations at the end of the Cold War commonly start in 1991 around the passing of the US Soviet Threat Reduction Act (PL102-228). In this study it is argued that this was one of a train of events starting some years earlier.

It is conceivable that such help could have been provided absent the INF and START I treaties, but unlikely. Those treaties came about through the vision of two men, each supported by a friend and lieutenant, collectively described here as the First Quadrumvirate. The backing to that achievement, supplied by CTR-plus over twenty years, would not have happened without the contribution of lawmakers scientists and officials operating initially through a range of known conversations and institutions. The achievements of CTR-plus are impressive, but the story begins with the quadrumvirate.

The formal dissolution of the SU could be cited as a proximate cause of US PL102-228 signed by President GHW Bush on 12 December 1991. It is insufficient to do so. This Act, marking the start of CTR, was contingent on circumstances in the SU and US over the preceding ten years. This chapter outlines some factors 1981-1989 without which the programme would have been unlikely to have been proposed.

Foremost are the characters and views of Ronald Reagan and Mikhail Gorbachev and the timing and circumstance of their periods of office as President of the US and General Secretary of the Communist Party

(later styled President) of the SU. The parts played by their principal lieutenants, George Schultz for Reagan and Eduard Shevardnadze for Gorbachev were essential. Absent the achievements of these four men there would have been no platform from which their successors, a growing body of legislators, scientists, and officials, and then other nations and international bodies could have worked to establish the CTR and subsequently the GP. The prevailing political and economic circumstances of their states framed the roles of these men and will be examined with emphasis on the factors that brought them, with shared aims, to the superpower conference table.

Those aims were to halt the nuclear arms race, reduce the stockpiles, and eventually rid the world of nuclear weapons. When Reagan acceded to the Presidency the US/SU relationship was, excepting the great crisis points of the Berlin blockade and the Cuba missile crisis, at one of its lowest points and the SU was facing economic collapse. It is against these circumstances that the achievements of Reagan and Gorbachev should be measured.

The First Quadrumvirate

Ronald Reagan (1981)

Reagan is remembered as a President who revived enthusiasm for right-wing policies, lifted national spirit following a period of decline, and for loosening supply-side economics and increasing Government expenditure whilst protesting a contrary aim of deficit reduction. He fed a growing sense of national pride (and the deficit) through programmes to enlarge and re-equip the American armed forces. SDI, controversial in its realism, science, and economy, was to prove an important element in negotiations to conclude the Cold War. Not in the public mind was that he was a nuclear abolitionist.

During military service in WWII he became increasingly distressed at the consequences of war[1]. Private correspondence during his governorship of California (1967-75) indicated his opposition to the Atom Bomb and in 1975 on surrendering the Republican nomination to Gerald Ford he spoke of the dangers of nuclear war.

Records of his views prior to his eventual nomination to the presidency additional to the 1975 convention speech can be found. Accounts of a visit to an Air Force control centre record his view of the disaster he envisaged following any nuclear exchange.[2] During his 1980 election campaign he spoke privately to members of his campaign team of his wish to abolish nuclear weapons.

During this period his public, in contrast to his private, attitude was not untypical of a mainstream Republican of his day. He was sensitive to the need to maintain support from his wealthy, generally right-wing, backers. He restricted references to security in campaign speeches to opposition to SALT II and concern that the Soviets were seeking military superiority. He kept his views private until after his election. He was accused of being a warmonger by Jimmy Carter, whom he was to defeat. He responded that he wanted the elimination of nuclear weapons, not their control.

[1] A peacetime reservist enlisted man Reagan was called up for regular service but because of his extreme short-sightedness was transferred from a combat arm into the Army's Public Relations and Films organisation. He was subsequently commissioned and discharged as a captain.

[2] For example see Hoffman David E *The Dead Hand* (London Icon Books 2011) pp 38 and 39

Following election he initiated increases in military expenditure with consequential MIC employment. Whilst apparently inconsistent with his claim to abhor nuclear weapons he saw nothing illogical. To be assured of success he believed argument or negotiation had to be from a position of strength. His actions carried significant second-order effects with a recovery in military morale following its dip during the Carter administration.

SALT and the *detente* policy of Nixon and Ford were seen by Reagan as unsuccessful in limiting growth in the Soviet nuclear inventory. He saw no inconsistency between the need to strengthen America's defences and abhorrence of nuclear weapons. He shared anti-nuclear views with officials and increasingly in correspondence with his Soviet opposite numbers, at a time when these were uncommon in official circles either side of the Iron Curtain.

Prior to his first letter to Brezhnev (1964-1982) a diary note read: "Ridiculous for both nations to spend so much [on nuclear weapons]".[3]

In his memoir he likened the posture of the two states to that of a stand-off between two cowboys:

> I wanted to let them know that we realized the nuclear standoff was futile and dangerous for all of us and that we had no designs on their territories. They had nothing to fear from us if they behaved themselves. We wanted to reduce the tensions that had led us to the threshold of A NUCLEAR STANDOFF." (His emphasis)

He spoke of months of debate in the Administration before a televised address from the National Press Club in Washington on 18 November 1981:

> Hoping it would be received in Moscow as a sincere effort to begin the process of arms reduction, I called for the elimination of all Intermediate Range Nuclear Force (INF) weapons in Europe by both sides, a proposal that came to be known as the "zero" or "zero-zero " option. I proposed that, instead of referring to our next range of negotiations as SALT [. . .] we adopt a more positive approach and we call them START – for Strategic Arms *Reduction* Talks.
>
> In addition, I invited the SU to enter with us in new negotiations aimed at reducing our mutual stockpiles of long-range strategic nuclear weapons to equal and verifiable levels.[4]

Witnesses have spoken of his horror at perceived consequences of a nuclear exchange following a Command Post exercise in March 1982. He confided in the staff that he thought MAD[5] was mad. "How could a rational decision be made in the time available if it were suspected that an attack was underway?"[6] In May 1982 he gave

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3 Reagan Ronald *An American Life* (London: Hutchinson, 1990) p 268

4 Reagan Ronald *An American Life* (London: Hutchinson, 1990) p293

5 The nuclear doctrine of "Mutually Assured Destruction". There are a number of references confirming this observation, for example Reagan Ronald *An American Life* (London: Hutchinson, 1990) p257

6 Reagan *An American Life* p257

a speech talking of the horror of nuclear war vowing "to ensure that the ultimate nightmare never occurs" [7] and in June to the UK Parliament said: "Our military strength is a pre-requisite to peace."[8]

In July Schultz, on appointment as Secretary of State, told State Department staff that the President had told him that the elimination of nuclear weapons was his instinct and belief although "no one pays any attention to him in spite of the fact that he speaks about this idea publicly and privately"[9].

Addressing the Japanese Diet on 11 November, he said "I see the dream is to see the day when nuclear weapons will be banished from the face of the Earth".[10] In 1983 he remarked, "My deepest hope was that someday our children and our grandchildren could live in a world free of the constant threat of nuclear war."[11]

The constancy of his views is reflected in his correspondence with successive General Secretaries from 1981 to Gorbachev's accession on 11 March 1985. (Brezhnev died in November 1982: his successors, Andropov and Chernenko, in February 1984 and March 1985 respectively.)

The drafting of every letter demonstrates lack of support for Reagan's views by senior advisors. Haig opposed the first letter to Brezhnev. His 1983 draft to Andropov suggesting the reduction of nuclear weapons and their eventual elimination met opposition from William Clark and Don Regan and the proposal was removed. The letter was handwritten by Reagan - confident in his ability to undertake diplomacy through personal relations, a trait which coupled with his anti-nuclear beliefs was to yield dividends in his relationship with Gorbachev.

Reagan wrote "This would have been an extraordinary letter the first time any President had tabled such a sweeping proposal." Andropov agreed to correspond privately but his response anticipated his death by only twelve days.[12] The day following Andropov's funeral a letter arrived from Chernenko, unhelpful in tone but adding that it was feasible relationships could be improved.[13] Reagan responded "urging direct and confidential communication"[14] but Chernenko stated he had no interest in pursuing a dialogue without acts of "weighty concrete substance and that these [US] bases are full of nuclear weapons. Their mission is well known. They are targeted at us. Nothing like it can be found around your country." and Dobrynin, the long-serving ambassador in Washington, told Schultz that the Soviet leadership had no interest in a summit.[15]

On 28 September Reagan met a Soviet Leader – Gromyko – for the first time face-to-face. Despite Gromyko's reputation as a cold and unyielding person who, as member of the Politburo and Foreign Minister for 22 years

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[7] Reagan Ronald Ed Brinkley D *The Reagan Diaries* (New York Harper Collins 2007) p84

[8] Full text available at http://www.reagan.utexas.edu/archives/speeches/1982/60882a.htm Accessed 8 October 2015

[9] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p376

[10] Schultz p189; Reagan Ronald Ed Brinkley D *The Reagan Diaries* (New York Harper Collins 2007) pp195-6

[11] Reagan *An American Life* p550

[12] Reagan *An American Life* p592; Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p358

[13] Reagan *An American Life* p593

[14] Reagan *An American Life* p595

[15] Reagan *An American Life* p599-600

had kept the Iron Curtain in good repair, Reagan spoke directly to him of his dream of a world with no nuclear weapons.

Thus by the time Gorbachev entered into office in March 1985 Reagan's views as an abolitionist were well known to his staff, had been publicly broadcast, and been conveyed to Soviet leaders. The approaches to the Soviets had been rejected and were regarded as rhetoric in the United States as Hoffman, a reporter in the White House lobby, recalled in an interview in December 2009[16]

> The press room view was always of a guy who was first, anti-communist, secondly very strongly patriotic in terms of building up our defenses and standing up to the Soviets. The press room view rarely gave us an understanding of a third part of Reagan which was that he was a nuclear abolitionist. I had heard him talk about one day wanting to get rid of all nuclear weapons, but when I read his diaries, interviewed people and looked more into his decisions, I realized this was not simply some kind of slogan put into a speech. To me the really telling moment is in January 1986, Gorbachev - in office less than a year - proposes in a major address to eliminate all nuclear weapons by 2000, and chemical weapons. He did this in a very complex, phased way. Reagan, that very day, gets the translation of the speech. It's rushed to him even before Shultz can talk to him. About 2 in the afternoon Shultz comes over to the Oval Office and Reagan has already got the thing in his hands and the first thing Reagan says is, "Why wait until the year 2000?" At that moment . . . they are trying to fit Reagan's own nuclear abolitionism, which we had no clue about in the press room.

Despite the rebuffs Reagan continued determinedly. One of his first letters to Gorbachev mentioned the elimination of nuclear weapons as a common goal.

The characterisation of Reagan as horrified by nuclear weapons has been detailed because it was:

long-lived;

revealed publicly as early as his first bid for the presidency;

was nurtured within the public persona of a president intent on growing military strength;

sustained despite the opposition of senior advisors;

and received little contemporaneous attention.

Its emotional basis, overweening self-confidence and experience in negotiating provided a cornerstone with the more practically-based approach of Gorbachev in the initiation of first steps towards nuclear disarmament between their two powers.

Mikhail Gorbachev (1985)

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[16] Interview of Hoffman by Brian A Howey *Howie Politics Inc. Indiana* 11 Dec 2009 accessed at http://www.howeypolitics.com/Content/HPI-News/HPI-News/Article/HPI-Interview-David-Hoffman-on-Lugar-Nunn-and-the-Reagan-diaries/39/123/5442 on 12 Sep 2011

In contrast to Reagan's long-standing pedigree as an abolitionist Gorbachev's record is more circumspect. His views were moulded during his Politburo years and then as General Secretary by his growing appreciation of military inefficiency such that an accidental nuclear event was a possibility and then by Chernobyl. When he concluded the number of nuclear weapons should be reduced and eventually abolished he pushed his view, as did Reagan, notwithstanding his advisers also thinking his position unrealistic.

If Reagan was a radical who wished to throw aside tenets of his avowed party Gorbachev wished to preserve his but improve it. It was anathema to Gorbachev that Soviet Communism was corrupt and inefficient. It was his moves through *perestroika* and *glasnost* that led to the revelation of greater systemic deficiencies than he had first supposed and which energised his moves against the military and nuclear weapons in particular.

Reagan was aware the economy of the SU was unravelling and believed this to be partly the consequence of policies prioritising the VPK (MIC). He was accurate to a degree. Gorbachev, when First Secretary at Stavropol, had sensed agriculture's being drained and people starved to benefit the VPK but had not dared raise it. As First Secretary for Agriculture he had visited Canada, where exposed to western agricultural economics, his view was strengthened. He then had sufficient authority to obtain the return to the SU to assist with his plans of Yakovlev, an official more articulate and free-thinking than had been wise in earlier times, previously exiled to Canada. Even as a member of the Politburo Gorbachev was denied vital information and it was only following his appointment as General Secretary that he discovered despite the massive diversion of funds to the military the same strands of inefficiency and deception ran through it as in the rest of the SU.[17] This revelation, and later Chernobyl, secured his steps on the path to disarmament.

Gorbachev had been chairing meetings for Chernenko in the latter's failing months and discretely had come to be better informed than his colleagues. He was also ready to move. Discussing the position with his wife on the eve of his accession (in the garden since they feared their private conversations were bugged, a telling example of the then frailty of Soviet politics) he concluded:

> There was an intuition that an era was coming to a close. In less than three years three General Secretaries, three leaders of the country, had died. So had many of the prominent leaders of the Politburo. . . All this was fraught with symbolic meaning. The very system was dying away; its sluggish senile blood no longer contained any vital juices. I realised the weight of responsibility I had to shoulder.[18]

On 8 April 1985, five weeks after his appointment, he announced the suspension of the deployment of SS20 missiles in Europe.

George Schultz (1982-89) and Eduard Shevardnadze (1985-1991)

The relationship between Reagan and Gorbachev was key. So also were those between them and their foreign ministers and between the foreign ministers. Schultz was Secretary of State from July 1982 until January 1989. Between 1949 and 1968 he had been an academic at MIT and Chicago. He was successively Secretary of Labour, Director of the Office of Management and Budget, and Secretary of the Treasury. Before his

[17] Gorbachev *Memoirs* p121

[18] Gorbachev *Memoirs* p168

appointment as Secretary of State Reagan had written in his diaries of Schultz's patriotism and warm and able manner.

In June 1985 Gorbachev disposed of the inflexible Gromyko and appointed Shevardnadze Foreign Minister. At one, Gorbachev appointed as his lead minister a man he had come to know well when both were provincial Party Secretaries and whom he knew to be hostile to aspects of the centralised control of the SU; and, as a Georgian, an outsider to the Moscow apparatus.

Shevardnadze's influence was immediate. Yeltsin, joining the Central Committee upon appointment by Gorbachev, wrote of the corruption and inefficiencies he found there:

> It was our aim to bring proper order into these organisations which, for years, had been immune to inspection and criticism. It was not too difficult with the Ministry of Foreign Affairs; Eduard Shevardnadze was now the foreign minister and he quickly sorted out the pseudo-experts who had filled the country's principal department for the conduct of external policy. The clean-up of the Institute of International Relations and the Ministry of Foreign Trade proceeded more slowly, but there, too, it was nevertheless put into effect, by replacing the senior party and administrative officials in these organisations. Gradually the situation improved.[19]

The Summits

Around the First Summit

In August 1985 an accident occurred in a Soviet submarine, one of a number of nuclear and other events kept secret even from many of the State's leaders during the previous ten years, the gradual revelation of which strengthened Gorbachev's dismay and determination. With the economy haemorrhaging the new General Secretary was keen to meet Reagan and he initiated preliminaries without delay. On 27 September 1985 Shevardnadze arrived for his first visit to Washington and serious discussions began. Three days later the SU proposed cutting US and Soviet nuclear weapons by half. In October Soviet scientists were surprised to be told they were now free to speak to anyone outside the SU. On 5 November Schultz made his first visit to Moscow to meet Gorbachev and on 18 November Reagan and Gorbachev met for the first time at Geneva. Prior to the Summit Soviet military scientists were encouraged to join the delegation. Immediately following it Arms Control Units were formed in the MFA and the International Department of the Central Committee. On 15 January 1986 Gorbachev proposed the abolition of nuclear weapons by 2000. Contemporary Russian accounts indicate this proposal was received in much the same way as had Reagan's advisors to his abolitionist proposals. It was thought rhetoric distant from practicality. In February, Chernayev, a foreign policy advisor who was subsequently to draft many papers for Gorbachev, was asked to be National Security Adviser by Gorbachev and in April Dobrynin was recalled from Washington to act as his foreign policy advisor. The General Secretary was moving fast. Indicative of the consistency of his approach, Chernayev, wrote in his diary in 1986 that Gorbachev, as he increasingly met foreign leaders, spoke of his nuclear abolition wish but that he was not taken

[19] Yeltsin Boris *Against the Grain* (London Jonathan Cape 1990) p103

seriously because of the perceived continuing power of the VPK[20]. He recorded Gorbachev receiving the response to his early proposal to the US to reduce nuclear weapons, thus:

> We have yet to receive a response to our proposal of January 15th 1986. We made practical suggestions. We really want to achieve disarmament. It is impossible to play dishonest games in these matters. No one can deceive the other side. They responded to our proposal for a nuclear free world by bringing up conventional arms. We are prepared for that as well. We're for a balance in all types of armaments, and that means conventional ones too. We are for control, but for control of disarmament and not the improvement of weapons. [21]

Later that year he recorded Gorbachev putting the same view to a visiting American Congressional party.

Geneva (1985)

Reagan and Gorbachev met at Geneva on 18 November 1985 for what was to be the first of five summits, a record, although Bush, not counting the Summit which he attended as President-elect, was later to meet Gorbachev seven times. Both were confident of their negotiating skills and ability to persuade. The outcome enabled each to claim victory despite Gorbachev's failure to persuade Reagan to adopt SALT II and an interpretation of the ABM Treaty prohibiting SDI activity. Reagan was able to claim he had won the right to pursue SDI and had been successful in persuading the SU to extend human rights.

The significance of the Summit was not so much in reckonable achievement but that it had taken place and for the portent of its final communiqué. It incorporated a favoured Reagan expression "nuclear war cannot be won and must never be fought", the acceptance of which by the Russians, as well as enabling them to claim they were fighting for peace, hinted a breakthrough had taken place between the heads of the two Superpowers, and who for the first time had begun to react as "normal human beings" rather than as ciphers for their systems. Reagan was to write in his memoirs:

> Looking back now, it is clear that there was chemistry between Gorbachev and me that produced something very close to a friendship. He was a tough, hard bargainer. He was a Russian patriot who loved his country. We could – and did – debate from opposite ends of the ideological spectrum. But there was a chemistry that kept our conversations on a man-to-man basis, without hate or hostility. I liked Gorbachev even though he was a dedicated Communist and I was a confirmed capitalist. But he was different from the Communists who had preceded him to the top of the Kremlin hierarchy; . . . the first to agree to destroy nuclear weapons. . . [22]

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[20] Chernayev Anatoly *My Six Years with Gorbachev* (Pennsylvania State University Press 2000) pp58,59

[21] Chernayev p55

[22] Reagan Ronald *An American Life* (London: Hutchinson, 1990) p707

Gorbachev's recollection commenced by stating he understood one of the principal aims of the Americans was to examine for themselves whether Margaret Thatcher's assessment of him as 'a man with whom business could be done' was justified. He continued:

> 5 or 6 meetings exceeded the time set aside and that [the Summit] could therefore raise the curtain on the process of resolving the most acute problem of the day – nuclear disarmament. Our dialogue was very constructive and intensive, sometimes even emotional. But what is more important it was frank and increasingly friendly the better we got to know each other. Tempers became heated whenever we touched upon . . . the notorious Strategic Defence Initiative. Nevertheless, I realised by the end of our two-day meeting that Ronald Reagan too was a man "you could do business with.[23]

With hindsight he was to write:

> "As I re-read the minutes I am amazed at the extremely ideological stands taken by both partners."

He went on to appreciate that some of the human rights points on which he had been trying to fend off Reagan were "probably right" whilst

> "for his part Reagan was busy warding off my judgements on the role of the Military Industrial Machine in American politics and the existence of a powerful propaganda machine directed against the USSR. To top it all, we traded accusations of responsibility for the mad arms race which had led the world to the brink of catastrophe. We were both right and wrong at the same time. Both countries shared responsibility for splitting the world into two blocks and fomenting the threat of war, as well as for the extreme tension that prevailed in Soviet-American relations. Yet neither of us was ready to admit this then."[24]

Whilst American views are more detailed than the Soviet preceding Geneva, Gorbachev's memoirs are more comprehensive than Reagan's regarding the Summit itself. He notes the gradually improving atmosphere between the sides and that both were seeking to avoid failure despite the wide gap between their official positions. On the final evening when there seemed little chance of a breakthrough Shevardnadze and Schultz were sent off to work on the communiqué even the "calm and even-tempered Schultz" being tested by the squabbling[25] whilst the leaders and their wives sat by the fire in friendly conversation the harshness of some of the remarks made in the earlier exchanges giving way to a desire to know each other."[26]

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[23] Gorbachev *Memoirs* p403

[24] Gorbachev *Memoirs* p406

[25] Gorbachev *Memoirs* p409

[26] Gorbachev *Memoirs* p408

The next morning:

> We signed the Joint Communiqué. In this truly historic document the leaders of the two superpowers declared that 'nuclear war cannot be won and must never be fought'. Admitting this and implementing it in practice made meaningless the arms race and the stockpiling and modernising of nuclear weapons. 'The parties will not seek military superiority.' This fundamental statement was not just a general phase to soothe the public. The American President and I had already committed ourselves to giving the necessary instructions to our negotiating teams at the nuclear arms talks in Geneva.[27]

Respect extended to Shevardnadze and Bush as the drafters - their first shared move in joining the parties in their common aim.

Geneva ended with a public handshake, declarations of goodwill, and no more than a determination by the Principals to infuse their spirit into their military and political staffs and to speed the Geneva disarmament talks. The relationships that had been established, including among subordinates, was to stand them in good stead not least five months later at the next turning point in the path. Schultz noted that Gorbachev and Reagan were getting on well personally, "Obvious rapport between the two men"[28] Of the teams he noted that, whilst the old sourness still pervaded the lower levels of the Soviet bureaucracy, for the first time there were light-hearted good vibes between the parties.[29]

Shevardnadze marks the start of his personal relationship with Schultz as being their second New York meeting.

> Much in the world depends on the state of Soviet-American relations. And they in turn depend on the relations that you and I have. I intend to do business as your honest and reliable partner, and, if you wish, to be your friend." Schultz suddenly stood up from the table and extended his palm: "Here is my hand. Give me yours!" Ever since, I always felt his firm handshake. Sometimes it weakened for reasons that did not depend on us, circumstances related to the serious differences in our countries' positions, unforeseen situations that arose in spite of us to bring elements of frustration and irritation to our meetings. But the obstacles were never stronger than our mutual desire to listen to and understand each other and to achieve a mutually acceptable outcome . . . Gradually, our contacts moved out of the official framework. Perhaps for the first time in the history of relations between our two countries, the foreign ministers of the USSR and the United States visited each other's homes and met each other's children and grandchildren.[30]

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[27] Gorbachev *Memoirs* p410

[28] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p601

[29] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p602

[30] Shevardnadze Eduard *The Future Belongs to Freedom* (London Sinclair-Stevenson 1991) p71

Schultz note is briefer, "I was finding ES to be a person I could talk with in an easy and straightforward way".[31] Later he was to record, "At the end Eduard Shevardnadze and I sealed our agreement with a handshake".

Gorbachev too came to have a high opinion of Schultz:

> I realized, maybe for the first time, that I was dealing with a serious man of sound political judgement. Subsequently, he developed his potential even more - as a statesman, an intellectual, a creative and at the same time a far-seeing person.[32]

Geneva may be measured as the time when the two leaders established rapport, when glue between the four essential players had been spread if not set, and from when easier relationships within the lower levels of the bureaucracies might be reasonably anticipated - elements essential in founding the path to 1991. However the reluctance of some junior officials to follow their leaderships was a characteristic that was to survive the life of CTR-plus.

Reykjavik (1986)

Despite the encouraging outcomes of Geneva there were few if any immediate developments within the quadrumvirate. Gorbachev, who needed progress badly, on receiving a letter from Reagan in the summer of 1986 believed him to be stalling and suggested a meeting to unblock the Geneva arms talks which he felt had turned into an "empty rite". Reagan replied almost immediately agreeing to the meeting. The speed of reply surprised Gorbachev. However two factors could have coalesced. Reagan's strength of purpose was now matched by senior advisors who, foretelling the imminent collapse of the Soviet economy saw that as being to US advantage. Gorbachev saw Reagan's logic as "he did not like to see Gorbachev setting in motion the international peace process all by himself, without American participation . . . [and] "the world was increasingly responding to our agenda, and Washington may have decided that it was better to join in this process".[33] Schultz noted that the proposals now being put forward by Gorbachev were moving towards those already made by the Americans.[34]

The formal record of the Reykjavik Summit is readily available. Sufficient only to meet the aims of this study five points are made.

Firstly, Gorbachev's team arrived with detailed and worked-through proposals indicating the seriousness of their intent to achieve a reduction in nuclear weapons and in so doing to provide a foundation for the necessary work that would need to follow in Geneva. The proposals for weapons decommissioning can be viewed as the inventory to be faced by the managers of CTR four years later. The American's initial position was in large measure reactive.

Secondly, both sides agreed for the first time a reduction in weapon numbers.

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[31] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p607

[32] Gorbachev *Memoirs* p44

[33] Gorbachev *Memoirs* p415

[34] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p759

Thirdly, the leaders failed to agree their shared aim – the abolition of all nuclear weapons by 2000 (consequent on Reagan refusing to accept limitations on SDI). Shevardnadze later observed that despite this particular failure Reykjavik had enormous influence on the future by exerting a strong influence on Soviets and Americans as to what could be achieved. He pondered whether had Reagan and Gorbachev made this agreement it would have been so far ahead of the situation in both states that it could have generated hostility and activated counter-productive forces.[35] Shultz view was not dissimilar. "There was a tendency within our own government and among our allies not to take these ideas seriously. But Ronald Reagan was serious. So was Mikhail Gorbachev. Two serious men agreed that, as President Reagan said, "Significant progress is possible.""[36]

Fourthly, the negotiations were unique in style. For much of them the usual teams of advisors were absent and discussions were between the presidents or them and their two senior advisors supported only by interpreters and note-takers. At one point Schultz seized the initiative from his President and agreed directly on a 50% reduction of strategic arms with Gorbachev[37].

Fifthly, during the proceedings Shevardnadze had open and serious disagreement with his team's military advisers. Exchanges of this nature had not happened before. It demonstrated a factor in the talks' success was the close rapprochement between the two leaders and the confident friends who were their closest aides. It also demonstrated Gorbachev's and Shevardnadze's relative strength *vis-à-vis* the Soviet military at this point – a significant landmark in Soviet politics. Without this change in balance within the Soviet leadership it is impossible to be sanguine about the chances of Russian disarmament from the early 1990's and subsequent creation of CTR. This was the high-water mark in Gorbachev's struggle with his military. As his political positioned later weakened the military began to take back disarmament negotiations into their own hands.

The full record of the exchanges was made available - by the previous order unimaginable. The scope of the talks was historic. Cats had been let out of bags and could not be pushed back. A claim may be made that Reykjavik was the most remarkable meeting held between the Cold War Superpowers.

By 20 January 1989, when Bush succeeded Reagan, the Treaty to outlaw INF weapons had been signed and the negotiations on START within sight of completion. Gorbachev and Reagan had written the first two chapters of a project that their advisors had seen as an impossible dream. It was not envisaged the SU would lack the resources to carry through their side of the agreement.

The Next Steps

This chapter has reflected the expression and development of Reagan and Gorbachev's views on the reduction and eventual abolition of nuclear weapons. As their visions grew closer it is important to note characteristics and circumstances which may have contributed to the turnaround in US-Soviet relations achieved made by the two men, and thus the disarmament treaties and conditions which made CTR possible.

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[35] Shevardnadze Eduard *The Future Belongs to Freedom* (London Sinclair-Stevenson 1991)p89

[36] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p 762

[37] Schultz was later criticized by some as not pushing Reagan on the SDI issue which *could* have led to the two leaders agreeing their declared aim. His response was that this was not a negotiating point – Reagan had made clear in speeches and papers that SDI was sacrosanct.

Both were consummate negotiators. Reagan had prided himself as a leader of protest whilst a student. As President of the Screen Actors Guild he had participated in marathon negotiations with studio heads, powerful trade union leaders, and government officials. He thrived on the cut and thrust of negotiations. Gorbachev had developed negotiating skill to ascend the CPSU hierarchy. His qualities, and circumstance, had excused him from much of the deal-making endured by predecessors seeking the General Secretaryship, but the accounts of senior colleagues abound with descriptions (not always complementary) of his negotiations with the VPK, around the establishment of *glasnost* and *perestroika*, and the introduction of some democratic practices into the SU. Confidence in their skills enabled them to interact with a trust uncommon between statesmen. This ability was not without side. Reagan was sometimes thought to be concentrating on performance rather than substance: Gorbachev could become bored and uninterested if he thought progress too slow.

Both had egregious self-belief but also sought recognition for their deeds. Reagan perhaps moulded by his life in entertainment and need as an actor to keep his name before his audience. Gorbachev's closest advisors (and Schultz) speak of preening in his acceptance of western recognition, the steps he took to ensure it was he that was recognised for the changes taking place in the SU, and his angling for flattering comment.

Both were at times at odds with their bureaucracies – and relied in part on their lieutenants to protect them, and it was claimed that they shared inability to manage their senior staffs well. This was not without cost to the lieutenants – Schultz threatened to resign on at least three occasions and Shevardnadze did in the end. The lieutenants were themselves outstanding. They were old and intimate confidents of their bosses. They were of high intellect and appreciated the requirement of civilized manners to make progress at a time when the culture of the states behind them was rooted in barely suppressed aggression. Bargaining skills were at least to the level of their masters, and both pushed their bosses to ignore their right wings. Shevardnadze nudged Gorbachev to maintain momentum; Reagan nurtured Schultz to keep his show on the road.

The Presidents were men of action who sought to push their views as soon as they were free to do so. Given the short time during which their periods of office overlapped this trait was significant.

Their paths to abolitionism were very different. Reagan's was lengthy. It may have started as early as Hiroshima. Early in his career he was to an extent a closet abolitionist because of the necessity of keeping his backers on-side. Strengthening US military capability while maintaining opposition to nuclear weapons, whilst consistent to him was not to his caucus, which did not take his nuclear aims seriously. Gorbachev's approach was more urgently based. He had little opportunity for long and measured consideration. Russian nuclear matters were almost completely secret within the SU - the VPK was a State within a State - and he was in ignorance of much before Chernobyl, when he was forced to obtain information from non-Soviet sources. This subsequently played a large part in his thinking. His abhorrence came through recognition of the rottenness of the Soviet military and apprehension of great power held incompetently. Emotion joined this approach when he was able to relate the difficulties of rural populations during his early years to those facing the consequences of Chernobyl, and to appreciate the economic penalty paid by the SU in the arms race.

Both were radicals in a wider sense than their roles as abolitionists, standing free of their party's templates of the time although they were not 'look-alikes'. Gorbachev was a master of detail and would spend much time on mastering the intricacies of briefs whilst Reagan sometimes ignored detail to the extent that he could be completely mistaken with regard to an issue on occasion. The legacies to their home turf could not have been

more different - Reagan remembered in the popular American mind as one of its best Presidents: Gorbachev by Russians as a poor leader who lost their state its Superpower status.

Conclusion

The foundation of *Nunn-Lugar* was unique. Ten years earlier US-Soviet relations were bad. Only a visionary could have imagined the position in the mid-1990's when both states had embarked on disarmament programmes with one assisting the other to meet its obligations. It came about because of two visionaries whose time in history coincided, buttressed by two supporters whose contribution was essential. They were able to initiate a process continued by successors in office, whose work is examined in the next chapter.

An end note to this chapter is left to Schultz. Following a dinner in Moscow at the conclusion of Reagan's last visit, at which the guests were Reagan, Gorbachev, Schultz, Shevardnadze, and their wives, Schultz wrote to Reagan the next morning:

> I was struck by how deeply affected Gorbachev appeared to be by the Chernobyl accident. He commented that it was a great tragedy which cost the SU billions of roubles and had only been barely overcome through the tireless efforts of an enormous number of people. Gorbachev noted with seemingly genuine horror the devastation that would occur if nuclear power plants became targets in a conventional war much less a full nuclear exchange. Gorbachev agreed that Chernobyl was a "final warning". . . It was obvious from that evening that Chernobyl had left a strong anti-nuclear streak in G's thinking.
>
> G showed open pride in your accomplishments together, mentioning that the INF treaty was an accomplishment for the entire world.
>
> In sum, Mr President, the evening was a fitting climax to your four summits with General Secretary G.[38]

[38] Reagan Ronald *An American Life* (London: Hutchinson, 1990) p710

CHAPTER 2

AGREEMENT ON NUCLEAR DISARMAMENT 1989-1991

1955	**Pugwash**
1958	**USSR-United States Cultural Agreement**
1960	**Dartmouth Conference**
1991	**Quadrumvirates' Closure**

Introduction

There were twenty-three months between Reagan's retirement amid energetic attempts to complete START 1 in January 1989, and the passing of PL102-228 in December 1991. This chapter bridges events between the end of the first quadrumvirate and the almost simultaneous passings of the Soviet Threat Reduction Act and the Soviet Union in December 1991.

It will focus on the dynamics of the second quadrumvirate and contacts beyond the leadership - some established and maintained throughout the Cold War with useful dividend on the collapse of the SU, and some without whom the CTR might not have come about.

The Second Quadrumvirate

The second quadrumvirate differed from its predecessor in more than composition. The dynamics of membership did not retain the singularity of Reagan/Gorbachev and its atmosphere was at times very different. Aspiration had been fashioned into possibility of realisation. The authority of the first quadrumvirate was initially diluted by the arrival of President George H W Bush and Secretary of State James Baker. The original driving force for nuclear disarmament might be seen as a two-horse affair with Gorbachev assisted, and sometimes prompted, by Shevardnadze; and Reagan, likewise by Schultz. Relationships established beneath the

umbrella crafted by Reagan and Gorbachev, and some which arose separately from it, became forces in growing the relationship between the US and the SU. Without them the treaties and subsequently arrangements for American help to Russia in meeting its obligations under them could not have been realised.

There was American continuity despite the change in membership. Bush, as Reagan's Vice-President, had shared in his final Summit and had conversed privately with Gorbachev prior to taking the helm. Baker, succeeding Schultz at the State Department, had been Reagan's Chief of Staff 1981-85, knew his predecessor well, and in some measure, shared his approach.

Reagan had built his relationship with Gorbachev from scratch across a cultural divide larded with hostility and misunderstandings but Bush had few such inhibitants. He was cool and thoughtful where Reagan could be impulsive. Their relationship might be measured from 10 December 1987 when riding together at the end of Gorbachev's first visit to the US Bush assured him that he wished to improve relations but that Gorbachev would need to understand he would have to take a hard line against the SU in the course of his forthcoming presidential campaign. Gorbachev should ignore this. The Soviet President expressed understanding and long afterwards was to recall it as the most significant conversation in his relationship with Bush. When members of his administration complained of difficulties in dealing with their American counterparts he would remind them of this conversation and its significance.[1] Bush was also unusually frank when three days after his inauguration on 23 January 1989 he telephoned Gorbachev to confirm his solidarity.[2] Having decided his aim was not the complete elimination of nuclear weapons he saw no need for an early Summit. He called for a review of US relationships with the SU. This took several months and the apparent lack of action after the frenetic business of the last months of the Reagan administration caused Russian concern. Bush came to appreciate Gorbachev's struggles and honesty, and his posture of quiet support endeared him to the other man and ensured premature American action was unlikely to create difficulties for him at home. Notwithstanding the warming of the relationship, Bush did not lose sight of the need for a sound and consistent policy to underpin the relationship – to keep Gorbachev in power and to assist him in his reforms so far as was reasonably practical whilst not making concessions which could prove difficult for the US if he was deposed. From 1989 to 1991 the Presidential archive reveals telephone calls between the two men increasing in frequency with almost all incorporating a friendly reference concerning family or shared experience.[3] In another break with precedent, and in a telling demonstration of the improvement in official and personal relationships, for his final visit to Moscow he dispensed with an American interpreter and shared Gorbachev's.[4]

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[1] A detailed account of this meeting may be found at Beschloss Michael R and Talbot Strobe*At the Highest Levels* (London Little Brown 1993) pp 3-4

[2] Transcript of telephone call Bush Presidential Archive http://www.ourarchives.wikispaces.net/George+H.+W.+Bush+Presidential+Library+%26+Museum) Accessed 6 March 2012

[3]Transcript of telephone call Bush Presidential Archive http://www.ourarchives.wikispaces.net/George+H.+W.+Bush+Presidential+Library+%26+Museum Accessed 6 March 2012

[4] Korchilov Igor *Translating History* (New York Scribner Division of Simon and Schuster 1997) p 239

Gorbachev's view of the relationship was warmer than Bush's from the start. He was gratified Bush had taken him into his confidence about his election campaign and later for the necessity of keeping his right wing content. Whilst he did not always get what he wanted there was steady with political support, relatively rapid ratification of treaties, and the invitation to the G7. In his relationship with Reagan he had not been able to understand, in a rare disclosure of naivety, why there had not been an immediate acceptance of his expressions of goodwill or intentions. As time passed into the third and fourth years of rapprochement between him and the Americans, that became less of an issue.

Baker's image was crisper than Schultz's. He commented on taking office that he felt Schultz had been too relaxed with the Soviets. Within a year he recognised the inaccuracy of his assessment.[5] He came to appreciate and praise the achievement of his predecessor, and in his turn came to know and be a close friend of his opposite number.

Following the conclusion of formal business in Washington on 21 September 1989, when Shevardnadze had come for a ministerial meeting and had met the President, Baker and he flew to Baker's Wyoming ranch where they began the productive talks which were to become the hallmark of a unique relationship[6]. As with Schultz, Shevardnadze became a close personal as well as professional friend of the Secretary of State. In the short period prior to Shevardnadze's resignation (fearful of a coup) on 20 December 1990 they had no less than 33 meetings. The closeness of the relationship and indicative of the strength it brought to US/SU relations was their declaration on 3 August 1990 in which the SU and US jointly condemned the invasion of Kuwait by Iraq[7].

To Shevardnadze is owed much of the credit for progress. His President was increasingly preoccupied with a disastrous economic position and a steadily deteriorating political one. His status was sliding from equal to supplicant as he sought to hold together the growing centrifugal forces of the Union whilst seeking economic and humanitarian aid from the West.

Chernayev, Gorbachev's Foreign Policy Advisor, described Shevardnadze as 'wholly non-Russian', of great moral courage, and not without enemies, forcing one compromise after another through a reluctant MFA, warning his colleagues that the SU would fall behind the Americans in military technology if it did not accept the arms control agreements being negotiated and give itself necessary breathing space for economic reform[8]. He was frequently at odds with the intransigence of a defence establishment on the verge of mutiny, and faced an increasingly hostile 'legislature', some of whom he is reported as describing as 'imperialist diehards'[9]. Memoirs of those near Gorbachev speak of Shevardnadze as being resolute, stronger than his President in standing up to the Party and the Army. His reward was that the conservative opposition and many ordinary Russians grew to regard him as a traitor.

In a remarkably short time Bush and Baker came to come to know their Soviet opposite numbers better even than their predecessors. At a relatively early stage Gorbachev chose to use the term "Partnership" to describe their relationship and this was later adopted by Bush. Transcripts of the telephone conversations between them

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[5] Beschloss Michael R and Talbot Strobe *At the Highest Levels* (London Little Brown 1993) p 28

[6] Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) p 133

[7] One of two highpoints of Soviet/US relations outwith the scope of this study, the other being Putin's actions of support following 9/11

[8] Shevardnadze Eduard *The Future Belongs to Freedom* (London Sinclair-Stevenson 1991) p132

[9] There are a number of references to Shevardnadze's passion. One is Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) Also Shevardnadze p 5

expressed warmth. They were to have seven Summits in four years. Their closeness was demonstrated, when in his first conversation with Yeltsin after the latter's agreement with Gorbachev that Gorbachev would step down on the dissolution of the SU, Bush asked that special care be taken in the subsequent treatment of Gorbachev and Shevardnadze.[10]

The strength of the relationship of the second quadrumvirate foreign ministers, commitment to shared aims, and Baker's understanding of what would be needed to bring this about, provided the strongest support for their presidents and ensured the process commenced at Geneva in 1985 would continue.

Contacts Beyond the Leadership

Essential players prior to CTR must be introduced by Senators Sam Nunn and Richard Lugar. Standing behind in essential support were Ashton Carter and David Hamburg, and on the Russian side Yevgeny Velikhov Andrei Kokoshin and Roald Sagdeev.

Throughout the first quadrumvirate motive power for progress came from its membership with direct assistance as required from the Ministries of Defence and Foreign Affairs and the disarmament teams at Geneva. As the second moved to implementation and, following its collapse, making safe the FSU inventory, many people and institutions became involved. The relationships and necessary knowledge had often been built over many years. Amy F Woolf[11] wrote "During the Cold War, arms control negotiations were a central feature of US-Soviet relations. . . Many noted, however, that arms control negotiations were sometimes the only place where the two nations could communicate and pursue co-operative efforts - even if they did little to control arms or reduce the dangers posed by nuclear weapons." This is a commonly stated, but without emphasis on "sometimes", a not wholly accurate view.

The longest formal standing agreement promoting dialogue between the states was the 1958 cultural agreement. Whilst the Khrushchev administration had entered into a number of such agreements this was the first such by the US. It had been considered by the National Security Council (NSC 5607) which had declared its aims to broaden and deepen relationships with the SU. It acted as an umbrella for a wide range of academic and cultural arrangements. The agreement and its successors ran until the SU collapse in 1991. Nelson has estimated[12] that over the length of the programme over 50,000 Soviet scholars, students, scientists, engineers, party officials and others came to the US and an even larger number of Americans travelled to the SU. This provided a wide pool of people sympathetic to their host country (particularly the Russians, who in the Gorbachev years formed a lobbying organisation). Several senior scientists active in Soviet politics had established foundations in the west this way. The best known was Yakovlev, credited as the drafter of the *perestroika* policy, who maintained back-channel contacts with the US, and was to be one of those to visit Washington post-December 1991 seeking help. If 'non-governmental' arrangements for meetings and exchanges were on occasion closer to the seats of power than recognised then periodically too official arrangements were stretched beyond diplomatic protocols. Dobrynin, the long-term Soviet Ambassador in Washington prior to recall to Moscow in April 1986 to act as

[10] Bush Presidential Archive Telecon 13 Dec 1991 http://www.ourarchives.wikispaces.net/George+H.+W.+Bush+Presidential+Library+%26+Museum Accessed 6 March 2012

[11] Congressional Research Service Brief IB 98030 (3 January 2006)

[12] Nelson Keith *The Journal of American History* (Vol 91 No3 December 2004)

Gorbachev's foreign policy advisor, was assiduous in pursuing "back channel" and informal contacts. During 24 years, in addition to his duties within the formal conventions, he acted as a back channel directly to the Soviet leadership, by-passing the MFA periodically, and in executing those acts became a personal friend of many at the top in America. In examples of diplomatic duplicity and the complexity of routes through which business was on occasion conducted, Dobrynin had exchanged information with the President through Poindexter of the NSC in an arrangement kept secret from the State Department, and Schultz was involved in discussions with him to short circuit the Department's formal arrangements with Kampelman, then leader of the US team at the Geneva disarmament negotiations, as he sought to quicken progress in Kampelman's discussions with Vorontsov, Soviet opposite number[13] .

Informal arrangements running alongside the publicly acknowledged had the value that they could continue at times of stress when political or public opinion would not have been supportive. The "Edinburgh Conversations", organised from 1983 by Professor John Erikson at the eponymous university, confidential discussions on disarmament, security, and environmental matters attended by senior SU and US figures at which senior Soviet military officers were present, continued immediately after the Soviet shooting-down of Korean Airlines flight KAL 007 when tensions were high.

Two bodies whose influence came to bear in the transitional period around 1991-3 were Pugwash, with its declared principle to rid the world of nuclear weapons (founded 1955) and the Dartmouth Conferences (founded 1960). Pugwash provided a channel for top level scientists. Velhikhov Sagdeev and Kokoshin, top advisors to Gorbachev, were regular attenders as was Artsimovich a Nobel physicist and later abolitionist, and Peter Kapitsa, who kept open a back channel to the Cavendish Laboratory at Cambridge. Goldansky, Chairman of the Soviet Pugwash Committee, gave a briefing to Shevardnadze shortly after his appointment informing him the SU would never be able to catch up with the west in nuclear weapons and that the Soviet military effort was 'ruinously costly' and bound to fail.[14] Sagdeev wrote:

> Throughout the most difficult periods of confrontation – the ups and downs of the Cold War - the Pugwash Meeting remained the only reliable channel for important arms control discussions between the Soviet and American blocs. Artsimovich soon became one of the most prominent figures on the Soviet side. Among his interlocutors on the American side were George Kistiakowsky and Jerome Wiesner, presidential science advisors in different administrations of that epoch. Henry Kissinger, when he was still a professor of political science at Harvard, was a participant in Pugwash brainstorming. It was from that epoch that we inherited the apocalyptic notion of MAD and the concept of nuclear overkill. Artsimovich and other thinkers of his generation were founders of the science of strategic stability in the nuclear age.[15]

[13] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p 869

[14] Ponton Geoffrey *The Soviet Era – Soviet Politics from Lenin to Yeltsin* (Oxford Blackwell 1994) p153

[15] Sagdeev Roald *The Making of a Soviet Scientist* (New York John Wiley and Sons 1994)pp 63,64

The Dartmouth Conference, born in 1960 during one of the periodic nadirs in relations during the Cold War[16], when there was almost a total lack of official contact and understanding between the superpowers, provided a milieu in which American and Soviet people of influence in the arts science and politics could meet and discuss matters of current concern. It evolved over 30 years until the end of the stand-off removed its purpose[17].

A leading activist and funder, David Rockefeller, has described early meetings as a place where participants could talk to rather than at each other with the conversation not hobbled by the rituals of diplomacy and, more important, an agreed agenda. Mutual understanding grew and the sustained dialogue permitted the forming of close personal relationships and to the exchange of often surprising ideas and information.[18] One problem in the early days was the failure of the Americans to understand just how secretive and centralised the Soviet system was, and how restricted in presenting their case the Soviet members were. It was difficult for them to distinguish how far out on a limb a member might be going, and the consequences that could follow. In the early days it was often difficult in the formal meetings to distinguish the differing motives of the participants on each side. After the first Dartmouth the entire Soviet delegation had to appear in front of the Central Committee. Their report to that meeting was not of the friendships generated but of disdain regarding their American partners - so as to reassure their masters of their reliability.[19] After the meeting in May 1979 the Russian team reported to Brezhnev, and Arbatov, the highly respected and influential head of IKAN, was admonished for engaging with the Americans about possible terms for a Soviet withdrawal from Afghanistan.[20]

This dialogue, in time, developed into a useful channel. Topics of importance were placed on the agendas and in its later years, as the climate thawed, working groups and task forces met between the plenary sessions to consider strategic issues. As the talks became embedded in the American-Soviet scene most formal conferences were enhanced by private meetings between a leading or leading participants and senior political leaders, including in the SU, the General Secretary. The Americans began to receive briefings from the State Department and the Pentagon – and after the arrival of Gorbachev's "New Thinking" – Soviet participants too.

The talks, to an extent, became a testing ground with on more than one occasion a Soviet position paper being trialled with, what some of the Americans saw for the first time, disagreement between Soviet participants.

Whilst Dartmouth has been presented as comprising players who were not in government across the time of the meetings, and by implication independent, this view must be treated with caution. It is the case that on the American side funding in the early days was entirely from non-government sources and the participants self-selecting. On the Soviet side funds for such endeavours could be provided only by government. Soviet representatives were approved, if not selected, by the Central Committee before which, on occasion, they were required to personally report. However in America there is a continuous circulation of policymakers between

[16] There were 17 full plenary meetings of the Dartmouth Conferences between October/November 1960 and June 1990 and in the latter years more frequent meetings of the Regional Conflict, Arms Control, and Political Relations Task Forces. In this account the Dartmouth convention of referring to meetings by Roman numerals has been followed.

[17] Pugwash continues. 47th meeting August 1997 reviewed the environmental problems of NW Russia

[18] Voorhees James *Dialogue Sustained* (Washington United States Institute of Peace Press 2002) p vii

[19] Voorhees 2002) James p 52

[20] Voorhees 2002)James p 136

academia, the executive branch, and think tanks, and American participants of the talks took with them into office a number of ideas that had seen their birth in Dartmouth.

An early reflection of the relationship between official and informal American views on Arms Control and of the level of VPK secrecy pre-Chernobyl can be found in a report of the Dartmouth meeting of 10 April 1976, when the Americans expressed concern that on the Russian side there were no members concerned with arms control - probably because until the 1980's all arms control expertise in the Soviet Union remained in the military. The absence of even basic technical information among the civilians had been clear to those involved in the SALT 1 negotiations. Indeed Stewart's complaint, that the Soviet delegates to the tenth Dartmouth Conference were well read in the American literature on arms control but knew little about Soviet programs and weapon systems, was, as he acknowledges, precisely the same complaint that American negotiators had about their Soviet civilian counterparts in Geneva.[21]

On the Soviet side the relationship between government and Dartmouth participation can be illustrated with reference to the Gorbachev/ Reagan aspiration to eliminate nuclear weapons. At the first meeting one of the participants was the Russian Secretary General of the Academy of Sciences who had been much involved in disarmament talks and who had been a member of a technical expert group at Geneva in the 1950's.[22] Moving forward to Geneva Voorhees records in a report of a meeting of a Dartmouth Task Force shortly after the Summit, "Also present in Geneva for the Summit were Sagdeev, Primakov, Arbatov[23], and Velikhov – all Dartmouth veterans. They had been sent along to brief the press on behalf of the Soviet delegation. The four also had the chance to give Gorbachev Shevardnadze and the Chief of the General Staff, Marshal Akhromeev, their assessment of the Summit."[24]

Arbatov, Director of ISKAN was an important member of the Soviet negotiating team at Reykjavik. He took part in the all-night session chaired by Akhromeev and Nitze that produced many of the key formulas agreed by the leaders the following day.[25]

From 1986 a significant change in the place of Dartmouth within the conduct of US/SU affairs can be detected in that from henceforth members of the SU Government and Party always attended. On the American-side participants included Senator Sam Nunn, Ashton Carter, and David Hamburg, the germinators of the Soviet Threat Reduction Act. Schultz considered a brief from "The Dartmouth Group" following his appointment and another before his Geneva talks with Gromyko.[26] At one stage Scowcroft was appointed a back channel for a brief period on the ground that his attendance at Dartmouth had provided him with good contacts.[27] Papers from the discussions were sent to Kampelman then Head of the US START team in Geneva. The Arms Control Task Force met in July 1987 and January 1988 before the sixteenth Dartmouth meeting. The Task Force "unwrapped Reykjavik" and before the July meeting were briefed by the Arms Control Staff at the State Department[28]. In

[21] Voorhees p116
[22] Voorhees p 42
[23] Director of ISKAN the Soviet American-Canadian Institute
[24] Sagdeev *The Making of a Soviet Scientist* (New York John Wiley and Sons 1994) and Sons 1994) p269quoted by Voorhees p178
[25] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) pp 751-780
[26] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p 510
[27] Schultz George *Turmoil and Triumph* (New York: Simon and Schuster 1993) p 473
[28] Voorhees James *Dialogue Sustained* (Washington United States Institute of Peace Press 2002) p 200

1988, following the formal conference the Russian team met privately with experts from Congress, CIA and DOD. By 1990, such was the improvement in relations that members of the Soviet team met members of the Senate Committee on Arms Control and were briefed in the offices of the Chiefs of Staff.

This view of Dartmouth has identified references to links with government and discussions about disarmament. Its structure, as it developed, facilitated a range of strategic relations between the Superpowers. It acquired permanently supported secretariats on both sides; on the Russian its management by ISKAN provided a managed flow of personnel and policy discussion between the parties. Policy discussion was prioritised and directed towards issues important to both sides; its 'non-governmental' nature allowed dialogue variously to provide a stalking horse or straw man for the formally recognised (for example the Geneva disarmament talks) or be disowned as necessary. The constituencies of its Soviet participants drew together party government and science, and was to provide an awakening of and briefing for senior policy-makers whose ignorance of the West was until that time almost total. America contributed opinion-formers, lawmakers, and scientists from the revolving door. With maturity it flexed new organisational sinews to meet the changing times using task forces and side meetings with government organs that morphed steadily from being off to on the record. From the viewpoint of CTR, its significant contribution was the provision of a milieu of representatives sharing concern for the safety of the world in a deeply nuclear age in which to meet and develop relationships essential in the birthing of what this study defines as one of the most significant occurrences of the 20th century.[29]

Not gained that all went smoothly in the Second Quadrumvirate period. In the White House Scowcroft and Gates delayed action wrongly estimating Gorbachev to be playing a double game. In Geneva, Richard Burt, a leader of the US negotiators, would reach tentative agreements with Yuri Nazarkin, his Soviet opposite number only to have them slapped down by Washington – often on personal instructions from Scowcroft[30]. During this period Gorbachev was facing acute difficulty and, subtly at first, losing control. The reference to the absence of Russian arms negotiators at Dartmouth resonates with reports of Yazov, Minister of Defence, trying to go back on agreements made concerning the CFE Treaty. As the waning of Gorbachev's authority became more evident, the US negotiators at Geneva were to discover that those preparing the briefs for their counterparts were by-passing the MFA and the President's Secretariat[31]. That position moved towards farce when Moscow asked the State Department if steps could be taken to short-circuit some of the Geneva discussions, stating that the Soviet representatives were going slow in a deliberate attempt to prolong proceedings so as to retain their comfortable Geneva life-style rather than return to the rigours of Moscow – a face-saving cover as the Gorbachev team attempted to disguise embarrassment as control slide away, perhaps .

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[29] Consideration of Pugwash and Dartmouth cannot be made without mentioning the part played by Paul Doty who had worked on the Manhattan project, became the leader of the FAS Head of the Soviet-American Disarmament Study Group which discussed arms control issues. He founded the Center for Science and International Affairs at Harvard and became advisor on nuclear disarmament to four US presidents. He was an important contributor to the Dartmouth Conference and a founder member of Pugwash. He made 42 visits to the SU during the Cold War and it was his contribution which ensured the award of the Nobel Prize to Pugwash.

[30] Beschloss Michael R and Talbot Strobe *At the Highest Levels* (London Little Brown 1993) p 37

[31] Beschloss Michael R and Talbot Strobe *At the Highest Levels* (London Little Brown 1993) p 363

Conclusion

The first quadrumvirate ended in January 1989. It had turned around the Cold War, with the INF Treaty signed in December 1987 and with frantic activity to complete START 1, achieved July 1991. By then insiders knew it would be impossible to secure and make safe Soviet nuclear weapons and impedimenta and prevent the proliferation of material and intellectual property by Russian efforts alone. In December 1991 the Soviet Threat Reduction Act was passed and in February 1992 Secretary Baker was discussing technical issues with the Director of the Kurchatov Institute and personnel issues in the Zato[32] of Chelyabinsk-70.

This chapter has sought to fill the gap between President Reagan's retirement and 1991/2. It has illuminated structure and relationships of the second quadrumvirate and the activities of institutions keeping open communications throughout the Cold War. Without either in the turmoil of Russia post-1991 the move from agreeing nuclear weapons reductions to western assistance in their dismantling would have been difficult if not impossible. The next chapter examines the circumstances and actions leading to American authorisation for the work to commence.

[32] Russian Acronym for Closed Nuclear City

CHAPTER 3

NECESSARY ASSISTANCE 1991

22 August	**The Call to Moscow**
2 September	**Campaigning in Washington**
27 November	**Congress Won Over**
12 December	**PL102-228**

Introduction

An Historic Call

The Campaign in Washington

Essential Commitments

The American Position

Conclusion

Introduction

It has been argued there could have been no CTR had Gorbachev, Reagan, Shevardnadze, and Schultz, then Bush and Baker, not been filling the most senior offices of state and successfully moving towards the nuclear abolition to which, initially, Reagan aspired. This chapter will describe events in 1991 between the signings of START I on 31 July and PL102-228 *The Soviet Threat Reduction Act* on 12 December authorising American assistance in dismantling the FSU nuclear inventory. On that date perturbed Americans and Russians[1] beneath the level of the second quadrumvirate (which would dissolve in thirteen days) and its senior advisors were ready to act. The last chapter described some of the steps that had brought them together: this the possible influence of Chernobyl in persuading the Russians of the need to act. The US government's preparedness to accept the commitment implied in the legislation and whether, at that time, such a commitment would have been likely absent the involvement of Senator Nunn will be questioned.

[1] All the Soviet participants except one, Sagdeev, were ethnically Russian.

An Historic Call

In August 1991 the Aspen Institute organised in Budapest a conference to bring together Eastern bloc and Western opinion formers and provide an induction in foreign affairs for US lawmakers.

The titles of some papers were prescient. One, "US-Soviet Relations: From a "Post-Cold War to a "Post-Communist Era", by Arnold Horelick of RAND, examined the consequences of the then recent Moscow Summit. It concluded that following the anticipated ratification of the START Treaty the scope for further novel arms control treaties was expired. It anticipated emphasis would shift to 'bite-sized increments' - cleaning up details of the CFE Treaty, the demilitarization of Soviet society, and consideration as to what form diplomatic and economic relations would take in the new arena within the possible context of a 'Grand Bargain' between the two states following the reorganisation of the SU[2].

Conference participants included Nunn and Kokoshin. Nunn later recalled it was about one third of the way through the conference when the Soviet delegation received a call informing it of the coup against Gorbachev and that Kokoshin decided to return immediately to Moscow. On Gorbachev's release Kokoshin rang Nunn, told him that "big things were happening in Russia", and urged him to come and to meet "some of these new people".[3]

Kokoshin's influence produced a visa for Nunn within hours and despite the advice of the US Moscow embassy he flew there the next day, confident his Russian friends would ensure his safety. That afternoon he mingled with crowds outside the White House, home of the Russian legislature, and for the next two days attended meetings of the Supreme Soviet with Rogov, Deputy Director of ISKAN, as his interpreter. As he left the second day's session with Sagdeev they discussed the dangers of the state's nuclear weaponry and pondered the custody of the release authorisation mechanism during Gorbachev's incarceration.

Nunn was acquainted with Gorbachev. Korchilov, one of Shevardnadze's interpreters who assisted Gorbachev on occasion, had observed Nunn "as a familiar face" in the official welcoming party for Gorbachev at the Washington Summit, November 1987. In his memoir he describes a lengthy meeting on 11 March 1988 when Gorbachev met Nunn, three other senators, and some American scientists, and re-affirmed the Soviet position with regard to the linking of the ABM and START Treaties, expressing confidence that START would be ready for signature at the forthcoming Moscow Summit. Again, according to Korchilov, Nunn was one of seven Senators who met Gorbachev on 1 June 1990 "in a replay of the 1987 meeting with Congressional leaders" as part of the proceedings for the 1990 Bush-Gorbachev Washington Summit.[4] Nunn confirms that he had met Gorbachev on a number of previous occasions[5]

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[2] Horelick Arnold L *US- Soviet Relations: From a "Post Cold War to a "Post Communist" Era* Occasional Paper OPS 24 (Santa Monica RAND/UCLA Center for Soviet Studies 1991) Accessed 21 August 2012

[3] Material for this and the subsequent paragraphs are drawn in part from interviews between Nunn and David Hoffman on 10 March 2005 recounted in Hoffman David E *The Dead Hand* (London Icon Books 2011); and Nunn and Richard Rhodes on 10 March 2005 and in July 2008 and recounted in Rhodes *Arsenals of Folly* (London Simon and Schuster 2007) and Rhodes *The Twilight of the Bombs* (New York, Alfred A Knopf, 2010).

[4] Korchilov Igor *Translating History* (New York Scribner 1997) pp 63,144,254

[5] Nunn *Changing Threats in the Post-Cold War World* quoted in Bernstein P and Wood J *The Origins of Nunn-Lugar and Co-operative Threat Reduction* Center for the Study of Weapons of Mass Destruction Case Study 3 (Washington DC National Defense University Press 2010) p 3

Possibly on the back of this acquaintanceship and his hosting by a member of his inner circle and the Deputy Director of ISKAN, Nunn obtained a meeting with the still unsettled Gorbachev when he had been out of captivity for "about three days" asking him about weapon security and anticipated control problems should the Union disintegrate. When asked specifically whether he had control of the command chain for nuclear weapons during the *coup* Gorbachev declined to answer.

Nunn, for whom the safety of nuclear devices had been of concern since his first visit to Europe in 1974 when he had discovered failings in the security of US weapons located there remained pre-occupied with the security and safety of the Soviet arsenal at that time of civil breakdown and incipient anarchy as he returned to Washington. His arrival coincided with a campaign by Congressman Aspin for greater humanitarian aid to the SU. The Administration had agreed to provide approximately $3B in food aid to the SU and the Chairman of the House Armed Services Committee now wished to add a further $1B from the Defense Budget for the same purpose. (This amounted to less than one half a percent in that budget.) He tied this to security on the grounds a chaotic SU would represent as much danger as the heavily armed but stable SU. The Chairmen of the two Congressional Armed Services Committees were sharing an immediate interest.

The Campaign in Washington

Return from Moscow

The endeavour, driven by Nunn with contributions from Aspin Lugar (Chairman of the Senate Foreign Affairs Committee) Carter (see later) and others during the three months following his return from Moscow, threw up a number of unusual characteristics. Without its success the likelihood of achieving an Act incorporating provisions similar to those of PL 102-228 at that time would have been improbable and a brief account is important in assessing the value of the achievement.

A principal characteristic of Nunn's operation was the speed with which it was undertaken. From Nunn's return to Washington to enactment of the legislation was 104 days – an extraordinarily short period for legislative conception to parturition other than that relating to a national emergency. Within this envelope was a turnaround of amazing speed when Nunn had to withdraw his *Soviet Defense Conversion and Demilitarisation Bill* from the Senate on 13 November and 14 days later introduce and have passed its successor - what became the definitive Act.

A second unusual characteristic was the legislature rather than the administration taking a lead in foreign affairs legislation. (Section 8 of Article 1 of the US Constitution gives the Congress foreign affairs powers over international trade and immigration only)[6]. Members of Congress do, of course, have foreign policy interests which on occasion they seek to promote. However they usually do this in association with the administration, or, if via Congress, through the appropriate committee rather than directly on the floor of House or Senate. When more direct action is taken it is commonly from a position where their party is not that of the President's, since if it is, their views are more likely to be in general agreement with Administration policies. Initiatives are

[6] Contemporary reality frequently fails to match the elegance of the founding fathers. There are many federal offices with foreign affairs interests and legislative practice, dependent on the views of the Executive Congress and political commentators of the day, is constantly labile. Meyer Christopher *DC Confidential* (London Weidenfield and Nicholson 2005) p209

more commonly born in the Senate than the House.[7] In this case there were significant departures from these practices. The first move - Aspin's - was made in the House; the promotion was at an early stage bi-partisan; and whilst wider support was sought through op-eds and briefings the main thrust of the initiative was always through Congress. President Bush was at first critical, particularly of Aspin's proposals, and later in public appeared acquiescent rather than enthusiastic. Within his administration attitudes stretched from Baker wholly in support to Cheney and Gates strongly opposed, but the general posture of the administration appeared neither to support nor oppose.

A third characteristic of Nunn's campaign was its flexibility. Aspin's first proposal to divert funds from the defense budget failed. The successful achievement of an Act, to which earlier objection with regard to the authorisation of funds and activities had been lodged, depended on exploitation of Congressional function. Nunn's Bills were introduced to the Senate by way of tabling amendments to the implementing legislation for the CFE Treaty, and the House adopted it through a Conference Report[8].

Fourth Nunn's concerns were reflected by senior Russians, not all of whom were *Amerikanskis*, but strongly represented by scientists and regular Dartmouth attendees. Nunn had pondered the necessity of increasing Russian awareness of the dangers during his Moscow stay. Now his Moscow hosts and others as senior as Yakovlev, deeply concerned, came to the US to plead the case for helping to secure Soviet nuclear weapons. They were assisted by those they had met previously at and around the activities of Dartmouth and by contacts made over the previous two years. Their meetings with such colleagues, and some on Capitol Hill, contributed traction to Nunn's case.

The lack of urgency noted by Nunn in August had evaporated. Velikhov asked for help at a conference of the FAS/NRDC between 18 and 23 October and on 24 October met members of Congress to repeat his plea[9]. Yakovlev met members of Congress to ask for their help on 13 November. On 15 November when Lugar met Kokoshin and Rogov he came away horrified by what he had heard. As the crisis developed the US was to meet the travelling costs of some Russians at meetings where their attendance was thought to be of value.[10]

Nunn/ Aspin progress towards funds for humanitarian aid and safing the Soviet nuclear arsenal stalled as the consequence of a Senate bye-election. When the Democrat challenger, who had trailed badly early in the contest, gained an outstanding victory following a campaign based on the need to provide more assistance "for those at home" at the expense of overseas aid this reflected a growing national mood, and hoped-for Congressional support for the campaign to assist the SU evaporated. Nunn subsequently withdrew the then Bill from the Senate.

The speed of Nunn's accomplishment should not disguise the difficulties he faced, of which the slump in support for aid was one. He started from a low base and needed to acquire momentum with little support from the Administration, Congress, or public opinion. Op-eds in quality newspapers might have reached opinion-

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[7] Carter Ralph G and Scott James M *Taking the Lead: Congressional Foreign Policy Entrepreneurs in US Foreign Policy* Politics and Policy Vol 32 No 1 March 2004

[8] Woolf Amy E *Non Proliferation and Threat Reduction Assistance*. (Washington CRS7-5700 RL31597 2011) Accessed 19 March 2012

[9] This was the meeting at which the possibility of a uranium purchase agreement was aired. Detail is provided in Chapter Four.

[10] Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) p 446

formers but public opinion at large, as demonstrated in the bye-election, militated against a major change of course. Concerns were expressed in the legislature, some genuine and others less so - using them as a cloak to hide a more fundamental disagreement that in approving the Bills they would be reversing long standing policy in several respects. Funds appropriated for the DOD were to be used in a novel way in the interests of - a term introduced by Baker - its competitor; on the competitor's territory; for the destruction rather than the manufacture of weaponry; and at the discretion of the President rather than the Pentagon. Questions arose as to the possibility of Congress Committee Chairmen being able to strengthen their authority extra-constitutionally by the employment of similar measures in the future. There was continuing hostility in the administration although a few changed sides as the position in Russia became clearer.

The Relationship between Nunn's Campaign and the Executive: September -December 1991

It can be argued that between September and December 1991 there were two streams of action directed towards the aim of making safe the SU nuclear arsenal– the Presidential and Nunn/Aspin's. They were to come together on 12 December when the President signed PL102-228. The speed with which Baker picked up the provision of the Act on the evening of its signature, and then in Moscow three days later, was the consummation of the streams and the start of an era that was to last more than twenty years.

On 2 September the Aspin initiative to provide humanitarian aid to the SU on the grounds a disintegrating SU would be as or more dangerous to the US than the previous position had been described as premature by Bush. On 12 September Aspin published "A New Kind of Threat" and on 15 September, he and Nunn, an op-ed in the Washington Post calling for assistance for the SU. Whilst doing nothing to support that initiative Bush went on to announce on 27 September, without pre-condition, the largest reduction to date in the US nuclear arsenal, described as possibly the greatest step in his presidential career, despite contrary views expressed by some of his senior aides (but not Baker). Some administration members urged by Baker, the first to see the link between Bush's initiative and Gorbachev's follow-on on 4 October and the consequent need to ensure the Russians had the means to meet their obligations, changed their views but others remained hostile. On 21 October Bush pushed further towards disarmament in questioning the necessity of the President being accompanied by a military officer carrying nuclear weapon authorisation codes.

There was no recorded response from Bush when eight days after the Senate bye-election, after failing to persuade the Senate of his case, Nunn withdrew his first Bill.

It can be asserted that throughout the autumn there was little correspondence in the actions of Bush and Aspin/Nunn. Bush's approach to the evolving position remained one of high diplomacy based in the circumstance of recent history initiated by his predecessor, and focussed on arms reduction: Aspin and Nunn had their feet firmly on the ground of a disintegrating SU, keen to do what they could to minimise the potential catastrophes of starvation and nuclear instability.

The Contribution of Ashton Carter

As Nunn drove his campaign a small network of experts outside Congress coalesced. Reflecting the value of previous holes in the Iron Curtain they were generally Dartmouth members - Perry from Stanford; Steinbruner from Brookings; Carter, and Hamburger, presently President of Carnegie. Carter, Rhodes Scholar physicist, had

worked in a Congressional office and understood how Capitol Hill operated. He was then director of Harvard's Center for Science and International Affairs involved in the study of nuclear arms and control and was currently heading a study of possible consequences of a Soviet collapse. A draft paper surveying the difficulties and setting out detailed recommendations for addressing them was the subject of a seminar at Harvard on 1 November and finalised a few days later[11]. The study was then presented to the DOD, led by Cheney, which was "cool to the idea but polite".[12] Hamburger then funded and convened in Nunn's office on 19 November what was to prove the first in a sequence of meetings, to which was invited Carter, Perry, and Steinbruner. Nunn remembered the meeting thus "My response to the Soviet crisis had been a gut instinct. I had not done an analytical product, and Ash had actually done an analytical product. That was enormously helpful."[13] Carter recalled that Nunn and Lugar's principal staff members, Robert Bell, Ken Myers, and Richard Coombs had already started working on similar lines and that after the meeting's conclusion he stayed behind with them to draft possible legislation.[14]

The paper described the SU nuclear profile from its Command and Control downwards, identified security and proliferation risks likely to emanate from SU collapse, and proposed a range of measures for dealing with them. What was later to prove of particular significance was the attention given to possible circumstances were the SU to dissolve into constituent republics.

The Campaign's Conclusion

Armed with the information in Carter's paper, the presence of the project leader to present it, and the work undertaken during the previous two days, Nunn succeeded in gathering sixteen members from both sides of the Senate for a meeting on 21 November. In the light of the dangers clearly presented they agreed to support a proposal of $500M to address the situation in the SU.

Between 23 and 27 November the Library of Congress Record lists 96 actions concerning the Senate and House Bills, their amendments, and the measures necessary to harmonise them prior to passing and sending the Act to the President for signature. A signal, and probably exhausting, achievement.

There are several descriptions of the signing of the Act which may be summarised as depicting the President as being somewhat aloof. Hoffman, the White House correspondent, had it thus in 2009.
"I don't think they ever got Bush enthusiastically on board. The fact is that Bush signed it, although he did it in a kind of desultory way. There's a famous picture of them coming out of their meeting and Bush was looking

[11] Campbell Kurt M, Carter Ashton B, Miller Steven E and Zraket Charles A *Soviet Nuclear Fission: Control of the Nuclear Arsenal in a Disintegrating Soviet Union* (Cambridge Harvard University 1991)
[12] Carter Ashton B *Origins of the Nunn Lugar Program Speech to The Presidential Conference on William Jefferson Clinton 10 November 2005* (Hempstead New York Hofstra University 2005) Accessed from Hofstra.doc 7 September 2012
[13] Quoted in Rhodes Richard *The Twilight of the Bombs* (New York, Alfred A Knopf 2010) p104
[14] Carter Ashton B *Origins of the Nunn Lugar Program. Speech to The Presidential Conference on William Jefferson Clinton 10 November 2005* (Hempstead New York Hofstra University 2005) Accessed from Hofstra.doc 2012-09-07

kind of grim. Bush never really embraced it."[15] It would appear therefore that Bush might not have been giving priority to the means by which the SU would be able to discharge its commitment to dismantle its weapons. However he had other important preoccupations emanating from Russia. The tussle between Gorbachev and Yeltsin, requests from Yeltsin for food (rationing had been introduced) [16] and reports of growing instability from Hartman[17]. Thus it might appear that at the time when the leaderships were engaged in headline positions concerning the nuclear arsenals there was no direct linkage between those headlines and the mechanics of bringing about the safekeeping of the SU inventory. It might also have been the reflection of a wish of Bush, given the weakness of his domestic position and the Senate bye-election, not to be seen giving too much away.

The Situation in Moscow

Clearly American policy had to accommodate the situation in Moscow. The embassy had noted as early as the previous spring that Gorbachev 'appeared to be losing control' and he was to do so completely in the three months following the *coup.* His power was leaching away. Priorities were swept aside by events. The need for finance and other factors including the consequences of the withdrawal from Eastern Europe was unsettling the VPK, which had until that year always had its demands met; the capital industries were suffering a drought; and rising localism, if not nationalism, was leading to a range of power struggles where previously strong central government had maintained control. The administrations of Gorbachev and Yeltsin could have been operating in different countries – as to an extent they increasingly were. In earlier times foreign affairs had pre-occupied Gorbachev to the neglect of domestic priorities: now he was burdened with contests over constitutional changes and not always aware of the moves of other players.

Senior staff members were defecting to Yeltsin who had been elected President of Russia on 12 June in the first fully democratic election held in the SU. Whilst on 4 October Gorbachev announced reductions in the SU inventory even greater than those of the US announced by Bush on 27 September his sense of realism around the announcement must be questioned. Drafts of papers nominally Presidential were known to be by-passing his office and the military were tacitly questioning their loyalty. Whilst Gorbachev was still working on his Union Treaty, Yeltsin, who on 28 October had declared that henceforward Russia would be a market economy, was steadily accumulating *de facto* powers formally reserved to the SU, and engaging in the talks with leaders of non-Russian republics which was to lead to the meeting on 8 December when he and the presidents of Ukraine and Byelorussia, acting as the successors in office to those who had originally formed the SU, agreed to its dissolution.

Whilst Bush may have been reported as publicly aloof of the Aspin/Nunn initiatives he was dealing with a unique situation, responding to Gorbachev and Yeltsin with great caution. His archive reveals increasing contact with the latter during the autumn and overall more conversations with Yeltsin than Gorbachev between September and December. In a telephone call of 27 September to tell him of his forthcoming announcement concerning nuclear weapons Yeltsin stated the VPK had been abolished and that the Americans would find the

[15] Interview Howie/Hoffman for Howie Politics.com 11 December 2009 http://www.howeypolitics.com/ Accessed 12 September 2011

[16] A report of the difficulties on the ground was made to Baker in Moscow on 15 December. Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) p 565

[17] Arthur Hartman had succeeded Matlock (who had played an important part in the Reagan negotiations) as Ambassador in Moscow on 11 August.

Russian MOD much more civilised than its predecessor and would say they would agree to cuts in nuclear weapons[18] [19].

Indicative of their struggle it was Gorbachev not Yeltsin that made the public announcement on the Soviet weapons cutback on 4 October. At first thought this might be thought an empty gesture given the chaos. However, whoever made the announcement, it provided cover for Soviet withdrawal of tactical nuclear weapons from the rumbling republics. Despite the promised withdrawal from East Germany (in 1991 there were still over 330,000,000 Soviet military on the territory of the GDR) the pride of the Army remained relatively strong: it was unlikely a request for assistance in the removal and dismantling of these weapons at this time would have emanated from the General Staff.

Yeltsin rang Bush on 25 October to tell him he agreed with the Bush announcement on cuts and told Bush that his support for the abolition of MIRV would mean the withdrawal of all nuclear capability from Ukraine and Kazakhstan. They went on to speak of the economic reforms that Yeltsin proposed to introduce[20] There were further calls on 30 November and 13 December when Yeltsin updated Bush on discussions in Russia about the break-up of the SU and economic reform. On 11 December Gorbachev visited the General Staff and spoke to them for two hours urging them to maintain support for the Union[21] but in his call to Bush on 13 December Yeltsin said that he had achieved the agreement of the Army General Staff, the security forces and the internal security forces to the proposed changes[22] Reflecting the difficulties facing Russia he spoke of the food aid being provided by the EU and made a personal plea to the President for more help from the US, receiving the response that Baker would be leaving the following day to come and discuss this with him. Reference to nuclear arms was limited to the central command system that would operate following the break-up of the SU. The conversation on 23 December[23] dealt extensively with arrangements for the custody and operation of nuclear weapons. Nuclear weapons were mentioned in every call, but the announcement of reductions to match the American (discussed by Bush with Yeltsin) was made by Gorbachev – an interesting reflection of the then Moscow relationships. Despite reference in an NTI document to the contrary[24] no other reference has been found in this study to a request from Gorbachev or Yeltsin for assistance in dismantling Russian weapons (see later).

There is a lack of clarity about the situation in the SU, particularly Russia, with among other things failures in food supplies, shortages of fuel, institutions wavering and tussles over control. The important agenda of the control and numbers of nuclear weapons were not forgotten, if their means of decommissioning were.

Other players were active. A US commission visited the SU to make recommendations on the supply and distribution of the grain the US had agreed to supply; conversations between senior Soviets led by Primakov and

[18] https://bush41library.tamu.edu/ Ref 7152 Declassification reference EO 12958 of 8/21/09 Accessed 6 March 2012

[19] All the transcripts of telephone conversations between Bush with Gorbachev and Yeltsin, and the conversation with Gorbachev at the Madrid conference were accessed on 6 March 2012. Given the brief document references as an aid to identification the declassification reference and date (US-style) are also provided.

[20] https://bush41library.tamu.edu/ Ref 7891 Declass 12958 of 6/22/09 Accessed 6 March 2012

[21] Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) p 563

[22] https://bush41library.tamu.edu/ Ref 9109 Declass EO12958 2/22/08 2004 1975MR Accessed 6 March 2012

[23] https://bush41library.tamu.edu/ Ref 9371 Declass EO12958 04 1975 MR of 9/23/08 Accessed 6 March 2012

[24] www.nti.org/db/nisprofs/russia/forasst/nunn_lug/overview.htm Accessed 17 April 2009 (See Fn26 also)

Yavlinsky with Allison and Blackwell at Harvard where the Soviets were pleading for help in an approach to be made to the G7 for help, and where the Americans were seeking to advise the Russians on the drafting of a structured economic plan; and consideration under way at MIT as to the practicality of American purchase of Soviet uranium. Calls were being heard for a new Marshall Plan. Reflective of non-US interests in CTR-plus to be covered later the Russians emphasised the help they were receiving from Europeans. Previous reference was made to the discussions by leading scientists organised by NRDC/FAS to discuss the safety of nuclear weapons, and on the day PL102-228 became law they were meeting in Moscow – their discussions to have relevance to Baker's visit three days later.

Essential Commitments

The introduction to this study postulated CTR-plus could not have come into effect had it not been for the political leaderships of the US and SU, described as the quadrumvirates, in establishing a culture of desired disarmament.

It is now suggested that subsequently two matters were of such significance that without them Nunn could have failed. The first the Harvard paper, the critical tool in Nunn's persuasion of essential supporters; the second Chernobyl, the disaster of four years previously.

Previous references to the impact of Chernobyl, particularly on Gorbachev, have been made. Those are now extended to argue it was a tipping point without which it is unlikely the SU would have been prepared to accept Western assistance in dealing with the safety of its nuclear legacy. Its influence permeated Soviet society from General Secretary to the peasantry, commenced the process of integrating Russia into the international nuclear community, and promoted major institutional changes.

Prior to Chernobyl nuclear power generation in the SU was the responsibility of the VPK. The operation was secretive with information doctored or withheld from the national leadership. The surrealism this entailed and its impact on Gorbachev is demonstrated by a vignette from the time when informed Russians were seeking to discover news of the disaster many via western broadcasts. Pavel Pazalchenko, one of Gorbachev's interpreters, was acting thus in meetings with westerners seeking to help. He writes that at a meeting with Arnold Hammer and Robert Gale, who were trying to assess what medical help was needed, Gorbachev was speaking with care, treading the line between appearing to panic and being callous. He stumbled and was clearly uncertain about some of the information with which he had been provided. "Gorbachev was being reassured by Slavsky, Minister of Medium Machine Building,[25] who assured him that it was all being exaggerated and "that similar accidents had happened before without any terrible consequences"".[26]

Gorbachev subsequently employed the accident and its outcomes to spearhead *glasnost* through the government and VPK leading to a substantial breakdown of the secrecy previously employed and a consequent reduction in their power. Close relationships with IAEA and western governments were forged as the General Secretary's team began to exert authority. For the first time western experts were able to visit Russian nuclear installations and networks were established between them and their western counterparts. The Politburo met on 6 July 1986

[25] The name by which nuclear enterprises were at that time known in the SU

[26] Pazalchenko Pavel *My Years with Gorbachev and Shevardnadze (*Pennsylvania Pennsylvania State University Press 1997) p 48

and discussed the situation. Velikhov interpreted an ambiguous exchange to give him approval to arrange the first nuclear test verification on Soviet soil by US scientists and this was quickly set up and in place just 3 days later on 9 July. On 14 July Gorbachev met Velikhov and von Hippel, leader of the US team, in his office. Working relationships in the most highly sensitive security sphere had been established for the first time. Another hole tearing the Iron Curtain, this contact was to prove invaluable in 1991.

Western representatives began to work with Soviet colleagues to deal with the consequences of the immediate disaster and to consider measures to prevent repetition elsewhere. By 1987 the World Association of Nuclear Operators had been established. "Twinning" arrangements were made for Soviet NPP with western facilities; western governments ran training courses in Russia and at home, and western design bureau commenced studies to improve Russian plant safety and operating procedures. By the time CTR commenced 'on the ground' in 1993 there was a wide network of Russian nuclear technicians comfortable to interface with foreign officials and scientists, in contrast to 1986, when any release of information would have been met by a lengthy prison sentence. The attitude of senior Soviet officials towards nuclear operations was changed fundamentally. The secrecy that had pervaded the issue meant that there had been little previous debate in the SU of the consequences of nuclear war. Now opinion-formers were shocked by the consequences of a single nuclear accident (information of earlier nuclear events remained secret at this time) and when members of the Central Committee learned that the military had targeted western NPP as part of their war plans the move towards disarmament was strengthened.

There was a major change also in civic society. Until 1986, save for a fig-leaf arrangement with the International Red Cross, NGOs were banned in the SU. Following the disaster the country was inundated with western NGOs seeking to help. The government was bewildered as to how to handle them and impressed as to what could be achieved by entities acting outwith a state organisation. The following year, as part of the changes agreed after examinations of the disaster, NGOs were legalised. This was to have a significant effect following 1991 with the involvement of western NGO's active in nuclear matters. In time some were to engage in CTR-plus activities and Russian counterparts became involved internationally as well as internally.

As the effects of *glasnost* became felt the abhorrence of matters nuclear spread through the general population. Long acclimatised to believe in the superiority of Soviet technology it now lost its faith and was pessimistic about the possibility of future disasters. For the superstitious concern arose as to whether this was the start of Armageddon, for in the Ukrainian language Chernobyl means wormwood, and some seized the connection with Armageddon from *Revelations,* the last book of the New Testament.[27]

The American Position

Why was the US Prepared to Accept the Commitment of CTR?

The timing seized the moment. There was widespread understanding that the Cold War was over. Baker's statement to that effect on the evening PL102-228 became law was one of several such by US leaders.[28] The funds approved initially were small - under a quarter of one percent of the defence budget. Indeed so small as to generate supposition that it could be seen as no more than the thin end of a wedge. As a corollary it could be

[27] Mann J *The Rebellion of Ronald Reagan* (New York Penguin 2009) p 95

[28] Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) p 563

represented as a tremendous bargain relative the previous costs of defence against the Soviet threat. In a Republican administration this was a telling point against Cheney's opposition. The measure was consonant with Presidential disarmament initiatives that had been answered by the SU. Whilst there remained a feeling in some quarters there would be no need for assistance such as that the Act permitted they were comforted in the knowledge that should it be so, execution would be at the discretion of the Executive.

Absent the Work of Nunn is it likely the US Would Have Initiated Such Action?

It can be argued it is unlikely the US would have initiated such a course of action as PL102-228 had it not been for Nunn. This chapter has illustrated apparent Presidential indifference and his demeanour at the Act's signing at the end. He was faced with many difficulties around the disintegration of the SU, and continued to be deeply involved in consideration of the highest-level issues concerning the nuclear arsenal. One may surmise that had Shevardnadze continued as Minister of Foreign Affairs throughout 1991, given the closeness of his association with Baker; or had Gorbachev or Yeltsin raised the question of assistance with decommissioning in one of his telephone calls with Bush during that autumn, Bush might have directed more attention to the consequences of the major reductions announced by Gorbachev.[29] The Bush team was not wholly supportive of Nunn's direction. The record of Cheney (Defense) and Gates (CIA) is clear. Cheney as first recipient of the Carter paper had been cool. It is therefore not certain that, given Baker's pre-occupation with the wider implications of the SU collapse, he could have successfully incorporated such a proposal within the American policy portfolio at this time. He might have met greater success post-1991.

Turning from the executive to the legislature Nunn, deeply respected by both sides in Congress for his meticulous attention to military matters, would have received serious consideration of any proposal about nuclear weapon safety. Throughout his Senate career he had articulated concerns over the safety of nuclear weapons and was widely informed about the practices and aims of arms control. His status enabled him to enlist Lugar, Chairman of the Senate Foreign Relations Committee with a strong reputation for foreign affairs and deep knowledge about arms negotiations, bringing support from the other side of the floor. These men had the knowledge to immediately identify the value of the Carter paper and the skills to employ it. It added the strength of analysis to emotion. He was able to meld his skills as a politician in putting together a coalition to carry the Bill through Congress with those of a networker in introducing to Senators senior Moscow officials carrying graphic first-hand descriptions seeking help in Washington.

Could others have fulfilled the role he took? Aspin had tried, with a less controversial proposition, and failed. Lugar did not have the Russian connections of Nunn and by himself would have found the task even harder than

[29] www.nti.org/db/nisprofs/russia/forasst/nunn_lug/overview.htm (Accessed 17 April 2009) states Gorbachev did ask for assistance in dismantling quoting as authority Center for National Security Studies ,Briefing, LANL Vol4 Number 4 3 November 1993. No confirmation has been found in that document (accessed 27 September 2012). Records of a telephone conversations between Bush and Gorbachev on December 25 1991 filed in the Bush Presidential Archive (Reference 9425 Declassification reference EO 12958 Sec 35(B) 8/30/00) and minutes of a meeting held between them in Madrid on 29 October 1991 have been checked. In the telephone call there was reference to the transfer of nuclear authority from Gorbachev to Yeltsin. At the meeting Bush said he would like to talk about the security of nuclear weapons following his recent letter but the conversation did not touch on assistance for their dismantling (Reference 8044 Declassification reference 2000-0429F 8/21/09). Both accessed 6 March 2012 .

it was. Carter with the help of Carnegie might have been able to keep the aim alive but difficulties in his taking matters further would have followed from his lack of status as a politician and the atmosphere outside Congress as illustrated by the Senate bye-election.

Had PL102-228 not been passed in December 1991 there is clearly the possibility that something similar could have been attempted later. It is appropriate to ask what might have stimulated such action and at what price. One possible answer is a further nuclear disaster in Russia. The accounts of Baker's endeavours in Russia in 1992 draw on *Nunn-Lugar* and there is something of the chicken and the egg about his initiatives. Given some reduction in the complexity of Russian-American relations following the departure of Gorbachev and the dissolution of the SU, allied with the attitude and supplications of Yeltsin, it might appear unlikely that Cheney and Gates' opposition would have continued particularly in the light of media reports of 'loose-nukes', approaches to scientists to transfer their loyalties elsewhere, unguarded dangerous facilities, missing inventories, and the smuggling of HEU, all indicating a potential FSU collapse of nuclear security.

Conclusion

In his speech at Princeton on the evening PL102-228 became law Baker outlined twenty initiatives in mobilizing support for a Soviet Union collapsing as he spoke, to be organized through a co-ordinating conference the first priorities of which were the provision of humanitarian assistance and the management of risks associated with nuclear weapons. In his record he stated that the conference was not only to mobilize international help 'but as a way to overcome bureaucratic inertia in the US government' - a difficulty to which there was frequent reference throughout the life of CTR.[30] When he arrived in Moscow three days later the NRBD/FAS team was already there to discuss with Soviet colleagues what should be done.

This chapter has described briefly steps that brought about PL102-228. In so doing it has identified a paper from Harvard and the legacy of the Chernobyl disaster as essential ingredients. The next chapter will track the first practical steps taken by the US in what from 16 days hence would be the FSU, and the moves in Washington to grow the original, not much more than symbolic, plan into what was to become one of the major features of 20th century international relations.

[30]Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) p 564

CHAPTER 4

COMBINED THREAT REDUCTION PROGRAM: 1991-2002

William Jefferson Clinton	**20 January 1993**
National Defense Authorisation Act	**5 October 1995**
Vladimir Vladimirovich Putin	**31 December 1999**
9/11	**11 September 2001**

Introduction

Political Landscape

A Developing Program: 1991-1994

The Established Programme: 1995-2002

Conclusion

Introduction

US funding for Russian weapon nuclear dismantling being approved in 1991, this chapter will review American activity 1991-2002. This was to be authorised by more than twelve Acts of Congress, with varying provisions, across three Administrations. They and the ensuing operations will be collectively referred to as CTR. The period comprises two phases – 1991 to around 1994, and from then until 2002.

It will describe the development of CTR against changing political backgrounds. A date-by-date account of legislation, moves by the Executive and its agencies, or individual projects will not be examined other than where they illustrate a bigger picture. The analysis will be informed by reports of the GAO since these provide accurate information when compared with aspiration or hostility expressed in Congress or obfuscation by officials. Great reserve is required in measuring expenditures. Contemporary figures are employed in this chapter - details of the many caveats applying are provided in Chapter Nine.

The operational management of CTR presents a continuum between 1992- 2002. The aims and policies of the Bush era were adopted by the Clinton Administration and exercised by those active around *Nunn-Lugar*. The higher level political direction was significantly different in style to that of the Republican years and will be briefly described prior to reviewing the programme.

Political Landscape

Baker left the State Department to manage Bush's re-election campaign on 23 August 1992. Clinton became President on 20 January 1993, 47 days before publication of the GAO's first report on CTR work in the FSU. Clinton's Vice President, Gore, had been chosen for his foreign policy experience, and exceptionally had made an agreement on duties with his President prior to the election. His Secretaries of State were Warren Christopher and Madeleine Albright.

Notwithstanding some biographers' claims to the contrary Clinton took a comparatively close interest in the US/Russian relationship maintaining good connections through the innovative Gore-Chernomyrdin Commission agreed with Yeltsin three months after entering office, and subsequently more directly as the presidents established good personal relations. A foreign affairs safety net might be regarded as essential given the proportion of the President's time devoted to domestic policy and the management of his team. He maintained during his presidency the momentum of leadership meetings set by Bush (eighteen meetings with Yeltsin and one with Putin). Much of the Executive's 'Russian' time was occupied by the attention given to democracy, development of a market economy, and aid. With the end of the Cold War the emphasis on nuclear weapons faded from the view of politicians and public.

Gore had written on nuclear strategy in 1982. He was recognised as the President's senior advisor, to some extent organiser of the presidential programme and manager of the White House in the absence of a strong Chief of Staff.[1] He discharged responsibilities customarily assumed by Secretaries of State, especially relations with Russia and, specifically in the case of *Nunn-Lugar*, defence conversion.

[1] Senate archives: Special Collections US Senate Historical Office at http://www.senate.gov/artandhistory/history/resources/pdf/Gore,_Albert.pdf Accessed 9 August 2013

Clinton's first and full-term Secretary of State was Warren Christopher (1993-1997). History has seen him as ineffectual although he was well experienced in foreign affairs having been Deputy Secretary of State to Carter. The preoccupations of his two predecessors had been principally the FSU, his were elsewhere, in part because of displacement by Gore-Chernomyrdin, but he did devote energy in attempting to maintain a bi-partisan approach in relations with Russia.

Madeleine Albright was Clinton's Secretary of State throughout his second term (1997-2001). She was better attuned to Russian issues than Christopher and established good relations with senior Russians. Clinton had first appointed her Ambassador to the UN and, at the same time to the 'Principles Committee', the top White House foreign affairs team[2]. Important in the Clinton White House she was a personal friend of the First Lady, and maintained good relations with Christopher and Strobe Talbot[3]. As ambassador a stated early priority was "the fashioning of a new relationship with Russia"[4] and she was quick to establish a close relationship with the "quick-witted" newly appointed Russian ambassador to the UN, Lavrov, to become foreign minister under Putin in 2004. She established and maintained a close connection with Foreign Minister Primakov, and Ivanov, who succeeded him in January 1999. These relationships became personal as well as official, and their warmth, if not their achievements, could be measured against the same office-holders of the Reagan and Bush years.

She wrote of the wish of many in Eastern Europe for a new Marshall Plan, of which CTR would likely have become a part, and that on her taking up office a priority was to pick up Christopher's unsuccessful efforts towards regaining bi-partisanship in the Congress. Soon she was playing the familiar tune of a bureaucracy slowing the Administration's work in its attempts to maintain good relations. Her memoirs are more directed to the Russian/ US nexus than Christopher's, and in particular her relationships with Russian counterparts. She was closely observant of the economic and social difficulties facing Russia but rarely referenced CTR – reflection perhaps of its growing maturity and/or its subordination to Gore/Chernomyrdin. There were references by others to the straight-jacket imposed on Christopher and Albright and of policy conflict with what came to be a large bureaucracy.

Russia's turmoil was reflected in its national leadership. Despite constitutional disputes, diminishing support, and health issues, Yeltsin remained in office until 31 December 1999. Under the first RF constitution the Prime Minister (twelve during the Yeltsin era) was responsible for foreign affairs. There was no Minister of Foreign Affairs approaching Shevardnadze's stature. Continuity was provided through the operations of Gore-Chernomyrdin until 1999 (Chernomyrdin was the longest-serving Prime Minister 1992-98) with added stability through a slow turnover of Foreign Ministers – Kozyrev, (1991-96); Primakov (1996-98); and Ivanov, who had been Kozyrev's deputy (1998-2004). Albright's stronger power base and will to make connections strengthened the US/Russia relationship during Clinton's second administration.

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[2] Albright Madeleine *Madam Secretary* (New York Miramax Books 2003) p131

[3] Clinton's long-standing friend and Rhodes Scholar colleague, Talbot who served as Deputy Secretary of State to Christopher and Albright and who provided a direct informal link between him and the State Department. Talbot had translated Khrushchev's memoirs into English. During the 1980's he had been the *Time* correspondent on Soviet US relations.

[4] Albright Madeleine *Madam Secretary* (New York Miramax Books 2003) p141

The key to the continuance and strengthening of CTR rested not so much with the Secretaries of State but of Defense and in decisions taken around Clinton's inauguration. Momentum was secured with Aspin serving as Secretary of Defense for Clinton's first year (until 3 February 1994) and Perry thereafter until 1997. Aspin immediately appointed Carter as Assistant Secretary of Defense for International Security Policy, a post he was to hold until 1996. His terms included 'oversight of the U.S. nuclear arsenal and missile defense programs, policy regarding the collapse of the former Soviet Union (including its nuclear weapons and other weapons of mass destruction) control over sensitive U.S. exports'[5]. These appointments were important in providing capacity to maintain the programme and ensure its continuance – more so following the mid-term elections when the Republicans were to sweep the House for the first time in forty years.

Carter and his four senior assistants made frequent visits to the FSU to assess need and progress, whilst in Washington efforts were made to shift the focus of officials from the confrontational of targeting and negotiating arms agreements with the SU to understanding and ameliorating the difficulties it faced.

Carter and Perry monitored the patterns of success and difficulty in Washington. They established a special procurement branch in the Pentagon to overcome the sclerotic practices in disarmament. Politically they responded to the uncertainties and hostility of Congress working to support the most critical elements of the programme whilst failing to save others, such as housing for displaced military personnel, and for "defense-conversion" projects – the whole programme of which was to be killed by Congress. Some conservative lawmakers saw the DOD as having no role other than to prepare 'fighting scenarios'.

A Developing Program 1991-1994

The study concentrates on nuclear-related fields. The quadrumvirates' focus was nuclear. The campaigners for CTR were primarily concerned with the nuclear arsenal. The title of PL102-228 was the "Soviet Nuclear Threat Reduction Act", and its preamble reads:

> (1) that Soviet President Gorbachev has requested Western help in dismantling nuclear weapons, and President Bush has proposed United States cooperation on the storage, transportation, dismantling, and destruction of Soviet nuclear weapons;
>
> (2) that the profound changes underway in the Soviet Union pose three types of danger to nuclear safety and stability, as follows: (A) ultimate disposition of nuclear weapons among the Soviet Union, its republics, and any successor entities that is not conducive to weapons safety or to

[5] Harvard Press Releases 2015 http://www.hks.harvard.edu/news-events/news/press-releases/carter-appointment Accessed 2 December 2015

> international stability; (B) seizure, theft, sale, or use of nuclear weapons or components; and (C) transfers of weapons, weapons components, or weapons know-how outside of the territory of the Soviet Union, its republics, and any successor entities, that contribute to worldwide proliferation; and
>
> (3) that it is in the national security interests of the United States (A) to facilitate on a priority basis the transportation, storage, safeguarding, and destruction of nuclear and other weapons in the Soviet Union, its republics, and any successor entities, and (B) to assist in the prevention of weapons proliferation.

Reference is made later to nuclear *and* chemical weapons but no specific reference to weapons other than nuclear in the 1991 Act. The 1992 Act was limited to 'nuclear chemical and 'other weapons''. The debates in US defence circles were almost exclusively limited to nuclear. The public discourse was confined to nuclear in CTR's early years although Western contributions to chemical weapons disposal was later granted equal importance. Chemical disposal is technically relatively simple with fewer secrets to be concealed; financially the presence of visible tangible assets such as a railway and incinerator plants demonstrates value for money; and political acceptance obtained through facilities seen to be working for a long while after installation costs have been met. On the Russian side there was countervailing opportunity for frankness, no requirement to maintain protect or develop weapons that would remain in the inventory, and assurance that they were complying with international agreements. Emotionally for both sides the satisfaction of eliminating a complete class of weapons.

The public narrative marks PL102-228 as the start of a smooth and noble process. The reality was ragged. The programme was in due term to be regarded as reflective of a radical change in US/FSU relations but it was not alone in bringing about significant change in the atmosphere. Reference was provided earlier to co-operation between the superpowers' scientific establishments in matters relating to space, the monitoring of nuclear activity, and particularly in Russian thinking the place of Chernobyl. Reagan had also been deeply concerned at the consequences of Chernobyl observing that whilst nuclear operations were a national matter nuclear safety was an international one, and between 1988 and 1990 the US had spent $168M on its consequences.[6] In 1987 the US and SU had established their Nuclear Risk Reduction Centres, an earlier initiative of Nunn administered by the State Department. Furthermore whilst the public narrative claims a starting point it is premature to regard it as the *establishment* of the programme. Arguments can be adduced for several later markers justifying such designation, of which the earliest is possibly PL103-160, the 1994 National Defense Authorisation Act under which funds were expressly authorised for the programme rather than providing permissive authority for reallocation from other budgets.

[6] GAO Report 230418 of 1991 Accessed at https://openlibrary.org/books/OL14538363M/Nuclear_power_safety on 1 December 2015

Baker had embraced *Nunn-Lugar* warmly in December 1991 saying the Administration was prepared to draw down funds to assist in dealing with the situation. He spoke of the importance of twenty-one initiatives across military, economic and democratic spheres – an indication perhaps of the possibility of discussions about a new Marshall Plan. He announced the appointment of Larry Eagleburger[7] to take overall charge of co-ordination, "which necessitated overcoming much bureaucratic resistance", and said that had Gorbachev space for consideration he might have regarded this announcement a significant outcome to his new foreign policy started many battles ago in 1985.[8] A cue for further consideration of whether the President considered the business of the Act 'small-stuff' relative to the other outstanding Soviet questions, or whether he and Baker were pleased to have the dismantlement funding issue out of their hands given the current national mood against foreign aid but swift to advantage the situation.

Baker's broadening of emphasis from high policy towards practical implementation triggered activity at scientific and official levels. In the following twelve months 185 Executive Branch and National Laboratory personnel made 343 trips to the FSU.[9] They were from a range of departments and agencies – Defense Energy State and Commerce Departments, the Arms Control and Disarmament Agency, the Nuclear Regulatory Commission, National Security Council and even the Customs – and from all three of the US facilities involved in the manufacture and assembly of nuclear weapons.

At a higher level, in March 1992, a Congressional delegation including some without whom the Act would not have passed – Senators Nunn, Lugar, Warner, and Bingaman, accompanied by Hamburg, together with Carter visited Russia and Ukraine to examine problems on the ground first-hand. Carter reported that the leaders of the new States were eager to learn more about the program and to meet those responsible for bringing it into effect.[10] Nunn and Lugar briefed the President on their return. Bush remained hesitant about attempting to get another assistance package for the FSU through Congress in an election year because of the difficulties he saw in the national mood, but, despite this, now declared his *personal* support. Baker, again aware of the potentialities of the situation, had the State Department begin drafting a proposal for Congress.[11] Nunn and Lugar led a second Congressional visit to the FSU in November 1992. There was now considerable concern in the US of the possible impact of Russia's chaotic situation on nuclear safety – and of the willingness of allies to commit to assistance. Both had been forecast in the original Harvard paper - foresight that over successive years was not to be apparent to all members of Congress.

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[7] At that point Deputy Secretary of State, later to become the only career Foreign Service Officer to serve (briefly) as Secretary of State.
[8] Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) pp562-564
[9] GAO Report GAO/NSAID-93-154 Published 8 March 1993 Accessed 1 December 2015. At the time of writing all GAO reports for the relevant period have been digitised and are directly accessible via http://www.gao.gov/ In subsequent references for simplification the report number and access date only will be given.
[10] Carter Ashton B and Perry William J *Preventive Defense* (Washington Brookings Institution Press 1999) pp71-72
[11] "Nunn Lugar Initiative" pp. 144-147 The Nunn Lugar Threat Reduction Program, NTI, Accessed at http://www.nti.org/search/?q=1996+CTR&page=1&sort=-publication_date&selected_facets=subjects:%22Cooperative%20Threat%20Reduction%2C%20Nuclear%22 17 April 2009 (Website since re-organised)

It is possible to draw from the GAO's first reports pointers to characteristics that were to define programme difficulties in agreeing, specifying and implementing tasks representing the central core of the Act's purpose, and the impossibility of accurately estimating costs. However there were also pointers towards what were to be long-term projects of outstanding value in terms of non-proliferation and of contributions to Russian civic society.

PL102-228 had currency for the Fiscal Year 1992. It was followed by the rarely noted PL102-229 which covered a range of supplementary appropriations across the Government and included mechanisms, technical corrections, and budget changes to the PL102-228 provisions – unsurprisingly necessary given the speed with which the former had been passed.

There were two direct successors. PL102-484 'Former Soviet Union Demilitarization Act of 1992' passed 23 October and PL102-551 'The Freedom Support Act' passed 24 October 1992. Their purpose was not specifically to increase resources available for threat reduction in the FSU but to update earlier legislation and agreements to reflect the position following the demise of the SU. Some Acts passed during the Cold War now held to be inimical to the development of relations between the US and the FSU were repealed. Covering a range of cultural economic and social activities PL102-551 was important because it removed some restrictions on activity in and related to FSU states which would otherwise have restrained work planned under CTR. Important in carrying CTR forward it was the last Act of the Bush Administration impacting the FSU nuclear situation.

Elements of the Acts were overlapping or supportive and for the purposes of this study will be considered in common. Their introductions [12] are identical. PL102-484 is cross referenced to PL102-551 and updated and extended the original PL102-228 whilst the much longer Freedom Support Act specified a range of activities. Both contain provisions with regard to conditions relating to their grants and their authorization or certification at the levels of the President, the Secretary of Defense and, in the case of the FSA, the Director of the Office of Management and Budget, and include obligations to be met by the recipients, significant as CTR became embedded in government activity.

Reflecting a year's experience and good practice succeeding urgency PL102-484 adds to the preamble of PL102-228 prior to describing in detail the categories of work that may be authorised:

establishing proliferations safeguards;

demilitarizing defense industries;

defense conversion;

establishing Science and Technology Centers for the purpose of engaging scientists, engineers and other experts;

the study of joint research programs;

and, greater military to military contacts.

There were for the first time references to activities later described, such as nuclear waste disposal in the Arctic; and others that do not – Project PEACE and VIPS (the 'Volunteers Investing in Peace and Security Program'

[12] Sections 1411 and 501 respectively

reflecting a Bill introduced in February 1992[13]. They approved an additional $400M for 1993 with accounting over a 24-month period - a significant formal recognition of the need for planning - in a manner designed not to disturb Congressional opponents - and two years in advance of more significant planning protocols.

A component for home consumption, reflecting a Marshall provision but to provoke later difficulty, was that the programmes 'to the extent feasible draw upon United States technology and expertise, especially from the United States' private sector'. A less familiar note, often ignored by Western advocates claiming full credit for *Nunn-Lugar*, was a stipulation that recipient states make their own substantial investment of resources under the programmes. In this connection Mikhailov, Head of the Atomic Energy Ministry, had reported in 1992 that one million people were working for his ministry and 5,000 'items' per year were being dismantled[14]. Interesting is that as the Russian political situation began to settle post-1991, members of the Duma raised objections in similar terms to some in Congress.

PL102-551 reiterated authority for the establishment of the ISTC and a clause permitting the 'purchase barter or other acquisition of such weapons or materials derived from such weapons'. A thoughtful inclusion, perhaps, by a drafter seeking to leave no gaps, but within this context authority for the UPA to proceed. Commensurate with the more relaxed timetable than that for PL102-228 provisions that might have appeared originally had that process been less hurried were incorporated, such as establishing priorities and enabling accommodation without further legislation future changes in some parameters, such as appropriations. Congress committees were specified under which future consideration of the Acts and their successors would be given.

A further development followed. PL102-228 had been 'stand-alone'. In recognition of 'the direct contributions to the national security interests of the United States by the programs and activities covered by the Act' access was granted for additional funding of up to $100M under the Foreign Assistance Act of 1961 and the Arms Control Act, and certain restrictions on the use of funds authorised under those Acts, which would have been inappropriate to the then situation, removed. An indication of support for the programme. However in recognition of the canvassing some lawmakers were receiving from constituents likely to suffer from the concurrent reduction in American military facilities the amount spent on FSU defence conversion was to be no greater than that spent in the US for the same purpose.

Activity broader than permitted by the original legislation also included permissive entitlement to expenditure in support of IAEA activities designed to 'ensure more effective safeguards against nuclear proliferation' and additional funding should State Department appropriation prove inadequate to support international organisations. The first provision for CTR delivery beyond the FSU (an important extension of the envelope by 2012) was the permissive granting of funds to the UN's Iraq inspection operation.

The programme's purpose was extended by two provisions. Following the earlier hint, the Secretaries of State Defense and Energy were required within 180 days to report on the ultimate disposition of fissile material in the

[13] This directed the Secretaries of Defense and State to 'jointly carry out a program to provide technical assistance to address the infrastructure needs of East European countries, the Baltic states, and the former Soviet republics. . . provided by volunteers who are retired or former members of the armed forces').

[14] US Congress Office of Technology Assessment *Dismantling the Bomb and Managing the Nuclear Materials* (Washington US Government Printing Office 1993 p135 Accessed at Princeton Archive USGPO Reference OTA-0-572 Order number #PB – 107554 18 December 2015.

FSU with cost-benefit analysis of the various routes that could be followed, and discussion of relevant issues including dumping, impact on potential electricity savings, and how HEU could be utilised as NPP fuel. (The UPA was to be signed 18 February 1993.) The outcome was to prove not only one of the enduring successes of CTR-plus but also to generate economic multiplier effects for the US and Russia.

The second provision was to authorize the establishment of a not-for-profit NGO to provide R&D opportunities with the FSU to offer alternatives to emigration, advance defence conversion, assist in the creation of a market economy and provide access for American enterprises into the FSU[15]. Absent from the periodic *Nunn-Lugar* scorecards, it worked alongside the ISTC's, NCI's.. This institution was to prove an enduring legacy and was productively operational beyond the formal limit of CTR in 2012. In spreading financial provision across a range of institutions the Administration was reducing the possibilities of a hostile Congress defeating its purpose.

The Freedom Support Act was employed by the 'Democratic' White House to provide the new Administration the opportunity of bringing policy strands together and to embrace *Nunn-Lugar* within its fold. The Press Secretary issued a six-page release on 1 April 1992 prefaced by a statement that the collapse of the SU provided America with a once-in-a-century opportunity to help freedom take root and flourish in the FSU. The success of democracy and open markets there would directly enhance national security and provide business opportunities for Americans. It called on a bipartisan approach, 'Just as Democrats and Republicans united together to fight for Freedom during the Cold War, we must remain united to win the peace'. Within a panegyric of assistance to be provided the FSU was a paragraph telling of the allocation of **$500M**[16] 'last fall' for CTR and nuclear plant safety; emphasis on co-operation with other donors including pressure to be placed on other G7 countries , and details of food and welfare aid between 1991 and 1993 where of a pledge of $6.33B 60% had been disbursed to that point[17]. Here in one document, published less than three months after Clinton took office and three months before the signing of the 'Umbrella Agreement', is encapsulated several of the streams of this analysis:

an attempt to keep alive the bipartisanship of *Nunn-Lugar;*

with the same aim, perhaps, the Democratic Administration emphasising US benevolence by quoting figures for which the Republicans could take most credit;

recognition of the need for international assistance but with America at the helm, as articulated by Baker during his Princeton speech on 12 December 1991;

by incorporating support across a wide range of civic, welfare, and international institutional achievements and aspirations providing a framework in which a Marshall-type plan could be considered;

and, through the incorporation of NPP safety within the CTR envelope, recognition that civilian and military nuclear safety could not be divorced.

Initial Difficulties in Agreeing Defining and Implementing tasks under CTR

[15] Civilian Research and Development Foundation

[16] Presumably the $400M CTR and $100M Foreign Assistance Act

[17] Freedom Support Fact Sheet issued by the White House Office of the Press Secretary 1 April 1992. http://www,fas.org/spp/starwars/offdocs/b920401.htm Accessed 20 October 2011

Despite the initial Russian plea and the generally close relationships between scientists and officials on each side, the RF was not prepared to give the US a direct role in warhead dismantling (*Nunn Lugar* permitted the use of American '*technology and technicians to the extent feasible'*). This is easy to understand. Former Soviet officials were still in charge at Minatom and the 12th Directorate of the MOD (responsible for nuclear weapons) and whilst professionals – scientists and military –spoke freely of matters which had, until the collapse been closely guarded, the national atmosphere was one of instability and fearfulness. Reminiscent of the receipt of the original Harvard paper the top levels of the DOD were also, in the words of Ashton Carter, "cool to the idea"[18]. The Russians had good reason also to believe that not all US efforts were benevolent, intelligence agents being embedded in some delegations[19]. Good relationships were achieved but it was clear that as co-operation grew difficulties with regard to law, legal liability, and taxes, would emerge. Chernobyl appeared as the ghost at the feast since these matters had been under review in the IAEA and associated forums since the 1986 disaster.

Those on the ground concentrated on matters that could be expedited. It had been clear to western observers since 1986 that Russian attitudes to 'nuclear hygiene' were substantially less disciplined than those of the West. It was possible to remedy multiple deficiencies without offending the protocols of secrecy or the military – some Russian senior officers had recorded frustration at budget parsimony which took insufficient account of infrastructure they regarded necessary to safely support nuclear-based operations during the arms race.[20] Accordingly priority was given to "First Aid" requirements where secrecy levels were lower, technical management easier, and equipment readily available. The criterion that the US should be seen to be moving swiftly, important at home to maintain support for the programme, and in Russia to maintain credibility, could also be met.

In meeting this priority DOD drew up plans for 10,000 safe containers for fissile material, 2,500 armoured blankets (to provide protection against small arms attacks on transport carrying nuclear weapons or fissile material) security improvements for 115 nuclear weapon-carrying railway wagons, and resources for several "first response" emergency teams. (One of the few non-US contributors at this point was the British who provided assistance similar in kind[21]). The first Russian priority was a facility for the safe storage of unsecured fissile material[22] at an estimated cost of $90M. The total estimates were $192,260,000 (excluding $25M for dealing with urgent chemical weapons problems). Immediately adequacy of the financial provision of PL102-228 comes under question.

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[18] Speech at Hofstra University 10 November 2005, accessed from Hofstra Docs at http://www.hofstra.edu/community/culctr/clinton/clinton_scholars.html 7 September 2012.
[19] GAO 09-743 p7 refers to assistance received from 'the intelligence agencies' for classified annexes to reports.
[20] Examples of major deficiencies may be found in Bohmer, Nikitin, Kurdik, Nilson, McGovern and Zolotov *The Arctic Nuclear Challenge* (Oslo Bellona 2000). The US itself was not without difficulties – see, for example, Schlosser Eric *Command and Control* (London Penguin 2014)
[21] UK First Global Partnership Report (London DTI November 2003) Accessed via DTI 20 March 2013 Available December 2015 at http://www.partnershipforglobalsecurity-archive.org/PDFFrameset.asp?PDF=uk_report.pdf
[22] These figures extracted from Appendix 1 page 11 GAO NSAID 93-154 http://www.gao.gov/assets/220/217529.pdf Accessed 1 December 2015

The State Department, following Baker's visits to Russia in December 1991 and February 1992, planned the first of a series of proposals to provide employment for otherwise redundant weapons workers - a "Science Centre" inspired by Hans-Dietrich Genscher the German Foreign Minister with legislation seeking $25M. Its launch was announced by Bush and Yeltsin in Moscow on 17 February 1992. The Centre (with substantial non-US) funding may emerge as one of the recognised monuments to the programme. Its work is covered in Chapter Eight.

An essential but often overlooked step before operations on the ground could commence was the 'Agreement between the United States of America and the Russian Federation concerning the Safe and Secure Transportation, Storage and Destruction of Weapons and the Prevention of Weapons Proliferation' commonly known as 'The Umbrella Agreement' negotiated over six months in 1992 which for PL102-228 , although modest in length, might be compared in purpose with the 700 pages of protocol accompanying the 47 pages of START 1. It was the legal and procedural agreement permitting US work in the RF. Complaint was raised in the following two years of the slowness with which work did get underway – often because of a failure to appreciate the necessity of securing what at the time were novel issues regarding liability, taxation, and other matters covered in this agreement.

Early progress might be assessed by comparing funds against allocations and consequently the delay before operations started on the ground. The first-year spend quoted by GAO totalled $19,605,000 against the allocated $400M. However the same review reported GAO calculation[23] of the costs of travel to the FSU for officials at $1.7M, of which only 21% was paid for from PL102-228 provision, the remainder from the budgets of the organisations involved. In the first year therefore, under the heading of travel, over $1,319,000 additional to that noted against work under the Act was expended. The long lead time and separately funded supervision expenses provide an early illustration of difficulties in CTR cost estimation.

The first CTR funding was puny. It was set against public opinion and bureaucratic inertia ranging from indifference to hostility. A steady flow of funding was a pre-requisite to survival. This would normally be obtained through the annual appropriations process. PL102-228, had allowed the virement of up to $400M authorised DOD funds for destruction safeguarding and establishing safeguards against proliferation. As noted this had been extended for a second year. Appropriations are customarily passed in November for the successive Fiscal Year commencing 1 January and the 1993 DOD Appropriations Act (PL 102-484) provided a further $400M maintaining stability for a third.

The terms passed by both Houses were overwhelming the prelude had not been without some horse-trading with lobbying to have conditions additional to the original Act incorporated.

> (b) Exclusions.--United States assistance in destroying nuclear and other weapons under this title may not be provided to the Soviet Union, any of its republics, or any successor entity unless the President certifies to the Congress that the proposed recipient is committed to--

[23] GAO/NSAID 93-154 p2 Accessed 11 January 2016

(1) making a substantial investment of its resources for dismantling or destroying such weapons;

(2) forgoing any military modernization program that exceeds legitimate defense requirements and forgoing the replacement of destroyed weapons of mass destruction;

(3) forgoing any use of fissionable and other components of destroyed nuclear weapons in new nuclear weapons;

(4) facilitating United States verification of weapons destruction carried out under section 212;

(5) complying with all relevant arms control agreements; and

(6) observing internationally recognized human rights, including the protection of minorities.[24]

These conditions were interpreted by some as demonstrating opposition to the original Act. It is equally plausible to argue they were in the nature of responsible boundaries to an important international programme.

The cause was advanced for 1994 in the 1993 Co-operative Threat Reduction Act (PL 103-160) the first managed by Carter as Assistant Secretary. Funds were appropriated directly for the intended purpose rather than having authority provided for their virement from other budget heads, a significant marker in the 'establishment' of CTR. Operationally it sharpened identification of priority areas into warhead removal, destruction and dismantlement of weapons systems, improvement of custodial arrangements for fissile material and weapons (and assistance for the demilitarisation of chemical warfare). It might be claimed Carter's appointment was justified by the improvements this Act alone brought to CTR.

Initiatives, frequently dependent upon the energies of individuals, were not always co-ordinated and periodically suffered setback. Some measures which assisted progress are not easily recognisable as such. One (the first that might be described as CTR-plus) had been in 1992 when $400M additional to the virement authority of *Nunn-Lugar* was made under the Former Soviet Demilitarisation Act (PL102-484) to underwrite establishment of the 'Safe and Secure Dismantlement' talks.

From 1994 financial uncertainties within the DOD were lessoned and consequent upon the programme now being included in the annual appropriations timetable difficulties in advancing it were reduced and longer term planning became realistic. However progress on the ground remained slow with GAO, noting that "Very few - if any - former Soviet nuclear weapons can be said to have been dismantled as a direct result of US funds

[24] US Assistance to the FSU Congressional Research Service Paper RL32866 1 March 2007 https://www.fas.org/sgp/crs/row/RL32866.pdf Accessed 19 March 2012

appropriated for this purpose. Only limited amounts of US equipment, aimed at improving the safety and security of former Soviet nuclear weapons, have been delivered to Russia".[25]

This criticism might be treated with reserve. All involved parties were facing unknowns – and the political and administrative foundations were being strengthened. At the same time however the 1994 elections (midway through Clinton's first term) were underway and were to bring to office more opponents of overseas aid. The opposition to US involvement in defence conversion and accommodation for displaced military personnel grew. Public sympathy for Russia had ebbed with its continuing politico/economic difficulties and the Chechnya war. Concerned politicians continued to make the case but were unable to always carry Congress or public with them.

Some of the closest relationships across the Iron Curtain had been between scientists. These connections yielded dividends after 1991. When US scientists commenced visiting Russian facilities following PL102-228 they found them in great distress consequent upon the VPK's bankruptcy. Popular accounts tell of subsistence on sacks of potatoes and of food and money donated by American laboratories and individuals. Donations from American scientists enabled families and communities - previously among the most privileged in Soviet society but in 1992/93 isolated and ignored - to maintain coherence. In turn this provided a conduit for the important technical work that was to follow, and insured against leakage of personnel to entities keen to acquire a nuclear capability.

In addition to GAO reports there were other reviews and conferences of CTR. The Government tasked the National Academy of Science with reviewing projects. Nunn was assiduous in monitoring CTR. He saw progress 1991-1994 as steady not fast. He summed it up in a speech to a conference[26] one purpose of which was to rally support for a campaign 'to develop a better understanding among the American people and among members of Congress of the importance of non-proliferation' through a review of CTR illustrating some dangers of failure to control proliferation and outlining circumstances that could present future challenges. He reported thus far Congress had made available $1.27B[27]. He acknowledged criticism, some of which he considered had merit, particularly the slow start, and reviewed the re-programming of funding and conditions. He reflected, tactfully, the position of some in the Bush administration who "did not oppose the program, but neither did they embrace it with real enthusiasm", and the bureaucratic stasis of American administration in highly sensitive areas which were multiplied in dealing with those of a partner state. He reminded that as this was a Congressional initiative, and at short notice, there had been no provision within the Administration's budget proposals and that to ensure the passing of the Act the Executive Branch was granted authority to cancel or reduce provision for programmes it had previously proposed to obtain funds for this activity.

Without mentioning the organisational difficulties faced during the preceding year he emphasised the modesty of the $1.27B relative to the trillions of dollars spent on the US nuclear program, and with a degree of perhaps

[25] GAO /NSAID 93-154 p4 Accessed 7 December 2015
[26] 'Nunn-Lugar CTR Program Donor and Recipient Country Perspectives' Monterey 20 August 1995. I am indebted to Cathy Gwin of Senator Nunn's office for a copy of the speech.
[27] $70M presumably being commitment at that time from the provisions additional to the CTR Acts.

justifiable exaggeration, of its powerful economic multiplier, before emphasising, for home consumption, that over 90% of the money had been awarded to US companies for services and equipment.

This latter point might be considered contentious. The Harvard paper in its recommendations stated that 'Work performed in the Soviet Union pursuant to these recommendations can be conducted by US firms operating in the former Soviet Union.'[28] In typical American 'pork-barrel' style the provision that wherever possible US suppliers be used to deliver the required projects was emphasised. In seeking to obtain further support before a 'home' audience this was a sensible point to make. It had pertinent validity for, as noted, much early activity had been off-the-shelf "First Aid" and the retention of consultants to meet an urgent Russian priority for the design of a fissile materials storage facility. However as the programme expanded dependency on US contractors aroused debate in Russia. It was claimed to be less cost-effective in many cases where there was equivalent equipment available in Russia and that it was wasteful and time-consuming to bring American personnel to Russia when there were many skilled unemployed able to handle what was required. There was frequent complaint from Russia that much more could have been achieved from the available funds had this policy been amended. GAO were later to commend arrangement used by the UK under which British project managers appointed Russian specialists to manage affairs to the optimum advantage of both parties. Their report stated that the British had received considerably more value for money for their expenditure than had the Americans.

Nunn, unsurprisingly, concluded with the point that a first priority for the now-partner nations must be the safe disposal of WMD, that the first tool in this was *Nunn-Lugar,* and the most important battlefield Capitol Hill. "For some reason it has come under attack as if it were a foreign aid program." Some, mistakenly, regarded it as an opportunity to leverage pressure on the Russians with threats to withdraw if policies did not accord with those of the US, a logic he equated with that of the Marx brothers. Nunn with his close contacts in the FSU would have been aware of the resentment aspects of the programme were occasioning with danger of consequential damage on the ground. He emphasised the advantage to the US of the mutuality of controls to limit the exports of fissile material and technical expertise.

Nunn's opening had been recognition of difficulties faced in carrying the programme forward and announcement of the creation of a group in Washington to bring focus to CTR and to develop better understanding among people and Congress of the importance of countering proliferation[29]. He summarised the core of his review thus: "We need help on Capitol Hill from people who understand this program; from interested citizens who understand this is one of the best defense expenditures we can possibly make."

The Established Programme 1995-2002

[28] Campbell Kurt M, Carter Ashton B, Miller Steven E and Zraket Charles A *Soviet Nuclear Fission: Control of the Nuclear Arsenal in a Disintegrating Soviet Union* (Cambridge MA Harvard University 1991) p121

[29] Nuclear Threat Initiative with Nunn and Ted Turner as Joint Chairmen was established in 2001

The second five years of the programme were marked by a reduction in legislative activity beyond the annual arguments around appropriations and following the fashioning of the necessary legislative and legal requirements and work-experience a major increase in operations on the ground. Following 9/11, there was questioning within the bureaucracy as to the continued relevance of the central tenet of CTR but this was not to penetrate the public domain until 2001.

Carter's departure from the Pentagon coincided with the approach of the 1996 Presidential campaign, and growth in Russian criticism. Additional to that noted above this arose from the growth in projects and fear in some quarters that US operations were a means to disarm and to erode Russia's industrial base. The evidence from Nunn at this time can be interpreted as the program surviving, but not in the strongest of health. Whilst the President and Christopher, were firmly in favour[30] they faced Congressional opposition to appropriations focussed by House Speaker Gingrich as part of a campaign to reduce federal expenditures of which aid and the State Department were principal targets[31].

Notwithstanding this chill from the first Republican House in forty years, 1996, the Clinton re-election year, saw significant advances in CTR development – the agreed introduction of multi-year strategies with project end dates[32] and the division of the single DOD funding stream and oversight responsibility to the DOD (weapon-related); DOE (material control and accounting (MPCA)); State Department (ISTC) and the Department of Commerce (export control). In more than a symbolic gesture the President re-named the programme from 'Soviet' to 'Combined' Threat Reduction.

Whilst not mentioning CTR a Congressional committee was highly critical of the work of Gore-Chernomyrdin[33]. However Amy Woolf of the CRS saw it differently[34] . She reported that during its first few years in office the Clinton Administration (possibly as represented by Perry and the Carter team) through the Commission sought to resolve bureaucratic issues that were holding up the [CTR] programme and subsequently identified areas where additional resources were required. Support was exercised to successfully obtain additional resources.

Additional to the change in process represented by Gore-Chernomyrdin the dynamic around the President was changed by Perry's appointment as Secretary of Defense. Progress in the Reagan and Bush years focussed around them and their Secretaries of State, who were often at odds with their colleagues at Defense who held strongly to what might be now described as traditional views. This was not the case with the Clinton administration and in February 1994 the pace of the programme accelerated when Perry succeeded Aspin.

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[30] Christopher Warren *In the Stream of History* (Stanford University Press 1998) p266
[31] Christopher Warren *In the Stream of History*(Stanford University Press 1998) p315
[32] The Nunn Lugar Threat Reduction Program, NTI, Accessed at http://www.nti.org/search/?q=1996+CTR&page=1&sort=-publication_date&selected_facets=subjects:%22Cooperative%20Threat%20Reduction%2C%20Nuclear%22 17 April 2009 (Website since re-organised)
[33] The Speaker's Advisory Group on Russia: Report to 106th Congress Accessed via http://www,fas.org.news/russia/2000/russia/part00-intro 24 May 2016
[34] Congressional Research Service Report 31957 of April 2012 https://www.fas.org/sgp/crs/nuke/RL31957.pdf Accessed 13 August 2013

Already associated with Carter he was able to put considerable traction behind it. This factor – bureaucratic support rather than obstruction–initiated a profile of steadily increasing subventions – from the annual permissive to earmarked $400M to $475.5 in 2000 and eventually to in excess of $1M.

Mid-Point Audit

The midpoint of CTR pre-Global Partnership was marked by one of a series of annual reviews by GAO to Congress[35]. NSAID 95/165 was a substantial examination across the whole operation, published June 1995, and inviting consideration to proposed major reductions in planned expenditure. Much related to chemical weapons and Ukraine but the overall envelope incorporated elements important to this study.

DOD disagreed with a recommendation that funding should be cut in later years on the grounds that they were presently engaged in catch-up, the programs were well-established, and a reduction in funding would raise problems later. Some financial audit problems were a consequence of western-style audits being new to the Russians[36]. DOD drew attention to the costs of Operation Sapphire quoted as one of the great successes of CTR. The GAO however reported that *Sapphire* had not been funded from CTR money but from separate sources in DOD, DOE and STATE. It was also pointed out the DOE had spent its own funds in the provision of a store for fissile materials at the Kurchatov[37].

Also raised was the question of technical equipment other than computers (see below) where lengthy discussion had been required regarding the necessity and desirability of supply for projects in hand - this a reflection of the desire to provide opportunity to US commercial entities.

Other Nation's Contributions

There are few references in US literature to other nation's contemporaneous contributions. These will be covered later but it is worthy of comment here that DOD and the State Department in letters of rejoinder to GAO criticism identified assistance provided by other nations, particularly the UK and France, and noted Russian contributions to some projects - claims not otherwise identified as other than solely American.

Reference to political dimensions of programmes rarely appears in GAO reports but here it is made clear that technical success in eliminating nuclear facilities in the Ukraine had been valuable in persuading other FSU states to follow. DOD had followed an earlier recommendation to commence multi-year planning with a consequence that project approvals had doubled and expenditure tripled over the past 11 months. This may be claimed as indicative of the success of discussions on the ground. Reference is made to the long list of

[35] NSAID 96/165 Reducing the Threat from the FSU An Update Accessed 4 March 2013

[36] Some years later an early and by one account the first Russian Company to publicly adopt western accounting standards was TVEL responsible for the manufacture of nuclear fuel rods.

[37] The institute is situated in an expensive smart residential area in Moscow and this expenditure might be seen as important in political terms as well as part of general drive to enhance Russian nuclear hygiene

outstanding issues – new amongst which was disagreement over the technology to be employed for some processes. It had been agreed that an untried system proposed by the Russians be adopted subject to American assessment and testing – possibly identification of a political and technical gain following the Clinton decision to rename the programme 'Combined' and certainly indicative of genuine co-operation. Of comfort to critics was reference to the introduction of activity audits in the FSU and of some progress in quality in this respect. Corruption was an identified problem and fraud cases relating to CTR were to be brought in subsequent years.

Two GAO references are particularly pertinent. One a proposal that consideration should be given to incorporating the work devoted to civilian nuclear interest into CTR, the often unrecognised closeness of the activities being emphasised in this study – and earlier reference being made of State Department/IAEA interest . Amongst difficulties mentioned are CTR project managers gaining access to NPP and their activities.[38]. The second related to the levels of US technology which could be safely released to the Russians to assist their programmes, for example computing[39].

An appendix related to work in connection with the ISTC referred to the US share of the required funds, but there is no reference to the degree of State Department involvement in its management.

Appropriations via the CTR budget head which had been held at $400M pa for the first four years of the programme was reduced following the report, dropping to $300M in 1996, $365M in 1997, and $382M in 1998. Whilst the reduction was attributed by advocacy groups to Republican hostility to foreign aid, and to Russia in particular, its roots are clearly determined in this report.

DOD contested the cut back, stating in its rejoinder that:

> GAO does not accurately portray how CTR is helping to keep up the pace of Russian warhead dismantling. The Russians have asked the U.S. for specific items of assistance to alleviate bottlenecks in the dismantlement process. The U.S. is providing assistance with long-term, secure and centralized storage for the fissile material from dismantled warheads, one of the bottlenecks identified by Russia. The U.S., Britain and France are all providing "supercontainers" for transport and temporary secure storage of nuclear weapons connected to dismantlement, the lack of which has caused yet another bottleneck. Recently, Russian

[38] GAO NSIAD-95-165, Jun 9, 1995 p23 Accessed 4 March 2013

[39] Whilst no direct reference was made, discussions had been taking place in the National Laboratories concerning one of the legal–technical issues not commonly raised in the literature - the maximum computing speed that might, in the light of high Russian skill-levels, be provided in supplied equipment to ensure there was no possibility of their being able to leapfrog the US.

> officials informed DOD that this bottleneck slowed the warhead dismantlement rate in 1994 and early 1995.

Of the civilian interests a report published the preceding month had detailed work and expenditure not found in previous CTR commentaries.

> GAO found that: (1) the former Soviet Union has at least 221 nuclear facilities operating, 99 of which are located in Russia; (2) as many as 20,000 organizations throughout the former Soviet Union are using various types of radiation for medicine, industry, and research; (3) aging facilities and equipment, inadequate technology, a lack of commitment to safety, the absence of independent nuclear regulatory bodies, and a lack of funding are contributing to unsafe conditions in the former Soviet Union; (4) efforts are under way to study the radiological effects of operating nuclear facilities and nuclear-powered submarines; and (6) the United States has committed $55 million to support programs focusing on the environmental and health effects caused by the production of nuclear weapons in the former Soviet Union.[40]

Both the State Department and DOD rejoinders to the report spoke of the programme's positive political effect. The STATE letter in particular drew attention to the importance of political motivation in the provision of Russian funds whilst acknowledging Russian exertions.

> In Russia, the catalytic effects have been similar. Nunn-Lugar has been significant in convincing the Russians that they should proceed with their ambitious dismantlement schedules for both missiles and warheads with full knowledge that shipments of American aid were forthcoming to supplement their efforts. . . Based on this understanding, the Russians have already dismantled thousands of nuclear warheads and hundreds of missiles in keeping with their plans to meet the goals established by the START treaties and Presidential Nuclear Initiatives.

And DOD similarly:

> . . . the following tangible reductions in the threat to the US have been made since the Soviet Union's disintegration: Missiles

[40] GAO RCED 96-4 of 7 November 1994 Accessed 13 January 2016

> containing 2,825 nuclear warheads have been deactivated in the former Soviet Union (CTR provided direct assistance for deactivation of many of the missiles and transportation of many of these warheads).

Of significance to this study is the reference to environmental studies an area where critics were to allege the US ran behind Europe.

2000-2002

As the end of the 1990's approached a cluster of signs indicated activity might be reaching a pivot point. The tenth anniversary of PL102-228 was within the planning horizon, Vladimir Putin succeeded Yeltsin on 31 December 1999, and Clinton's term would expire 20 January 2001. Major changes in structure, direction and activity levels were induced by the events of 11 September 2001 - taken forward in the next chapter. 6 March 2000 GAO published a report on DOE progress on making safe Russian fissile storage 1993-1999.[41] 113 of 332 identified buildings had been made secure and work continued on a further 72. The schedule was to be completed in 2006 when (consequent upon the success of the dismantling activity) protected material was expected to increase from the then current 50 to an estimated 400 metric tons. Slow progress exercised concern and a follow up review was undertaken in 2001.

The same day, in response to a request from Congress for an overall review of CTR and for guidance as to the future, GAO published a broad ranging report[42]. It listed authorisations at $4.7B under the programme as specifically approved, although total costs taking into account factors such as assistance at NPP, and costs met by other agencies, the actual total was possibly twice this amount. As befits an audit report the first comments were of an accounting nature pointing out that in the settling but still acute financial turmoil in Russia, there was a distinct possibility of it being unable to meet its obligations under the arms reduction treaties or agreed share of costs on joint de-commissioning programmes. It noted Russian reluctance to grant unqualified permission for American admission to sensitive sites. (A Russian comment was that whilst CTR was designated a joint programme the Americans wanted transparency for everyone except themselves.) The attitude was entrenched in the justified Russian belief that western "expert" teams sometimes incorporated unattributed intelligence officers[43].

GAO subsequently acknowledged that although it was difficult to adumbrate the political and safety advantages of CTR the auditors were "relatively confident" that 'DOD played a tangible role in helping at

[41] NSAID/RCED/-00-82 Accessed 13 January 2016
[42] NSAID/RECED/00-119 Accessed 13 January 2016
[43] The Russians did not have to search far. Footnote 19 above refers to a specific report. GAO lists a range of matters involving the intelligence agencies in its reports. It would seem strange that the Russians did not seek to acquire unclassified GAO reports

least two FSU states meet their arms control obligations' and that a resolution of the security issues would assist in the long term financial planning of the programme.

The DOD had been required to satisfy Congress of its satisfactory safeguarding of expenditure to its intended purposes. GAO was able to report that it was satisfied to 95% that such processes were operative. This may be seen of significance given the FSU background of bad record keeping, absence of modern western accounting systems, corruption, and the need as the programme developed to reach accommodation with a range of taxation and legal problems. GAO noted that 5% of expenditure took place where there was no US access and made recommendations for improvement.

This report is a strong endorsement of the success of the DOD teams in meeting the administrative underpinning of the programme.[44] It would have made less comforting for DOD and GAO alike to have read in the *Moscow Times* on 20 February 2008 that Yevgeniy Adamov, Head of Minatom from 1998 to 2001, with two accomplices had been found guilty of embezzling $30M from 'a US-Russian Uranium Joint Venture' in 1998 and 1999. The US was later to lay charges alleging the embezzlement of $9M 'from a programme for improving Russian Nuclear Safety'.[45]

Whilst these high level reviews were taking place, at the operational level discussion continued over a range of business uncompleted since the 1993 review with regard to the levying of Russian taxes on US funded expenditure[46]; the previously noted falling behind by DOE in work to protect fissile material, and the continuing absence of its long-term plan;[47] ongoing concern about the operations of Soviet designed NPP[48]; and late delivery of HEU under the UPA. This report, incorporating reference to civilian nuclear safety and the UPA, emphasises this study's claim that the reality of CTR was much wider than the focus of many politicians and advocacy organisations.

Continuing issues with longer-standing projects had not prevented the start of new. One such was the NCI of 1998[49] reviewed under GAO 1-429 in May 2001. Initiated as part of the portfolio to find alternative employment for weapons scientists this was to grow into a major component of the programme with the closure of two NPP, the essential function of which had been to manufacture plutonium, the electricity acting as a bi-product to maintain the nuclear cities' habitable environment. In due course, somewhat counter-intuitively, these NPP were to be replaced by coal burning generators.[50]

This 'end of term' review is appropriate as the interest of Congress in CTR , measured by critical review and reflected in GAO reports, appeared to decline in the later 1990's. If this interpretation is accurate the reasons

[44] GAO 01-694 of June 2001 Accessed 13 January 2016
[45] *Moscow Times* 20 Feb 2008 . In subsequent developments a 5 year sentence was reduced to 3.5 and then probation (reports from Associated Press and AFP). The background was perhaps political as much as corrupt.
[46] For example see GAO NSIAD-00-154R of April 2000 Accessed 13 January 2016
[47] GAO 01-726T of May 2001 Accessed 13 January 2016
[48] GAO RCED 00-97 of April 2000 Accessed 13 January 2016
[49] The UK also started a programme with a similar title. This note is to ensure reference to that is carried over to the following chapter
[50] As with Fn 11. The UK also ran its Closed Nuclear Cities Partnership programme.

could include *ennui*, the outturn of the November 2000 election delivering an incoming Republican President, and recognition that House Republican effort had effectively failed with Clinton leaving office with the highest approval rating of any president since WWII. Contemporaneously preparations for the possible launch of a long-term international programme, with CTR central to providing American leadership, was likely to reduce the pressure of enquiry with regard to its political value.

Clinton may be remembered for the strongest American economic boom to date. This should not overshadow his achievement with CTR-plus. He selected an operational team unchallengeable at the time for its knowledge and commitment, saw its survival to 'establishment' and, from 1997, was able to steadily build the financial commitment from a nadir of £300M in 1996 to $475.5 in 2000 (Congress CTR appropriation figures only). The Gore-Chernomyrdin Commission allowed for much closer examination of matters of current concern, including nuclear safety, with an authority surpassing that of the then Secretaries of State, while Clinton maintained connection with the Russian leadership meeting Yeltsin no fewer than eighteen times and becoming the first US president to address the Duma.

PL102-228 was the bellwether of CTR-plus. CTR's practical manifestation was through the 'Umbrella Agreement' without which its and some other projects could not have been undertaken. Its validity had been for 7 years the optimistic original assessment as to how long CTR would take to complete its aims (based on an estimate to provide sufficient safe and secure fissile material storage at Mayak). The circumstances approaching its tenth anniversary were very different. Russia's share of CTR project costs had increased from 51% in 1994 to 73% ($866.5M[51]). The political and technical desires to co-operate were undimmed despite the constraints of the 1998 Russian economic disaster.

Conclusions

It is appropriate to review the first ten years of the operation of CTR as comprising two phases around the mid-point. Significant in the first was the energies of Secretary Baker supported by President Bush in using *Nunn-Lugar* as a vehicle for addressing Soviet difficulties under cover from possible Congressional opposition. Initiatives absent the need for arrangements to protect legal, liability, and taxation positions commenced immediately - such as protection for weapons in transit and fissile material; discussions of the possibility of what was to become the ISTC, and under a Nelsonian eye the feeding of scientists in closed communities. Negotiations concerning the umbrella agreement, essential prior to beginning work at defence installations commenced. Administrators redrafted hurriedly achieved legislation to secure it. Legally not part of CTR, although conceptually at its centre, fruitful discussions were joined towards achieving the UPA. On taking office in 1993 the Clinton Administration appointed many of those pushing for *Nunn-Lugar* to the Executive. Their work secured CTR as an institution.

[51] National Research Council *Strengthening US-Russian Co-operation on Nuclear Nonproliferation* (Washington National Academies Press 2005) Appendix C Co-operative Threat Reduction Negotiations: Lessons Learned, Susan Koch p42. Electronic Version Accessed 15 January 2016

The programme could be seen as ‘established’ in the second period. Planning was long term, Gore-Chernomyrdin helped maintained it in good health in the US and Russia as did the Clintonian name change from ‘Soviet’ to ‘Combined’. It had sufficient mass to resist Republican campaigns to unseat it. The professionalism of the GAO was met by that of the State Department, DOD, and DOE. CTR began to take a more central role in policy. Work relating to civilian nuclear safety, where the US had been active since 1988, became related to it as was recognition of the work undertaken by other nations. Its contribution as a mature operation came increasingly under review as international circumstances changed. Consequences of achievement 1991-2001 became evident during and long after it, and will be reviewed in Chapter Eight.

CHAPTER 5

GLOBAL PARTNERSHIP 2002 -2012

1975	**First G7 convened**
1992	**Munich G7 FSU NPP Safety Plan - First International Role for EBRD**
2002	**Kananaskis G8 Global Partnership**
2004	**Six non-G8 countries join the Partnership**

Introduction

Chapter Four outlined some characteristics and the development of CTR 1991-2002 when it became the lead partner and 50% of the Global Partnership. This chapter examines the establishment, compass, and operations of the Partnership 2002-2012.

The Organization of G7/G8 Summits

G7 forums for the heads of government of major industrial nations relied on informality and fluidity to achieve their aims. Whilst the format evolved it was characterized by no secretariat, fixed format, rules of procedure, or records of decisions. Side meetings of heads sharing particular concerns were common. Intimacy was maintained with 9 or 10 leaders seated round the table; each with a *Sherpa*, seated behind. The language was English.

Early topics were economic but by 2002 many were political. The Sherpa network became powerful, and the initiative of the then (exceptional) French Sherpa, Jacques Attali, was to lead to the creation of EBRD in 1991.

Soviet Issues 1985-2001

A frequency analysis of topics discussed at the G7 between 1985 (the year of the Reagan-Gorbachev Geneva Summit) and 1991; and from 1991-2001 discloses:

Topic	1985-91 (7 Summits) References	1992-2001 (10 Summits) References
Chernobyl	1	6
Nuclear Safety	1	7
Arms Reductions	4	7
Non Proliferation	2	8
Terrorism	5	2
SU/RF Economy Political/Structural position Relations with the West Technical and financial Aid	5	3

Table 1 G7 Discussions

The table reflects primary references. At some meetings there were subsidiary references to primary headings. In 1991 the records reveal deliberation of 5 distinct non-proliferation topics including the NNPT, IAEA Safeguards, and the NSG; whereas in 1990 there was only one, entitled NBC Proliferation. Given the fluidity of Summit arrangements and the annually changing secretariats (supplied by the host country) it is important to note with regard to these headings:

there is not commonality in terminology – an item covered under 'WMD' one year might be carried forward under 'Non Proliferation' the following;

documentation is varied so that whilst some information, not necessarily complete, is released in official communiqués, variations occur in statements (summit and national), and at press conferences;

some documents are edited for public release and other translated 'unofficially' by national sources;

while conversations and agreements are often not published in the official record on occasion they can be retrieved from national records.

The retrieval of information has been complicated since 2000 by the introduction of an email network between the leaders, and as formality has developed, the passing of documents from the Summits or subsidiary groups or meeting to other bodies and subsequent publication, although they were not originally available as Summit papers.

Kananaskis 2002

Consideration of the background to the decision to launch the GP is important. Table 1 illustrates the G7 leaders were accustomed to discussing issues relating to the SU/FSU. Putin and G H Bush had become close following 9/11 with Putin immediately offering help to the US. Relieved at the departure of Yeltsin, American and Russian senior officials had become closer. Putin was regarded as reliable.

The informal format had been lost at the 2001 (Genoa) meeting, with Japan and the US sending delegations totalling 900. For Kananaskis Prime Minister Chretien insisted on the original formulation of Master and Sherpa only in the meeting room making for intimacy, confidential discussion, and the opportunity to make unscripted side deals. The total official entourage of approximately 2,500 was reduced to about 400[1].

The host sets the Agenda. Prime Minister Blair had pushed for the relief of African debt to be the major item, whilst following 9/11, anti-terrorism measures were important to the US.

The informal milieu and private deals may have contributed to a possible ambushing by Bush of Blair despite his quick-wittedness and aim to bridge the US and Russia[2]. He had anticipated the principal agendum being his nomination of African debt reduction, and appeared surprised by the GP proposal[3]. Two 'private' deals were then made out of plenary session, which were essential were the GP to be born - Bush and Blair to agree funding for the GP *and* African Debt Relief (an issue towards which the Congress was not sympathetic but perhaps open to a deal) and Bush and Putin on the terms of the GP, in particular the removal of hindrances relating to access, liability, taxation, and insurance where CTR problems remained despite the renewing of the umbrella agreement[4].

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[1] *'A Guide to Who's Who'* Chwialkowska L *The National Post June 24 2002* https://www.globalpolicy.org/global-taxes/42810.html Accessed 3 June 2016

[2] Hill C *Putting the World to Rights: Tony Blair's Foreign Policy Mission p385-386* in Seldon A and Kavanagh D Ed *The Blair Effect 2001-5* (Cambridge CUP 2005)

[3] That the primary subject would be NPAD (New Partnership for African Development) had been heavily publicised. Chretien had visited Addis Ababa it to speak of it to the UN Economic Commission for Africa on April 11 and Blair had visited four African countries in February 2002 speaking of "Africa's best chance in a generation to make progress" Each G8 leader had nominated an African leader to attend. Details may be found at www.globalpolicy.org/global-taxes/42813-nepad-the-plan-in-fashion.html of June 25 2002Accessed 3 June 2013

[4] NPAD described as a priority for UK Presidency of G8.Total potential of $55B write-off under UN programme including components by World Bank and IMF. IMF description under 'Fact Sheet: Heavily Indebted Poor Countries Initiative' at https://www.imf.org/external/np/exr/facts/hipc.htm Accessed 23 June 2016 Basic Report in The Guardian of 11 June 2005 http://www.theguardian.com/politics/2005/jun/11/uk.g8 Accessed 23 June 2016

For Bush, within the context of high public concern of terrorism, had 'been seen to do something' and to relieve some Congressional opposition to maintaining CTR whilst widening its focus[5]. For Putin, the deal cemented relationships (he was now a 'partner' and not a supplicant) and guaranteed funds when Russia was still struggling economically and when there was no guarantee the recent recovery of world oil prices, on which Russia was dependent and which would sustain him in office over the next ten years, would continue. Blair got his debt relief plan which was over the succeeding years to prove another outstanding success for the G8.
The GP agreement was to prove significant in political and G8 organisational terms. The CTR priority of the FSU nuclear legacy remained central but was now joined by a commitment to 'prevent terrorists or those that harbour them from acquiring or developing nuclear chemical radiological and biological weapons; missiles; and related materials, equipment and technology.'
The post-conference communique read:

> The attacks of September 11 demonstrated that terrorists are prepared to use any means to cause terror and inflict appalling casualties on innocent people. We commit ourselves to prevent terrorists, or those that harbour them, from acquiring or developing nuclear, chemical, radiological and biological weapons; missiles; and related materials, equipment and technology. We call on all countries to join us in adopting the set of non-proliferation principles we have announced today.
>
> In a major initiative to implement those principles, we have also decided today to launch a new G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction. Under this initiative, we will support specific cooperation projects, initially in Russia, to address non-proliferation, disarmament, counter-terrorism and nuclear safety issues. Among our priority concerns are the destruction of chemical weapons, the dismantlement of decommissioned nuclear submarines, the disposition of fissile materials and the employment of former weapons scientists. We will commit to raise up to $20 billion to support such projects over the next ten years. A range of financing options, including the option of bilateral debt for program exchanges, will be available to countries that contribute to this Global Partnership. We have adopted a set of guidelines that will form the basis for the negotiation of specific agreements for new projects that will apply with immediate effect, to ensure effective and efficient project development, coordination and implementation. We will review over the next year the applicability of the guidelines to existing projects.
>
> Recognizing that this Global Partnership will enhance international security and safety, we invite other countries that are prepared to adopt its common principles and guidelines to enter into discussions with us on participating in and contributing to this initiative. We will review progress on this Global Partnership at our next Summit in 2003.

The formal Charter read:

[5] Bush was not immediately successful. The Republican Chairman of the House Armed Services Committee (Duncan Hunter) attempted to wreck the CTR provision in the following Appropriations process on the grounds of money inefficiently spent in Russia. Washington Post November 11 2003 http://www.greencrossinternational.net/Communication/DigitalForum/digiforum/articles Accessed 9 June 2004

The G8 calls on all countries to join them in commitment to the following six principles to prevent terrorists or those that harbour them from acquiring or developing nuclear, chemical, radiological and biological weapons; missiles; and related materials, equipment and technology.

1. Promote the adoption, universalization, full implementation and, where necessary, strengthening of multilateral treaties and other international instruments whose aim is to prevent the proliferation or illicit acquisition of such items; strengthen the institutions designed to implement these instruments.

2. Develop and maintain appropriate effective measures to account for and secure such items in production, use, storage and domestic and international transport; provide assistance to states lacking sufficient resources to account for and secure these items.

3. Develop and maintain appropriate effective physical protection measures applied to facilities which house such items, including defence in depth; provide assistance to states lacking sufficient resources to protect their facilities.

4. Develop and maintain effective border controls, law enforcement efforts and international cooperation to detect, deter and interdict in cases of illicit trafficking in such items, for example through installation of detection systems, training of customs and law enforcement personnel and cooperation in tracking these items; provide assistance to states lacking sufficient expertise or resources to strengthen their capacity to detect, deter and interdict in cases of illicit trafficking in these items.

5. Develop, review and maintain effective national export and transhipment controls over items on multilateral export control lists, as well as items that are not identified on such lists but which may nevertheless contribute to the development, production or use of nuclear, chemical and biological weapons and missiles, with particular consideration of end-user, catch-all and brokering aspects; provide assistance to states lacking the legal and regulatory infrastructure, implementation experience and/or resources to develop their export and transhipment control systems in this regard.

6 Adopt and strengthen efforts to manage and dispose of stocks of fissile materials designated as no longer required for defence purposes, eliminate all chemical weapons, and minimize holdings of dangerous biological pathogens and toxins, based on the recognition that the threat of terrorist acquisition is reduced as the overall quantity of such items is reduced.

The Charter and communiqué may be valuably compared with *Nunn-Lugar*. Of first importance in marking the position of Russia, and that between it and the US, is the adoption of four priorities put forward by Putin - chemical weapons destruction , dismantlement of nuclear submarines, disposition of fissile materials (MPCA) and employment of former weapons scientists. For the Partnership three of these priorities (excluding MPCA) could be picked up by non-US states without technical difficulty or intrusion into areas offering difficulty in US/Russian terms.

Emphasis on the importance of multilateral treaties and other international instruments is reflective of the G7's and (including Russia) four of the P5's operational considerations in international security and widens the formal terms of *Nunn-Lugar* to include the IAEA, the NSG, (and the future 1540 Committee). The IAEA inclusion is important in supporting the assertion that military and civilian nuclear safety is one and whilst there was no formal reference to civilian nuclear matters in early CTR, America had been involved initially via IAEA and later directly. Looking forward this provision was to be invoked in establishing future treaties to limit proliferation.

The drafters of the charter in paragraphs 2 and 3 would likely have had in mind recent experiences of terrorist activities. Following 9/11 and the changed perception of Russia since 1991, paragraphs 4, 5, and 6 cover areas that would not have appeared were the focus solely State-centric activities. The wider definition of weapons placed a greater emphasis on chemical and the appearance of radiological and biological.

A continuing legacy of the six principles has been a cat's cradle of institutions and networks covering every aspect of nuclear security and safety. In its totality, not visible in the public domain: in its existence, a world-wide protection against nuclear disaster.

The financial commitment was encapsulated as '*Ten plus Ten over Ten*'. The pledges were 'up to' the amounts declared; an important qualification often missed by observers. The pledges made by some leaders required formal approval by their legislatures. In every case this was given.

US	US$ 10B
Germany	€1.5B
UK	US$750M
France	€750M
Japan	US$ 200M
Italy	€1 B
Canada	Can$1B
EU	€1 B
RF	US$2 B

Table 2 Confirmed Global Partnership Pledges in 2003

Organisation of the GP

The summit addressed organisational issues and set out operational requirements for *new or expanded*: projects, thus providing 'grandfather rights' for the projects then underway.

i. Mutually agreed effective monitoring, auditing and transparency measures and procedures will be required in order to ensure that cooperative activities meet agreed objectives (including irreversibility as necessary), to confirm work performance, to account for the funds expended and to provide for adequate access for donor representatives to work sites;

ii. The projects will be implemented in an environmentally sound manner and will maintain the highest appropriate level of safety.

iii. Clearly defined milestones will be developed for each project, including the option of suspending or terminating a project if the milestones are not met;

iv. The material, equipment, technology, services and expertise provided will be solely for peaceful purposes and, unless otherwise agreed, will be used only for the purposes of implementing the projects and will not be transferred. Adequate measures of physical protection will also be applied to prevent theft or sabotage;

v. All governments will take necessary steps to ensure that the support provided will be considered free technical assistance and will be exempt from taxes, duties, levies and other charges;

vi. Procurement of goods and services will be conducted in accordance with open international practices to the extent possible, consistent with national security requirements;

vii. All governments will take necessary steps to ensure that adequate liability protections from claims related to the cooperation will be provided for donor countries and their personnel and contractors;

viii. Appropriate privileges and immunities will be provided for government donor representatives working on cooperation projects;

ix. Measures will be put in place to ensure effective protection of sensitive information and intellectual property.

American influence in the drafting is demonstrated in sensitivity to issues that had arisen during CTR with acknowledgement to the need for a softening of some attitudes - the requirements of an international agreement being easier to defend in Congress than domestic proposals - and incorporation of susceptibilities absent from earlier CTR such as the emphasis on the environment.

The GAO, as previously reported, was not wholly supportive of the precept that priority should be given to American enterprise, and restriction is eased for all partners in paragraph iv. Liability issues are reflected in several clauses. The Europeans considered the American

stand on absolute indemnity unreasonable. As will be seen EBRD was to negotiate a compromise on tasks undertaken under the NDEP, and the US was to go on to adopt this agreement on the expiry of its then umbrella agreement. A position with regard to IPR, a consideration completely absent in 1991 but of growing importance as the decade had progressed, was included.

The statement promulgated monitoring mechanisms. There would be an annual review at G8, identification of project gaps and overlaps, and co-ordination of bilateral and multilateral operations. All funds disbursed following Kananaskis were to be reported for accounting purposes – in the eventuality some states were to backdate pre-GP contributions.

Russia would continue as the focus and responsibility was placed upon it to 'maintain primary responsibility for implementing its obligations and requirements within the Partnership', signal of its new maturity of partnership. Other countries, including those from the FSU, on adopting the rules could seek negotiations leading to membership i.e. as recipients.

The concluding provisions were an invitation to other countries to contribute to the programme and establishment of a new G8 Nuclear and Security Group prior to the next Summit in June 2003.

The hurried conversations at Kananaskis almost certainly failed to anticipate that the GP agreement would change the anatomy of the G8 through the necessity of a permanent scientific and bureaucratic sub-structure. The Summits themselves changed as political and economic discussions, previously separate, were now of necessity joined in monitoring the GP, and for succeeding major projects. The magnitude and technical complexity of the GP required standing subsidiary bodies with formally agreed terms of reference of which the "Seniors Group" responsible for management of the GP between summits and its supporting Technical Advisory Group were the first. There was a surrender of G8 authority when its first formal requirement to monitor progress, achieved through national reports ('Annex A') was referred for review not only to the GP principals but also externally – the NDEP. A subsidiary organisation – the Nuclear Safety and Security Group – was established with responsibility to report on work underway or completed in fulfilment of pledges made. The organisation had grown from nominally Sherpas alone via Sous-Sherpas and meetings of Finance and Foreign Ministers to one formally involving hundreds of staff, and changed perceptions of the G8 from a self-selecting elite avoiding the chains of international bureaucracy into a pinnacle of such. This was reflected in snapshots of successive UK meetings at Birmingham (1998) when the leaders enjoyed a pub lunch, and

Gleneagles (2005) when the meeting venue was surrounded with barbed wire and security devices, protected from a large crowd of demonstrators by some 10,000 police who made 385 arrests[6].

The Seniors' Group terms charged it with implementation and translation of the guidelines into action, initiation and development of projects, obtaining financial contributions enabling the declarations of commitment, and outreach activities to draw in countries not initially involved. The reality was complex. A portfolio of interlocking arrangements was required to accommodate the accession of non-G8 countries, and the harmonisation of existing national and multi-national activities. These arrangements were steadily augmented as the momentum and standing of the GP matured. Members sought to close gaps in the openings available to rogue states and terrorists, for example, the International Convention on the Suppression of Acts of Nuclear Terrorism (proposed by Russia) and The Global Initiative to Combat Nuclear Terrorism (Russia and US); and the 1540 Committee – the body monitoring the outturn to UNSCR 1540 on non-proliferation.

If Kananaskis was the moment when the administration of G7/8 burgeoned it might have peaked by the GP's end in 2012. The G8 Research Unit of the University of Toronto identified 15 organisational events 2012-2013 at which the hosts issued an accountability report of 175 pages (which did not mention the GP) and a 24 page closing communiqué in which the only nuclear reference was to Fukushima Daiichi.

Whilst many GP projects would not continue following the Russian decision to withdraw from the GP in 2012 - if not from some projects and agreements - a new nuclear oversight, the Nuclear Security Summit, had been inaugurated by the US in 2010 with the aim of securing nuclear material against terrorism. Its terms carried no reference to specific issues affecting the nuclear or former nuclear states. Reflecting the nuclear renaissance the initial participants were 47 nations with, reflecting linkages of the GP, IAEA, UN, and EU.

The G8 did not relinquish all authority to this body however. 'In December, the US, in conjunction with the IEA, convened the first-ever discussion of G-8 Sherpas and the Governing Board of the IEA to discuss the issues identified by Leaders at the 2012 G8. In key areas, including work on the infrastructure needed in response to changing dynamics in global energy production and consumption, the G-8 and IEA set clear targets for additional work under the UK leadership of the 2013 G-8.'[7]

Aspects of organisational development reflected the GP's progress. New partners were able to immediately access the American umbrella agreements and the period of preparation for non-US G8 projects were generally shorter than had been the case for the original American operations. Those countries were able to share US experience in dealing with Russian agencies not least in the necessity of requiring programmes to be approved by the Duma. Charles L Thornton, who from 1994 to 2001 worked as an onsite manager for *Nunn-Lugar* projects, claimed that the countries joining the program now received all the rights and protection provided by the CTR[8].

Circumstances also changed on the Russian side. Notwithstanding the umbrella agreements there had been continuing difficulty in obtaining agreed tax waivers, liability indemnity and site access. Putin had agreed at Kananaskis to try to resolve them and there is evidence of some success. The GP was successful in acknowledging Russia as a contributing partner (the large funds spent by Russia in meeting its START

[6] BBC News Archive at http://news.bbc.co.uk/1/hi/scotland/4666985.stm Accessed 10 Dec 2013
[7] http://www.state.gov/documents/organization/202643.pdf Accessed 14 November 2013
[8] Charles L Thornton :The G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction *The Non Proliferation Review* Fall-Winter 2002 p 135

obligations had received little attention in the US) and the wide range of commercial contacts between Europe and Russia may have eased negotiations.

Russia's resentfulness of the tight liability protection terms for the Americans in the umbrella agreement and its first renewal - a total of 14 years - was subsequently eased when at the second renewal the US adopted easier terms agreed with the European partners under NDEP. As the decade progressed the striking improvement in the Russian economy and quickly growing commercial and official contacts fed back into the GP arrangements. The new structure offered political advantage to the US. Significance was marked by success in doubling headline appropriations funding for the new programme over that of CTR alone. This was important in domestic political terms although the apparent increase in funding was less than publicists claimed, since all other G8 countries (and the Nordics) had by this time programmes which became absorbed into the GP. More widely, importance rested in the creation of a structure which encouraged offers of more funding, adherence to pledges (not always the case in some earlier offers of help to Russia) and frameworks within which non-G8 countries might contribute.

The exchange of information through the new structure enhanced project management for the Americans and the Europeans, as GAO pointed out, particularly where they were of like nature, such as submarine dismantling.

GP Operations 2002-2012

As with the review of CTR 1992-2002 this chapter will not examine detailed project activity. Snapshots will seek to capture changing moods and progress noted at the Summits, in particular 2003 (Evian) to examine whether the enthusiasm of the foundation year was maintained and whether the operation remained clearly in the hands of the political leaders; and 2010 (Muskoka) when renewal was considered.

A *post hoc* assessment of US moves at Kananaskis, reflective of an issue first raised in the Harvard paper, was provided in testimony to the Senate Foreign Relations Committee by John Bolton, Under- Secretary for Arms Control, in October 2002 that " The G7 members commitments should represent *a fairer share of the responsibilities"*[9] (Author's emphasis).

Each Summit until 2011 received a GP report prepared by the host countries with considerable variation in detail, length, terminology, and archived material. An audit trail is not easy to construct. Reflecting the necessary delay in initiating projects the first Project Annual Report (Annex 'A') did not appear until 2004.

2003 (Evian)

The energies of Kananaskis remained evident with reports embracing action plans for the GP and the Securing of Radioactive Sources, a Declaration on the Non-Proliferation of WMD, and the Seniors Group first annual report. The Action Plan on Securing Radioactive Sources was adopted as the international standard by the IAEA later that year. The first 'Information Meeting' designed to encourage potential donors, and of discussions designed to widen the initial focus from Russia to other countries was reported. These papers and the adoption of their recommendations were important in operationalizing the 2002 pledges.

[9] US Senate Committee on Foreign Relations. Testimony of John R Bolton, 107th Congress, 2nd Session, October 9 2002 p6, quoted by Thornton p136.

The Seniors' report reviewed implementation of the Kananaskis guidelines. Four objectives had been adopted. Translation of the guidelines, and their implementation as necessary, into programme agreements and action; initiation and development of the first projects; financial contributions following the Kananaskis pledges; and outreach activities towards non-G8 countries. Settlement guidelines had been reviewed at each meeting, and reviews undertaken of difficulties and obstacles to implementation with a special review of bilateral and multilateral agreements. For the first time in the GP arena a CTR leitmotif appeared, "We welcome the important progress that has been made on the issue of tax exemption on the basis of high level political decisions". The described position would continue through succeeding annual reports. The group was careful to enter a caveat that whilst agreement had been made at the political level the arrangements were yet to be tested in practice and that for projects to succeed full exemption from taxes and other charges was essential. Other CTR themes were reprised – and were also to appear regularly in the course of the partnership – including liability protection, where it was noted the requirements of donors did vary and that it had been agreed important to establish uniformity without which there would be ongoing difficulty in bilateral and multilateral projects. The US continued to experience difficulty in achieving site access. The then arrangements provided for 45 days' notice of access by or on behalf of donor projects, and it was suggested that difficulties would be eased if this was to be reduced to 30. Annual visit lists had been considered but not all partners (not identified) found this satisfactory. Discussion-lines from CTR, such as the monitoring and auditing of funds and that supplied 'material, equipment, technology, services and expertise were provided solely for peaceful purposes' continued - and additionally, the need to monitor projects in an environmentally sound manner;[10] The balanced conclusion of this section of the report was to welcome Russian efforts in the areas discussed but to point out new and sustained effort was required.

In summary whilst there had been improvements, many difficulties experienced under CTR continued and that further effort was needed to ameliorate them[11]. Project review was covered in Part 2. All partners had engaged in intensive bilateral consultations with Russia to identify fields of co-operation and projects. The Russians had prepared lists of projects that were presented to selected partners. All took into account the priorities identified by Putin at Kananaskis. Agreement to end production of weapons grade plutonium was announced (and would appear regularly until 2011) and (again representing the continuation of endeavours throughout CTR) "an acceleration of efforts to secure Russian fissile material and nuclear warheads".

Opening appearances in the report are international support for the PDMA; the employment of former weapons scientists; and a function as an "umbrella" for similarly aimed activities – here specifically the Conference of the Non-Proliferation and Disarmament Co-operation Initiative organised by the EC under EU US and Canadian Chairmanship.

The third and fourth sections covered outreach activities; meetings with potential donors, an application from Ukraine to become a partner, meetings with national administrations and lawmakers to explain the role of GP and to encourage non-proliferation activity beyond it. A simple diagnosis of GP progress at this point might be

[10] http://www.g8.fr/evian/english/navigation/2003_g8_summit/summit_documents/global_partnership_against_the_spread_of_weapons_and_materials_of_mass_destruction_-_g8_senior_officials_group_-_annual_report.html Accessed 18 November 2013

[11] In this context the World Bank rated Russia 111 of 189 countries for doing business in 2012. The index relates to commercial activity not sensitive security matters.

funding received against targets and success in sharing the load. In this respect was noted accession to partnership of five countries, Netherlands, Norway, Poland, Sweden and Switzerland of which Norway and Sweden had programmes before GP.

A strongly positive report for the GP. However a grand irony might have been noted. At Kananaskis the Canadians had moved the meeting back to that of principals in a rural hotel, and eliminated hangers-on. Now the G8 was responsible for an operation involving many hundreds of officials, dozens of meeting venues, and desks in the chancelleries of the developed world.

2004 (Sea Island)

The first indications of a shift in authority to the bureaucracies. The French had changed the original structure with a new GP Working Group responsible for the GP and other proliferation interests, and initiated discussion as to whether this should be separated from the structure formed within the Kananaskis guidelines.

> The Senior Group and the Global Partnership Working Group have reviewed the current structures for supporting implementation of the Global Partnership. As part of this review G8 and non-G8 Global Partnership participants discussed whether the GPWG should be spun off from the G8 framework, considering that its expanded membership includes a number of non-G8 countries. Global Partnership members reached consensus that the current affiliation with the G8 framework is important to continue. Benefits include the political support of the G8 countries, including their support for translating financial commitments into budgetary allocations as well as the advantages of the secretarial functions for the G8 presidency. Participating countries that are not G8 members will continue to attend meetings of the GPWG. Meetings in the G8 format will also continue, including for consideration of G8 decisions.

Growth in membership continued, albeit more slowly, with the accession of Finland; $US 200M had been received to add to the founding pledges with contributions from Australia, Belgium, Czech Republic, Denmark, Ireland, and Republic of Korea; the EU was planning to increase its pledge in 2006. European influence was being felt softly but persistently. More legal agreements had been enacted between the parties and these had generally followed the softer MNEPR/EBRD format. The strictures of Kananaskis on control of expenditure had been followed with a GAO report of the American contribution and of progress across the GP by the NDEP[12]. The latter contained thirteen major points including the financial issues which will considered in Chapter Nine. Russia reported engagement in 41 projects.

[12] NDEP G8 Consolidated Report of Global Partnership Projects June 2004 Accessed via NDEP Website http://ndep.org/ 29 January 2008.

2005 (Gleneagles)

The 2005 was of different format – national secretariats perhaps finding it convenient to follow their customary styles. Growing maturity replaced the urgency of earlier reports with worthiness. The Seniors Group maintained its review of activity through the GPWG. It refreshed principles and procedures, noted progress in accordance with them and looked to the future. Projects were described: some had already been completed. Implementation techniques were important and there was deference to the success of MNEPR providing the necessary support structures to projects under the NDEP and beyond. Training was being provided for new contributing partners and could be seen in association with a growing understanding by some of the magnitude of the task. This realism was being assisted by Russia becoming open in sharing the challenges of work at certain sites – a significant change from early years. New financial contributions had been received from fourteen countries and the EU[13] and the value of donations would be likely stretched by discussions over sharing overheads and by "piggy-backing" whereby third party countries would contribute to existing operations rather than starting new ones with the difficulties that entailed.

Programme maturity was evidenced in confirmation that the Kananaskis priorities were being followed as well as second order issues not previously reported, and in the adoption of priorities not previously listed – the disposition of fissile material (a priority under CTR); employment of former weapons scientists (including work in ZATO's additional to ISTC); and the physical protection of nuclear materials and facilities (in Russia a US priority) and for Chernobyl a European one). In embracing the declared expansion aims there are references to work in Ukraine by the US; and for the first time outside the FSU in Iraq and Libya by the US and UK; and that the GPWG would continue to provide overall coordination of current and proposed projects. There remained legal and access difficulties in Russia.[14]

By Gleneagles there is little doubt that effective machinery was in place to deliver the Kananaskis aims although NTI claimed that no progress had been made in the long-lasting difficulties of US-Russian access and liability. Michelle Flournoy at CSSIS considered more could have been done in the wake of the London bombings that cut short the conference to press harder with non-proliferation initiatives, as did John Wolfsthal Deputy Director of Carnegie's non-proliferation project.[15] However such criticism might be thought unjustified given the achievements of the GP through dispersed centres of operations, partner nations and subordinate institutions, in a relatively short time.

2007 (Heiligendamn)

The 'half-way' meeting had been preceded by the first Summit held in the FSU at St Petersburg the preceding year That was significant as the platform for the announcement by Bush and Putin of the Global Initiative to Combat Nuclear Terrorism and a report from the Nuclear Safety and Security Group which brought together

[13] Canada, Czech Republic, EU, Finland, Germany, Italy, Netherlands, New Zealand, Norway, Poland, Russia, Sweden, Switzerland, UK and US

[15] These comments appeared in the Global Security Newswire for 8 July 2005 http://www.nti.org/d_newswire/issues/print.asp?story_id=A4A8C498-1890- 4652-86DO-E616843B55EA Accessed 12 July 2005

positively aspects of civilian and military nuclear issues. Analysis of business transacted at Heiligendamn covers firstly the routine and secondly a wider review of the Partnership.

The Annual Report, confirming commitment to the Kananaskis principles and priorities, unsurprisingly exhibits evidence to the use of a template. It reflected growing confidence: spending on some projects was running ahead of plan. New references indicated the totality of Northern Fleet difficulties – dismantlement, storage, waste, and the environment; and a range of Chernobyl issues; and the GP was increasingly seen as *primus inter pares* in non-proliferation endeavours - demonstrated by concern over the Iranian and Korean positions.

In summary:

the Reports' brevity against its predecessors demonstrated confidence in addressing the Kananaskis priorities;

programme maturity is shown in a shift of emphasis in submarine dismantling from cutting-up hulls to the more difficult issues of reactor storage and nuclear contamination;

the growth in multilateral projects betokened developments in international co-operation generally given the sensitivity of some issues for the Russians whose exposure to western standards of nuclear hygiene, contracting, and auditing, was growing;

NDEP was providing a robust framework for organisational and financial support of projects to the degree it was being used to benchmark in areas beyond its immediate concerns;

GP was proving a useful processing tool for longstanding projects initiated before its institution;

absence of a plea for additional funding indicated financing keeping pace with project programming;

the GP was prepared to show its teeth in relation to concerns that the NSG had been insufficiently astute in matters relating to enrichment and reprocessing;

indications were emerging of what was to become the nuclear renaissance with Russian proposals for an international depositary of fuel, and later re-processing, under IAEA supervision.

The central point to the meeting was however not the periodic report but the review commissioned for the mid-point meeting. The review document appeared slight, running to four brief sections over 4 pages. Given the achievements of the previous five years at first glance it does not look worthy. However, in contrast, Annex A in its second appearance had expanded to 48 pages.

As part of the evaluation process a two-day meeting of the GPWG had been held in February 2007 to which had been invited NGOs and scientists. The document bears a diplomatic stamp in that observations bear unquestioned similarities to the annual reports. Assertions outnumber questions, failures are not identified, and priorities not questioned. The overall impression is one of 'as-is'. This could be misleading. The diplomatic success had been hard fought: the overall management of the Partnership was fraught with national sensitivities. Some programme components in current operation had been negotiated over years and others remained in discussion. This was not the moment to upset the apple-cart and a bland and self-congratulatory reassurance could strengthen opportunities for future progress. The transfer of points emphasising success and continuity from the Annual Report to the Review might explain the former's uncharacteristic brevity on this occasion. Kananaskis is recognised as bold and novel, the priorities have lost none of their validity. The partners, exhorted to note that their co-operation and security are directly linked, are in a strong position to generate the totality of the funds pledged in 2002.

It claimed the GP to be unique and successful, most programmes were well on track, and progress was likely to speed up in the second half of the operation; an effective mechanism had been formed *without a standing bureaucracy* (author's emphasis) for unprecedented international co-operation in important and sensitive security-related areas, and had fostered truth and mutual understanding; the GP had become a model for addressing the most urgent issues of international security and stability.

Partners appreciated the contributions of the EU and 13 Nations. Russia had significantly increased its funding and this was appreciated but the magnitude of the problem was such that continuing commitment was required. The pluralistic approach had enabled states to follow national priorities or concentrate on areas where they had special expertise. There had been progress on all four priorities set at Kananaskis.

The first in a section 'Lessons Learned' was that "the G8 together with other partners have proved and demonstrated their ability to work successfully together". They had managed this "in a constructive manner and on the basis of mutual respect taking into account the mutual security interests of partners". Maintaining the patina of success it is perhaps only insiders who would immediately detect the underlying tone of the succeeding "lesson" - "Adequate information submission, site access and tax exemption *in accordance with the existing legal requirements* of donors and recipients were found to be essential for the implementation of projects" (Author's emphasis). It continues, "While there remains room for improving project implementation . . . our evaluations have shown that it is possible to overcome the many bureaucratic obstacles to progress *by sustaining good working level relationships".* (Again, author's emphasis – it will be remembered from earlier chapters that much of the early work to initiate projects and 'to keep them lubricated' was consequential on good personal relationships between like-minded professionals – scientists, engineers, and the military.) Improvements in arrangements it was suggested might be obtained through donor contributions to a single project manager and decentralized management at lower levels – a reflection of the NDEP not the then American view. The saws of having appropriate legal arrangements in place and for planning to be long- term were noted. After 15 years of CTR an impartial observer might question the continuing repetition as indicative of a lack of success – perhaps, given the preceding reference, at the official rather than the operational level. The next five priorities were seen as the continuation of the first two from Kananaskis – dismantling nuclear powered submarines and chemical weapon destruction - where additional efforts were urged before the report reverted to earlier extortions encouraging members to extend non-proliferation activities beyond the original recipient partners. The Review concluded the GP to be well-positioned with regard to the second half of its programme and that "against the background of evolving risks" the same group would evaluate the programme prior to its planned termination. The concluding sentence was buoyant "Stock can be taken from this unique co-operation of 22 partners united in a common vision to make the world safer".

Was the report more than the "Mutually agreed effective monitoring, auditing and transparency measures . . . to ensure that cooperative activities meet agreed objectives . . . to confirm work performance. . . to account for the funds expended" as agreed at Kananaskis? Had the series of annual reports not already fulfilled this function? Did it have alternative purposes such as reassurance for donors' legislatures - 'all was going well'; to demonstrate the effectiveness of a unique organisation competently handling arrangements of considerable complexity; or to provide confidence that similar models could be contemplated should future need arise? These might be foreseen as changing proliferation threats - geographically and scientifically; the nuclear

renaissance; and pandemics, where the techniques for fighting biological warfare would have relevance. The reference to a small *standing* organisation, to which no objection was raised, was an irony apparently not evident to those involved.

The GP was unique organisationally and in achievement. Its philosophy, grown from that of CTR, was developing to meet new challenges in the context of change. Accepting GHW Bush's 'Victory' claim, the victor and friends addressed the military and related issues of a defeated power with magnanimity and imagination. Against the argument that this was in self-interest and that previous victors had not faced annihilation from the armoury of the defeated must be placed the case that the actions adopted demonstrated a value beyond that necessary for self-preservation. That was evident also in the continuing commitment around Chernobyl. Co-operation between previously hostile parties had been remarkable. The programme was proving flexible and embracing a range of issues much wider than its promoters had envisaged.

An audit of national involvement at the midpoint of the GP is shown in Table 3. Significant trends include the now established relationships between American and European Activity (in acknowledgement perhaps to Under Secretary Bolton); the GP and IAEA; the co-operation of several countries on single projects; and the appearance of NGO's.

Country	**Principal projects upon which engaged**
Australia	Submarine Dismantlement *
Belgium	Chernobyl NSA
Canada	Chemical Weapons Destruction Submarine Dismantlement Green Cross IAEA Physical Protection Elimination of Plutonium Producing plants RTG Chernobyl ISTC Bio-security Initiatives
Czech Republic	Chemical Weapons Destruction IAEA
Denmark	Nuclear Safety Emergency Reaction Nuclear Waste Disposal Green Cross NDEP Chernobyl Ignalina NPP
EU	NSA

	ISTC Submarine Dismantlement Border Controls Improve Nuclear Safeguards Fissile Material (particularly Plutonium) Disposition.
Finland	Nuclear Materials Control Nuclear Waste Management NPP Safety Nuclear Emergency Preparedness NDEP Chernobyl Elimination of Weapons Grade Plutonium Zheleznogorsk NPP. Chemical Weapons Destruction Green Cross and other NGO's
France	NDEP for Strategic Master Plan for North West Russia Plutonium Disposition] AIDA MOX 1 and 3 Agreements CSF Ignalina NPP NPP Safety Dismantling "Lepse" Nuclear Transportation and Storage Ship Gremikha Nuclear Waste Incinerator at Severodvinsk RTG Chemical Weapons Destruction. Bio-security ISTC
Germany	Long Term Storage Facility for Submarine Reactor Compartments Submarine Dismantlement Chemical Weapons Destruction Upgrading Nuclear Sites, Nuclear Cities, Research Institutes and Weapon Storage Sites. IAEA NDEP

Ireland	Chernobyl Chemical Weapons Destruction
Italy	Submarine Dismantlement Chemical Weapons Destruction
Japan	Submarine Dismantlement * Storage Facility for Reactor Compartments * CSF IAEA ISTC
Netherlands	Chemical Weapons Destruction Contributor to US Elimination of Weapons Grade Plutonium Programme Green Cross Costs towards the Russian GP Meeting Submarine Dismantlement CSF Chemical Weapons Destruction Severodvinsk Public Information and Outreach Office Nuclear and Radiological Security
New Zealand	Chemical Weapons Destruction (Via UK) Zheleznogorsk NPP (via the US) Anti-Nuclear Smuggling Measures (via US)
Norway	Submarine Dismantlement AMEC RTG Nuclear Security, Safety and Protection Andreeva Bay Infrastructure Protection. NDEP Chemical Weapons Destruction ISTC
Republic of Korea	Submarine Dismantlement Zheleznogorsk ISTC
RF	Submarine dismantlement Chemical Weapons destruction
Sweden	NDEP

	Physical Protection Nuclear Emergency Protection Nuclear Waste and Fuel Disposal Export Controls Green Cross Chemical Weapons Destruction
Switzerland	Chemical Weapons Monitoring and Destruction Green Cross Part-funding part of Annual National Dialogue Forum in Moscow. 18 projects for Ukraine to Protect Against Smuggling and to Provide for Nuclear Forensics
UK	Andreeva Bay Submarine Dismantling Nerpa Ship Repair Yard AMEC EBRD CEG Nuclear Security and Physical Protection IAEA Chernobyl Closed Nuclear Cities Partnership Zheleznogorsk NPP Fast Breeder Reactor at Aktau (Kazakhstan) Chemical Weapons Destruction
US	**Projects managed by DOE** (Active projects in Belarus, Armenia, Kazakhstan, Uzbekistan , Moldova, Georgia, and Kyrgyzstan) Accelerated Material Disposition of Uranium and Plutonium Zheleznogorsk NPP Fissile Materials disposition and the manufacturing of MOX from HEU. MPCA International Radiological Threat Reduction NPP Safety Upgrades

	GTRI – return of sources to Russia Fast Breeder Reactor Aktau (Kazakhstan) INSP NCI **Programmes Managed by the DOD** AMEC ICP Water Measurement from Processing Plant following Waste Dismantling Road Mobile Delivery Systems and Launchers Submarine Dismantlement Removal and Destruction of Propellant from 163 SS24 missiles (This is for the Ukraine but it copies precisely the same, it reports , to a previous project done for Russia) Completion of Removal of Four Nuclear Weapons Storage Sites Enhanced Nuclear Weapons Transportation Security Bilateral Defense Consultations and Exercises. Expenses Relating to Transparency Protocols for Fissile Material storage at Mayak (Urals). Anti-Nuclear Smuggling and Border Protection Measures Chemical Weapons Destruction. **Projects Managed by the State Department and Other Agencies** Risk assessments on NPP and Safety Analysis Reports Assessments Regulatory Guidance and Strategic Plans for NPP Nuclear Safety and Security Oversight Program Chernobyl Export Control and Border Security GTR Science Centres 300 projects Chernobyl

Table 3 Projects underway or for which funds were provided at the Mid-Point of the GP

***Far East**

Footnote to table

Entries have been compacted for brevity. They relate to the ultimate destination of funds and not the recorded intermediary reported (e.g. the EBRD). Funding calls for Chernobyl and IAEA have been consolidated. The table has been constructed from country reports – there is no meta-level audit of activities.

2010 (Muskoka)

This was the G8 Summit's first return to Canada since 2002. National pride and a possible sense of ownership may have imbued special significance to consideration of the GP's lifetime operations as well as the current cycle. Consideration reflected the need to address changes in the world economic order; the operation of an open transparent and efficient organisation to support the GP and other G8 sponsored programmes; and foresight to a successor operation. It illustrated clearly the changes that GP had brought to G8 practices.

At Kananaskis Prime Minister Chretien had emphasised the collegiality and informality that had made the G7 effective. At Muskoka the growth of a tenticular bureaucracy was revealed. Canada had re-assumed the G8 Chair in January. Prime Minister Harper made his first statement with regard to Canada's aims for the G8 as early as 26 January, and by the start of the Summit at least 17 reports for consideration had been prepared. Reference has been drawn in the review of GP progress to the ways in which its interests were interacting with those of other international bodies and how it sought to maintain influence. Now, in the 26 January document, it was noted, "The G20 has emerged as the world's premier forum for fiscal and economic cooperation"[16]. The G8 had originally been timetabled for June 25-27 but in the event was cut back to 25 and 26 June, end-on with the G20 on 26 and 27 June. The organisational changes of the previous seven years and the formal links established between the G8 rotating secretariats and other major international bodies facilitated - perhaps even permitted – this fusion.

The shift of day to day authority to the Sherpas and expert standing committees with an appreciation of the need for more closely co-ordinated planning and information exchange within the G8, GP, and key multilateral organisations was demonstrated in a meeting over 3 and 4 June of Sherpas and key representatives, chaired by Canadian Minister of Foreign Affairs, Cannon. The meeting agreed with regard to the GP and other security programmes that:

a comprehensive approach to capacity building was required;

the parties should engage in demand-driven assistance respectful of recipient country needs and ownership of decision making;

there should be a focus on prevention;

partners should build absorptive capacity to plan and manage programmes; and,

political drivers should be understood by taking into account local and regional political dimensions.

A list of the means by which these principles might be progressed, and a commitment of the participants to continue to work with the Chairs of G8 Working Groups, including the GP, was included; and it was agreed that the subscribers to the document would continue to maintain contact, sharing information and experience as

[16] http://www.g8.utoronto.ca/summit/2010muskoka/harper-priorities.html Acc essed 6 July 2010

necessary through an informal network under Canadian leadership, and would decide on the adequacy of these arrangements at the end of the Canadian presidency or the following year.

A marker was the Nuclear Summit, Washington 12-13 April 2010. The Obama administration had considered that, despite the work undertaken under the GP, nuclear security had become too low an international priority and required refreshment – an echo, it might be thought of the 2002 Bush initiative. The emphasis, in keeping with the times, related to the dangers of terrorism and nuclear materials and not weapons *per se*. It was designed to refresh, energise, and expand international partnership - an area where some considered the GP's success been less than it could have been. Its significance as a potential parent for the activities carried on under the GP umbrella should that be not continued in 2012; the extension of concern beyond the FSU and the operational priorities originally addressed; politically, a need to reflect the changing balance of world order with the rise of the G20; and administratively the support of a now large bureaucratic structure were plain to see. Early indication of a transfer of organisational allegiance could be found, "Some partners are already undertaking activities to implement the Work Plan of the Nuclear Security Summit".

Hints of these shifts were evident in the annual report. 'Annex A' previously deep within published papers was translated to become a prefatory statement and the introductory paragraph noted the evolution of the Kananaskis principles to address new challenges and to deal with the worldwide fear of WMD – a process initially announced in 2008. "New members accepting the Kananaskis principles can be admitted on a case by case basis (*i.e. not having to be approved by the G8)* in the *expanded* Global Partnership" (author's emphases). It continued "With respect to nuclear security in particular, we will work to implement commitments as outlined in the Nuclear Security Summit Work Plan" – another indicator to future change.

There were reports significant in betokening the successful end of the CTR/GP. With 112 of 120 Northern Fleet submarines dismantled (and 69 of 78 in the Pacific Fleet) it was expected that this work would be completed by 2012, whilst at that point 45% of chemical weapons - the second priority - had been destroyed. The end was not noted of the ISTC programmes although this was hinted in the use of the term "interim" and of the past tense in describing their activities. (The State Department had held a protective arm around ISTC since 1992.) Inclusion here reflects the maturity of the programme and reminds of the dual confidence-building task often facing US Administrations - Capitol Hill on the one hand and friendly nations on the other.

The "new era" was significantly marked by reference to nuclear security and the protection of radioactive substances and surprisingly briefly to the signing of the revised PMDA on 13 April 2010. The latter was strictly-speaking a US/RF instrument but one of outstanding importance. GP partners had pledged funds to the operations planned to follow its ratification over several years previously. It was perhaps the long delay in bringing it about that led to caution on this occasion. The support of the community beyond the G8 members and of the planned growth in their share of activity was reflected in a continuous skein of references to them by name where project contributions had been made rather than leaving this to the columns of 'Annex A'.

A change of balance away from the US could be detected. Emphasis was placed on programmes designed to protect the environment, a major concern of the Europeans. The NDEP and its management by the EBRD with subscriptions from a number of GP members received attention. The document conveyed the reflection that the pattern of operations of the NDEP with co-ordinated fund management, opposed by the US at Kananaskis, was proving very successful.

This would have been the Summit at which a decision, in outline at least, would have been made to renew the GP had that been the G8 decision. The observations above illuminate the diffidence of the G8 in following this course.
In summary:

Russia had been bankrupt- it was no longer. Its record in making safe its nuclear legacy during the life of the GP was a good one;
intergovernmental and other effective formal and informal relationships between East and West in large measure in their infancy in 1991 had grown to maturity;
of the Kananaskis priorities set out in 2002 – one had been effectively completed and the infrastructure for the second put in place with 45% of the undertaking completed;
twenty years after the collapse of the FSU a credible programme for the re-employment of weapons scientists had been completed;
in 1991, in terms of safe military nuclear disarmament there had been little alternative to CTR; in 2002, clear identification of difficulties with an agreed need for a major initiative; in 2010, when many of the original tasks had been completed there were multifarious and effective international and institutional channels through which newly prioritised hazards could be addressed;
the currently perceived difficulties were more subtle and multi and not bilateral; and perhaps finally;
G8 power in world leadership was perceived to be weakening.
Senior officials were asked to evaluate the results of the GP to that date and to develop options for programming and financing beyond 2012 but the general mood, and failure to make a commitment to renewal, was clear to interpret.

2011-2012 (Deauville and Camp David)
Contrariwise the year following Muskoka Russia announced its withdrawal from ISTC, stating a transitional agreement had run to its natural end, whilst the 1540 committee called for the GP to be extended. In 2011 the Muskoka commissioned report which reprised many of the previously made arguments was presented. Moving with the times it emphasised the importance of security against non-State actors, and the advantages in enforcing non-proliferation that modern science could contribute. It re-iterated the successes of the Partnership – some of them the fruits of the law of unintended consequences and others, such as the UPA, never formally included. There was no doubt the Partnership operation was central to international security, that it was likely to retain organic growth with the extension of its footprint and in the demand for new projects (with an imaginative suggestion that its work could be combined with the 1540 Committee) and, in harmony with Russia, that it was timely to wind down the ISTC with its projects successfully completed.
It was an appropriate validation. The chief priorities were moving towards completion; the ISTC's had been a valuable component of the small Russian SME sector undertaking high value R and D for countries around the world, the call for funders beyond G8 had been met through governments and institutions. Issues around the PDMA and UPA, not central but the existence of which hard to envisage without CTR/GP, remained - and will be reviewed later.

If there is a formal date to note the closure of the Partnership (and many of its individual projects and practices continued beyond 2012) it is probably 18-19 May, the 2012 G8 Summit. There was the, by then, formulaic declaration on Non-Proliferation and report of the G8 Nuclear and Security Group but there was no report on the GP included in the register of papers for the Summit - although it might be thought this would have taken centre stage if only to emphasise a great international success. It had thrived rather than survived its planned ten years of existence, the foundation pledges had been exceeded, its operational boundaries extended and some twenty non-G8 institutions had joined the Partnership or contributed to its costs. The previous year's valediction was the effective end. The nuclear proliferation role of the G8, the GP, had passed to the Nuclear Security Summits whilst its many continuing projects were managed in the cat's cradle of institutions and bilateral and multilateral agreements parented by its creation.
The Global Partnership had come of age.

Conclusion

This chapter has reviewed the GP from its roots in CTR; the range of activities it sponsored in nuclear disarmament and safety and as the top-level international co-ordinating organisation on non-proliferation; and the organisational changes it brought to the G8 equipping it as a model for reacting to other world crises and contributing to a foundation for the G20. Following chapters will re-direct attention to US activities and those of European institutions and states.

CHAPTER 6

THE STATE DEPARTMENT 1990 -2012

1993	**International Science and Technology Center**
1993	**Uranium Purchase Agreement**
1994	**Operation Sapphire**
2010	**Plutonium Management and Disposition Agreement, finally?**

Introduction

The preceding two chapters reviewed high-level characteristics of CTR and GP. The State Department's contributions, rarely absent from CTR-plus activities, are frequently overlooked and this chapter will touch briefly on aspects of its involvement.

DOD and DOE operations involving the FSU are generally distinctly identified from other responsibilities. This clarity is not always present in examining State Department involvement. Expenditure cannot be taken as a metaphor for activity.

The State Department faced growing operational stress during the 1990's. Inadequately resourced it was required to shoulder a major load of new state-to-state relations with the individual FSU countries, as well as negotiating their access to CTR projects; play a leading role with Belarus Kazakhstan and Ukraine in the lead up to the Lisbon accords; liaise with friendly nations around CTR-plus contributions; and arrange humanitarian aid for many. Coterminous with the FSU crises and CTR 1991-2001 were the wars in the former Yugoslavia and an increasing role for Europe in international affairs raising the tempo of its work in more familiar territory. Post- Kananaskis the State Department fronted other on-going US preoccupations led by Afghanistan and Iraq, while the international view was of a weakening US with budget deficits increasing almost every month of the

Bush administration[1], failure to handle satisfactorily the after-effects of Hurricane Katrina (2005) and doubts about the robustness of its financial system following the 2008 crash. Meanwhile, buoyed by increasing hydrocarbon prices, the RF had regained its self-confidence, and was repairing much of the damage of the 1990's. This renewed confidence stimulated assertion in foreign affairs and encouraged resentment to flow at what was seen (not always accurately) as Western involvement in its 'near abroad' with the eastwards expansion of NATO in 1999, 2004, and 2009; and the 'flower revolutions' – the Rose in Georgia (2003); the Orange, Ukraine (2004); and the Tulip in Kyrgyzstan (2005). Most serious was the Russia-Georgia War of 2008 which led to American discussions as to whether CTR should be halted.

Actor and Agent

Responsibilities and Resources

The State Department's contribution in CTR-plus is easily understated. In some aspects it is recognised as the lead. In others its involvement as facilitator of inter-agency measures and enabler of others' responsibilities can be overlooked. This was illuminated on 12 December 1999, when Secretary Baker announced the appointment of Eagleburger "czar of our assistance programme" subsequently adding "which required overcoming much bureaucratic resistance"[2]. The successful co-ordination of CTR-plus programmes presented challenges to and beyond its formal conclusion. During, and subsequently, there have been various organisations beneath its umbrella taking responsibility for these and related activities. At the formal conclusion of the GP in Russia (2012) the Under Secretary of State for Arms Control and International Security, was responsible for interagency policy on non-proliferation, arms control, regional security and defense relations, and arms transfers and security assistance. This entailed overseeing the negotiation, implementation and verification of international agreements in arms control and international security. Other duties included directing and coordinating export control policies and policies to prevent missile, nuclear, chemical, biological, and conventional weapons proliferation.[3] Among specific bureaus of the State Department covering aspects of CTR-plus, were those of Arms Control; Verification and Compliance; Counterterrorism; International Security and Non-proliferation (which managed relationships with the ISTC); Defence Trade Controls; and Political-Military Affairs. The Department interacted closely with international institutions involved in CTR-plus matters –IAEA; NATO, which once had 26 committees considering aspects of FSU nuclear disarmament and safety; and later the 1540 Committee and World Nuclear Summits. Irrevocably linked to the State Department and CTR-plus are the START treaties. START1, 1991 effective 1994: and START2 February 2011. By the end of 5 years 10,298 notifications had been exchanged between the two parties under the latter[4].

Additional to the daily business with FSU states, CTR-plus activity in and project integration and co-ordination with them was important throughout. From 1992 with UK France and Germany in 'first aid' transport and

[1] In 2013 USD values the deficit at Bush's inauguration was approximately $58,600,000M. On his departure it was $12,200,000,000M. In June 2012, the assigned end to the GP, under his successor, the total had reached $15,815,885,000. Figures extracted from the US Bureau of Public Debt *Monthly the State of Public Debt* at www.treasurydirect.gov/govt reports/pdf/mspd.htm Accessed 5 September 2013.

[2] Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) p564

[3] Full details of the post may be found at http://www.state.gov/t/ Accessed 3 February 2016

[4] http://www.state.gov/t/avc/newstart/index.htm Accessed 3 February 2016

security of weapons and material; the UK for the removal of fissile material from Georgia; early negotiations with Germany Japan and Canada leading to the founding of the ISTC; Japan, concerning its role in submarine dismantlement in the Far East; and mid-term with the UK and Norway around AMEC. Presidential support for G7 was shared with the White House, and is clearly evident in the drafts presented at Kananaskis.

Analysis of the resources required to discharge these responsibilities is beyond the scope of this study although some insights are possible. Reports of the early 1990's in the Moscow Embassy recall acute staff shortages and the pressing into service of staff member's families[5]. In 2008 the State Department Inspector-General undertook an enquiry into staffing in Moscow following the reduction in activity ordered following the Russia-Georgia War and reported that the locally-engaged staff engaged in administrative work for CTR activities had been reduced from eight to four creating difficulties. Accounts across the whole period speak of a constant flow of CTR personnel visiting the embassy for help in the resolution of tax legal liability and Russian bureaucratic hindrances.

The impossibility of estimating accurately CTR costs will be asserted in Chapter Nine. The impossibility of estimating commitment by resource allocation for the State Department is claimed here. There were two re-organisations of budget arrangements for the State Department during the life of CTR, and appropriations were on occasion approved months into the operating year or as the consequence of contingencies. A CRS report in 2015 commented that clearer budgeting would allow the Congress to measure more accurately the effectiveness of funding spent on foreign affairs[6].

The State Department was subject to many calls on its resources 1991-2012 of which CTR-plus was only a part, and the figures produced by the White House historian (which take into account supplementary appropriations) should be regarded as being of no more than of fleeting interest. Of funding specifically allocated to CTR between 1992 and 2000 the State Department received only 5%, DOD 68% and DOE 27%[7]. Table 1 shows total expenditure 1990 – 2001. By 1991 the impact of the first Gulf War was winding down and might be disregarded. Fighting continued in the former Yugoslavia throughout the decade and for this purpose additional expenditure for the Department might be regarded as a constant.

Year	$B (2016 values)	Comment
1990	4796	*End of Gulf War*
1991	6149	Nunn-Lugar approved SU collapses 12th Budget Month
1992	5827	
1993	6385	First CTR work 'on the ground' Carter appointed to lead CTR
1994	6784	*American Free Trade*

[5] Other Departments are entitled to call on embassies for assistance. In 1995 DOE and State Department lost control of re-charging of expenditures to DOE from STATE up to the level of aircraft charter and some were 'unsubstantiated'. GAO RCED 95-58R Dec 1995 Accessed 24 June 2016

[6] Epstein S B (Washington CRS 2015 Department of State and Foreign Operations Appropriations: A Fact Sheet on Legislation, FY1995-FY2015 https://www.fas.org/sgp/crs/row/R43751.pdf Accessed 3 February 2016

[7] GAO RCD 00119 published March 2000 Accessed 8 March 2016

		Agreement
1995	6263	Carter leaves office
1996	5730	
1997	6029	
1998	5396	
1999	6554	Putin enters office
2000	6687	
201	7487	*9/11* 9th Budget Month

Table 1 State Department Expenditure 1990-2001[8]

From this table, whilst no assertion of cause and effect can be made, major increases may be noted for the year during which the SU was collapsing and the first two years of CTR, the second of which coincided with the appointment of Carter to manage the programme from within the DOD, the then controlling authority for CTR expenditure. The reduction from the peak year of 1994 until 2001 could reflect growing stability in the programme.

Year	$B (2016 values)	Comment
2001	7487	President GHW Bush enters office 9/11 9th Budget Month
2002	9327	GP 6th Budget Month.
2003	9343	
2004	10915	
2005	12748	
2006	12953	
2007	13737	
2008	17493	Russian-Georgian War
2009	21427	
2010	23802	
2010	24354	
2012	26947	Formal Completion of CTR programme (but not all constituents)
2013	25972	

Table 2 State Department Expenditure 2001-2012[9]

[8] www.whitehouse.gov/omb/budgets/Historical Table 4.1—OUTLAYS BY AGENCY: 1962–2020 Accessed 3 February 2016

[9] www.whitehouse.gov/omb/budgets/Historical Table 4.1—OUTLAYS BY AGENCY: 1962–2020 Accessed 3 February 2016

The profile of the second period is distinct. A peak of 2001 increases annually until the end of the programme. This can be cross-checked with Chapter Five concerning the number of projects continuing under the auspices of CTR across a range of agencies, growing moves by the US and Russia in non-proliferation, and work resulting from disarmament treaties. Again there is no claim of cause and effect, but all these activities called on State Department expertise and facilities, and its work-level is almost certainly reflected in these figures. However in promoting the impossibility of analysing accurately CTR expenditure it is emphasised that tranches of this funding were met through State Department appropriations, not CTR, and that they were often difficult to discern being made *post hoc* and on contingent bases.

The Uranium Purchase Agreement

This project is not formally part of CTR although regularly reported as such. Collectively no projects lasted longer. It is included here since although the State Department was not the lead it was as an example of a low-level but long-term obligation requiring departmental resources.

Discussions about the possibility of the US purchasing FSU uranium started prior to *Nunn-Lugar* and resulted in 1993 in the UPA under which initially for five years the RF would down blend HEU at the rate of 10 metric tons per year and thereafter not less than 30 metric tons, which would be processed to manufacture fuel for US NPP. It was agreed that Russia could use a proportion of the proceeds from the sale of HEU (or LEU converted from HEU) for 'the conversion of defense enterprises, enhancing the safety of nuclear power plants, polluted areas clean-up, and the construction and operation of facilities in Russia for the conversion of HEU to LEU'.[10] Commercial traction to the agreement was given by a contract in 1994 between Technabexport and the US Enrichment Corporation acting as agents for their respective governments, under which USEC was to purchase a minimum of 500 tonnes of weapons- grade HEU at a rate of up to 30 tonnes a year from 1999. A supplementary agreement was signed in 1999 under which the US agreed to buy 163,000 tonnes of natural triuranium octoxide (U3O8) [11] from Russia over the subsequent 15 years.

The 1994 start-up was slow in some respects but with time gathered speed. A WNA report August 2013,[12] quoted by the State Department, was that by June 2013 475 tons of Russian HEU had been processed – equivalent to the proceeds of 20,000 warheads – for which the US had paid $13B. This equalled approximately two years of world natural uranium demand.

Plutonium Management and Disposition Agreement

The 1993 UPA success was followed with an attempt in 1998 to negotiate a Plutonium Management and Disposition Agreement. (De-weaponising plutonium is complex when compared with uranium.) An agreement was made in 2000 (signed by Gore and Kasyanov) contingent on funding for Russia to build the necessary facilities. Process was not smooth and the State Department was to become involved in negotiations over the

[10] Russian-US HEU agreement www.fissilematerials.org/library/heu93/pdf Accessed 19 Sep 2013
[11] A form of yellowcake
[12] http://www.world-nuclear.org/info/Nuclear-Fuel Cycle /Uranium Resources/Military p1 Accessed 19 September 2013

succeeding ten years, with several GP partners contributing towards Russian costs. Meanwhile changes in the Russia industrial nuclear profile during the extended negotiations rendered the original technical plan obsolete. With major obligations on both sides this was different to other CTR projects. The plan required the withdrawal of 250 tonnes of plutonium (200 US and 50 Russian) from military purposes. The Russians were also obligated under the agreement to withdraw from military use 500 tons of HEU distinct from that covered by the UPA. It was originally envisaged it would take until 2008 to complete the project.

The UPA may be viewed as a part-commercial agreement. It was relatively simple compared with the PMDA which contained detailed specifications of how the plutonium could be converted to MOX and utilised by the two parties. Whilst there had been demonstration projects in the US in the 1960's and 70's the first (small) use of MOX fuel rods was not to take place there until 2005 (although by 2006 180 metric tons had been loaded into about thirty European reactors). The US undertook to supply up to $200M to enable the Russians to meet their obligations. The WNA subsequently reported agreement in 2000 for the work to proceed and that the State Department's estimate that the costs of setting up the Russian side of the programme would be $2.5B to be covered by the G7 nations[13]. By 2006 the estimated cost had risen to $2.7B consequent to the Russians seeking to change the ways in which the MOX would be employed[14] and the US agreed to contribute $400M towards the manufacture of Russian Plutonium into MOX for burning in *Russian* (author's emphasis) reactors[15]. Contributions were subsequently made under the GP, and a protocol, taking account of new Russian methodology and prohibiting delay on grounds of Russian finding contingency, was signed by Secretary Clinton and Foreign Minister Lavrov on 13 April 2010.

By 2015 both countries were behind their timetables. The revised programme was for conversion to be underway by 2018 although post-2012 the Russians had proceeded more quickly than the US. Work on the American plant to manufacture MOX commenced 2007 although production was not expected to start until 2019[16].

The State Department was continuously involved in these negotiations with Russia and seeking contributions for the Russian operation from GP partners)[17] and will be so after 2019, far beyond the horizons of the *Nunn-Lugar* progenitors[18]. Again reflecting the indivisibility of military and civilian nuclear, the IAEA will be involved in the necessary monitoring arrangements. The circumstances leading to the changed Russian position following

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[13] http://www.world-nuclear.org/info/Nuclear-Fuel Cycle /Uranium Resources/Military p4 Accessed 19 September 20013

[14] Congressional Record House Vol 152 pt 16 P 21223 September 29 2006 https://books.google.co.uk/books?id=iwW_dE91hF4C&pg=RA1-PA378&lpg=RA1-PA378&dq=Cost+of+Plutonium+Management+and+Disposition+Agreement&source=bl&ots=IvlciYU9pg&sig=bGStoHFAehMWMVNVH76m2E3msu0&hl=en&sa=X&ved=0ahUKEwim9- Accessed 8 February 2016

[15] http://www.world-nuclear.org/info/Nuclear-Fuel Cycle /Uranium Resources/Militaryp6 Accessed 19 September 2013

[16] A State Department Press Release with some detail may be found at http://www.state.gov/r/pa/prs/ps/2010/04/140097.htm Accessed 8 February 2016

[17] Some details are provided later. The non-G7 contributions were more political than practical with estimated costs at $3B in Russia and $5B in the US

[18] A State Department Summary may be found at http://www.state.gov/r/pa/prs/ps/2010/04/140097.htm

Accessed 4 April 2016

the original agreement are in part a reflection of the role of Russia in the nuclear renaissance referenced in Chapter Eight.

The Removal of HEU from Kazakhstan

The removal of 1278 lbs of HEU by the US from Kazakhstan in 1994 has been popularized in books and film. Popular reportage can be of these productions rather than the reality. This illustration is provided to demonstrate some factors not evident in popular accounts and to reiterate that accurate costing of CTR-plus operations, and on occasions their source of funds, can be difficult to establish.

Emphasis in this study is NW Russia. HEU fuel for NW-based 'Alfa' submarines constituted material to be removed. Whilst the operation involved DOE (particularly the National Laboratories) DOD and the Air Force, the State Department was the initial lead. It was involved in the negotiations concerning payment to Russia for the return of weapons and equipment based in Kazakhstan, and with Kazakhstan over the terms to which it would acceded to the NNPT. The operation was initiated and progressed by an inter-agency team outside the usual *Nunn-Lugar* processes.

The HEU removed was purchased ($27M) and eventually included in the UPA process. The contribution of the State Department was essential to the successful outcome of a CTR-plus process. Accounts vary as to how the contact from Kazakhstan was initiated but confirm the involvement of the US Ambassador to Kazakhstan, and that he established the storage of the material was unsafe and security almost non-existent. The magnitude of the operation and possible consequences of inaction place it in the handful of processes which defined the legacy of American initiatives.

Under the Lisbon protocol Kazakhstan was to surrender the weapons and fissile material. Initially all went well before the operation was suspended while Kazakhstan sought payment from Russia for their return. An arrangement was negotiated with American help in March 1994 after which it resumed.

The process of decision-making, negotiation with the Yeltsin Administration, making safe the material and preparing it for transport and removal to the US, extended over fifteen months, and was completed in November 1994. Following the first State Department reports discussions had taken place in the White House centred on its Office of Science Policy and Technology, outside the structure established to conduct *Nunn-Lugar*, and before agreement had been reached on whether DOD or DOE were to have lead responsibility for nuclear materials policy. Early factors in discussion were how to plan and execute the agreed course of action - whether the material should be brought to the US (DOD view) or returned to Russia (State Department view). It was resolved the planning and execution of the operation should become the responsibility of Carter (by then responsible for CTR in the DOD) whilst the necessary negotiations with Russia would be handled through Gore-Chernomyrdin. Activities in Kazakhstan were to be the responsibility of DOE, through the Oak Ridge National Laboratory. The team undertaking the operation in Kazakhstan comprised twenty-eight Oak Ridge personnel (some contractors) and four from DOD.

Reflective of the poor level of nuclear hygiene commonly applying across the FSU neither Kazakhstan nor Russia could supply the necessary containers. The US provided them and associated equipment to IAEA-standard designs. The Kazakhstan President required secrecy, and cover was provided by a legend that the work

was necessary in preparation for a forthcoming IAEA inspection. This detail is provided not solely in evidence of the need for security but for two reasons particular to *Nunn-Lugar*. Firstly, the acceptability of such an account given the then extensive work by IAEA in the FSU, much indistinguishable between civil and military. Secondly because the work was being undertaken by the US beyond the strict confines of the CTR and confidentiality would inhibit critical appraisal at home.

In 2012 details including full costing of the operation remained classified. Individual elements such as the operations in Kazakhstan, overland transport in the US, and reception and housekeeping at Oak Ridge would have been substantial. A crude calculation has been made of Air Force costs alone to provide some order of magnitude for transport costs to the US. They imply that the actual costs were far higher than those published. Operating costs as stated by GAO and USAF differ and not all are available. For consistency the figures used have been taken from one commercial source covering all types of aircraft quoted as being employed in the operation[19].

Operation as described in accounts	**Assumed for comparison purposes**	**2014 Cost**	**Adjusted 1994 Cost Deflation Rate 2014 to 1994 = 36.6%[20]**
'at least one C-130 made a reconnaissance prior to the operation.'	C130 - 24 hours at $14,014 per hour	336,336	
'Three out and return flights at the beginning of the operation and two at the end' 'Difficulty with return – at least two other C5's were used' 'Direct return flight five in-flight refuellings required over 11 hours'	11 hours flight in each direction at start and end of operation by 3 aircraft on each occasion: 66 hours at start and end of operation at $78,817 per hour	10,403,844	
'5 in-flight refuellings required over 11 hours'	5 sorties by tankers required for each Galaxy: 5 hours each sortie 75 hours at $21,170 per hour (assuming DC10 tankers)	1,587,750	

[19] http://nation.time.com/2013/04/02/costly-flight-hours/ Accessed 15 April 2016
[20] http://www.usinflationcalculator.com/ Accessed 10 March 2014

A number of deployment difficulties were experienced on the outbound flight and detailed estimation is difficult. Diversions but probably no in-flight refuelling. 50% of the return flight adopted for comparison purposes.		793,875	
Total		13,121,805	4,802,580

Table 3 USAF Operations in Support of Operation Sapphire

This illustration can do little more than ddemonstrate the inaccuracy of published accounts and the speed with which *Nunn-Lugar* funds could be exhausted, the USAF contribution alone on this operation being unlikely to be less than $5M against the $5M total cost for the operation estimated by Shields and Potter.[21].

Possibly misled by Carter's being in charge, and an incorrect assumption that all nuclear safety operations in the FSU fell within CTR, popular reports that the costs, of Operation Sapphire were met from *Nunn-Lugar* are incorrect. This simple review demonstrates the difficulties in estimating the costs of operations and source of funds. Jessica Stern, a member of the team convened to deal with the operation told Rhodes[22] that it was agreed that the totality of costs of the Kazakhstan operation (both removal and the price for the material demanded by Kazakhstan) should be met from *Nunn Lugar* funds. However GAO stated in its report this was not so.
Each element presents problems. The USAF contribution is considered above, there is not easily available a breakdown of the wage costs of Oak Ridge staff so far as they were occupied on to Kazakhstan activity or their expenses . The commercial value of the uranium would have eventually been recovered at least in part through the sale of nuclear fuel but a record has not been found. It may be assumed the State Department (and DOE) would have been expected to absorb a proportion of the expense in their operating budgets.

International Relations

[21] Shields John M and Potter William C Eds. *Dismantling the Cold War - US and NIS Perspectives on the Nunn-Lugar Co-operative Threat Reduction Program* (Cambridge Mass MIT Press 1997) p361
[22] Rhodes Richard *The Twilight of the Bombs* (New York, Alfred A Knopf Division of Random House, 2010) p151

An early conclusion of this study is that the costs of CTR-plus totalled substantially more than is publicly stated. One reason is that the role of the State Department is commonly taken for granted. This is in part the consequence of the practice of officials and commentators to review only items directly charged to official programmes. There is failure to acknowledge the ongoing daily costs of constant diplomacy (including during the Clinton era many of those relating to Gore-Chernomyrdin). Involvement with many international organisations is by or through the State Department. There follows an outline of involvement in the IAEA where US contributions as a consequence of the Chernobyl disaster and as a leader against proliferation and for nuclear safety has been paramount and where work has been associated with CTR-plus[23]. It continues with AMEC illustrating how the Administration's sensitivity to domestic pressure and diplomacy joined in initially extending the CTR budget without disturbing the Congress, and the ISTC where via Secretary Baker and the Department the first CTR operation was announced and initiated. It concludes with some incidental notes *en passage*.

IAEA

Reference has been made to work through the IAEA pushed by Reagan and facilitated by the State Department following Chernobyl, and the way in which periodically work undertaken under IAEA interacted with CTR. The IAEA Contact Experts Group was established in 1996 and after 2002 increasingly worked alongside the G8 Seniors Group. It was designed to provide co-operation between the, by 2013, thirty-plus countries and organisations involved in assisting Russia in the nuclear fuel and waste fields. It devised a number of IAEA approved standards designed to ensure minimum safety levels across the FSU. It has continued to meet two or three times each year after 2012. An analysis of its activities has illustrated the importance of environmental programmes funded and operated in Russia other than as part of the CTR.

Activities parallel to CTR have aided in harmonising FSU practices with those of the West and have made a contribution towards the integration of Russia into IAEA which commenced with Chernobyl. The US has allocated non-CTR resources since the beginning – an additional funding stream contributing to Russian nuclear safety. Financial accounting for the operations is frequently by participating countries, to the IAEA, and therefore often appears as input rather than expenditure allocated to operations - another window on the difficulties in attempting to assess the totality of spend on CTR-plus.

The Kananaskis declaration sharpened attention towards nuclear security and this was reflected in the establishment of the IAEA's Nuclear Security Fund (NSF) on a three year basis. Following G8 discussion it was renewed for three years in 2005 and then until 2013, the date at which it was anticipated GP-sponsored programmes would conclude. However it subsequently become part of the permanent IAEA structure as a first line defence against nuclear terrorism with provision to implement measures designed to prevent, detect, and respond to nuclear terrorism. An early contribution of $3M to this specific fund by the US was recorded by the IAEA.

NATO's involvement is a paradigm to IAEA in this context as an international organisation in which the State Department as well as DOD were contributors in nuclear disarmament and safety work not tracked back to

[23] The IAEA was first suggested by President Eisenhower. The US and IAEA (drawing on US expertise) have undertaken joint operations.

CTR. NATO was actively involved during the mid-1990s in the creation of standardised terms of reference and the devising of procedures that would have a common understanding between the East and West in nuclear disarmament and safety. Whilst the work concerned was undertaken principally in office and conference, it was essential for the safe undertaking of many of the operations on the ground. It is not without significance that the first major work of the CEG was with regard to nuclear-powered submarines of the Northern Fleet, and of their infrastructural support facilities, the subject of keen attention by NATO prior to 1991, and first priorities of CTR and GP.

Arctic Military Environmental Co-operation

A third CTR-plus obligation undertaken by the US with partners was AMEC proposed, as was the CEG, by Norway. (The acute interest of Norway with the potential for nuclear and environmental disaster within 40 miles of its borders requires no explanation.) The purpose of the agreement was broadly to support 'downstream' activity in dealing with nuclear issues following the dismantling of Russian SSN. The costs of dismantling and making safe fell to CTR/GP. The agreement between Norway, the US, and the RF in 1996 (and the UK from 2002) encapsulates many characteristics of CTR-plus.[24]

First, the constant difficulty in attempting to calculate the amounts spent by the US under the CTR label. The initial US funding of $1.8M was met from the Environmental Security Budget of the DOD and not from CTR funds. In 1999 the budget was increased to $4M, then transferred to the CTR Appropriations Bill, and subsequently carried through the appropriate Appropriations Act.

Second, the difficulties faced by US Administrations in obtaining Congressional consent for CTR-like purposes. This agreement was made directly by Perry, then Secretary of Defense, in Oslo, and there was in the US considerable politicking designed to obscure its purpose. There was as noted earlier hostility at this time to overseas aid, and to Russia in particular, and when the grant was eventually publicised it was so as technical assistance rather than as part of the threat reduction programme.

Third, Norway, not prior to 2002 involved in the G7 discussions, was pursuing a foreign policy designed to protect its position *vis-a-vis* the RF of which this was a part, not only through independent negotiations but also through the Nordic Council. Its objectives harmonised with those of the US. There was commonality in that much of the work planned or undertaken under CTR in NW Russia was on the littoral – now that was extended into the maritime. Norway was able to benefit from negotiations undertaken by the State Department.

Fourth, there were legal difficulties to be circumvented. The State Department, as with other projects, was required to represent the US in negotiations with the RF concerning matters of liability, tax, and intellectual property. The Russians were content to agree that expenditure under AMEC should follow the same rules as for CTR. However it was necessary for the Norwegians to negotiate separate terms with Russia. This was though a marker that would carry forward to the GP when, as the consequence of side-discussions between Bush and Putin, it would be agreed that all future agreements under the GP would carry the same terms and conditions. (The splitting of diplomatic hairs can be detected in that similar terms in respect to issues other than liability would also apply under MNEPR, discussed later.) As noted earlier despite formal agreement between the US

[24] A detailed account of the establishment of the programme may be found in Sawhill Steven G *Cleaning up the Arctic's Cold War Legacy* (Co-operation and Conflict 2000 Vol 35 Issue 5) Accessed via Sage 4 November 2013

and the RF the US embassy in Moscow was constantly required to act as an intermediary in actions initiated by a range of Russian national, regional, and local authorities. There was a separate area of legal liability at home for the DOD in that some of the necessary work was in or emanated from still active RF naval basis where work under CTR was forbidden. The involvement of allies (who gradually increased their share of expenditure to 44% by 2004) and provisions outside CTR eased an American difficulty.

AMEC demonstrates the effectiveness of diplomatic skill deployed for domestic consumption. At a time of anticipated hostility to its aim of assisting Russia further in the North West the Administration side-stepped Congress and was subsequently able to incorporate and extend the required funding within CTR. Perry rather than Albright undertaking the negotiation would hopefully ensure scrutiny would be by the more supportive Defense Committees not by those dealing with Foreign Affairs. The narrative supported prudence rather than adventurism in that the administration could point to consequences of the American success in scrapping Russian SSBN. The Arctic Treaties specifically forbad military activity, and by making special provision for the clearing up of nuclear detritus resulting from American success a policy supported by Congress was being furthered.

This smokescreen may have been effective in disguising intent from opponents of US involvement since it remained common for reviews to continue to repeat the absence of US involvement in environmental matters. In addition to the value of the agreement as such, its making demonstrates again the difficulties in identifying what might legitimately be included as CTR expenditure, and as an illustration of the closely woven network of CTR activities between the State Department and DOD. The GAO was not misled. In 2004 it was asked to assess the extent to which AMEC supported and complemented the CTR program; assess the partners' financial contributions: assess future program objectives; and evaluate a DOD proposal to extend such activity to the Pacific Fleet area. Its principal finding was that it found that only one of eight AMEC projects designed to support CTR's objective of dismantling Russia's ballistic missile nuclear submarines had actually done so[25].

International Science and Technology Center

Whilst AMEC presented a number of characteristics inviting particular consideration in the totality of CTR it was not large. In terms of State Department commitment to CTR an outstanding contribution was to the concept and realisation of the ISTC 1992-2012 for the Moscow Center, and ongoing for the Ukrainian.

Earlier reference to ISTC was with regard to State Department success in persuading Germany and Japan to make contributions to the start-up costs in 1993. This was however a small part only of the ISTC phenomenon. A fuller description is necessary to demonstrate the complexity of *Nunn Lugar* processes, of difficulties on the ground overcome, the role of the State Department, and of its overall importance as one of the initiatives not publicly highlighted in 1991-2.

In August 1991 the new Science Counsellor (a State Department appointment) had taken post at the US Embassy in Moscow and made contact with those holding similar portfolios in other western embassies. On 31 January 1992 she reported back to Washington on the dangers of a brain drain.[26] On 14 February Baker

[25] GAO-04-924: Published: Sep 9, 2004 Accessed 8 February 2016

[26] Hoffman David E *The Dead Hand* (New York Doubleday 2009) p 405

journeyed to Chelyabinsk-70, one of the two Russian weapon design institutes.[27] There he talked with the highly intelligent staff about the difficulties they faced, not least the serious possibility of starvation and the consequent potentiality for brain drain and hence proliferation. Three days later Baker and Yeltsin announced the formation of an international centre to assist weapons scientists move to civilian employment. Baker pledged $25M (which came from the CTR DOD fund). The Counsellor was given responsibility to co-ordinate the establishment of the Centre and the State Department initiated steps to appoint the first Director. This was, given the chaos of the time, a demanding task and it was not until March 1994 that the Centre was in a position to make its first grants.

The ISTC foundation agreement was to prove to be the only government-to- government agreement within CTR. It could be signposted as a candidate for one of the most important single events in CTR history in that it was the first at which agreement rather than intention to proceed had been signified between the US and RF; it initiated a programme not seen as threatening by the Russians, which other proposals had been, and was welcomed equally by both parties. It was to become one of the three longest lasting programmes around CTR-plus (the other being UPA and IAEA NSF); and for the first time it provided opportunities for the US to engage other states and domestic business in what until that point had been solely an American programme. For Yeltsin it provided a major political success when one was badly needed and for the West it could be seen as a template for a mechanism that would be of utility in the rehabilitation of any future failed nuclear states. Although the Director was a State Department appointee it was only in 1996 the Department was to be formally handed the responsibility for managing the ISTC. During the 1990's much of the US contribution was channelled through the State Department with NATO, taking a close interest in much of the work underway[28]. The ISTC, with its several levels of deeply involved activity, governments and ministries, its Board, project managements, and Russian institutions was ideally placed to be a major clearing house of information and 'oiler of the works' not only for projects directly under its administration but as a template for the wider field. It created channels through which work could be progressed, and five years later, prior to Kananaskis, records of departmental deliberation indicate its close involvement with ISTC, and awareness that activities would be continued by allies whether or not the G7 would agree to the GP. By then the EU, which had assumed Germany's original commitment, Canada, Sweden, Norway, and Korea were funders.

When raised in discussions about the future of the GP that the Moscow Centre should be closed some saw this not with a sense of failure but of a job completed. A profile of the magnitude of its success will be provided in Chapter Eight.

Further involvement

Various claimed references to CTR projects can be harvested from State Department papers. One such example is found in a report of CTR-related activities of the inclusion of a German contribution to the costs of moving former Soviet troops out of East Germany - an important objective for Germany and NATO but not within the formal compass of *Nunn-Lugar*. There were instances where the maintenance of close relationships between State Department officers and their colleagues in allied chancelleries and embassies smoothed the way of CTR-

[27] Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) p 614-616
[28] Note Chapter Eight p22

plus. There was a reference in one GAO report to the way in which the British were handling some procedural and contracting issues rather better than the DOD, and commending examination of the British methods. Reference is not provided as to how the GAO became aware of this, but the State Department was listed as one of the sources for the report and this could therefore be a demonstration of effective networking between Foreign Ministries.

The State Department view did not always prevail in discussions with allies. Records indicate its assessment that operationally the most effective operations were bilateral with one donor and one recipient and it commended this pattern to the G7 at the expense of plans requiring the liaison of multiple entities. As will be seen the contrary view was to be taken in Europe in the devising of the NDP and the MNEPR. The work of the EBRD in supporting these has been reckoned an outstanding success and has been validated in the flexibility in which it has subsequently provided assistance in non-nuclear areas firstly to FSU and then third- world countries.

Conclusion

This chapter has sought to direct some light on State Department engagement in supporting its own and the programmes of other US agencies in CTR; in encouraging the involvement of allies; and working through IAEA and other bodies to enhance nuclear safety and prevent proliferation. The following chapter will review European institutions supporting similar aims.

CHAPTER 7

EUROPEAN PERSPECTIVES 1991-2012

1991	**TACIS**
1991	**EBRD**
1993	**Barents Sea Co-operation Agreement**
1996	**Contact Expert Group leading to NDEP**

Introduction

National Contributions Outwith the Global Partnership

European Institutions

Conclusion

Introduction

Chapter Six touched on the State Department's contribution to CTR-plus. This reviews some European contributions, sometimes in areas not prioritised by CTR, including community environment and NPP safety. In NW Russia it involved dismantling SSN and SSGN - a priority in contrast to American concentration on SSBN consequent of START. In methodology a preferred action was through local project management rather than the imposition of western equipment and personnel. Following Chernobyl and the discovery of disaster waiting in the wings, one lead was activities, co-ordinated by the Nordic Countries, to minimise the threat of a further NPP disaster in NW Russia with its potential economic and environmental consequences.

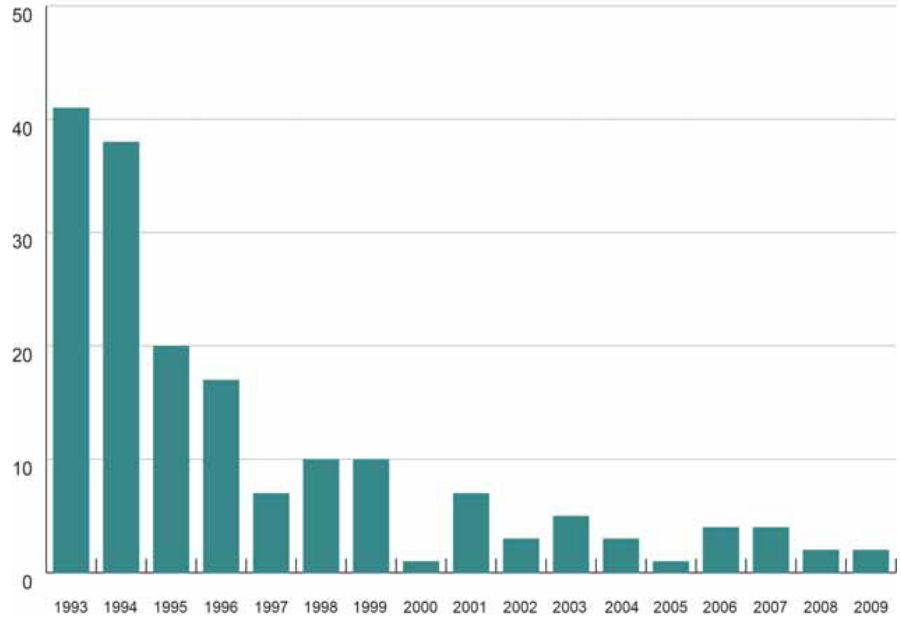
National Contributions Outwith the Global Partnership

Whilst the Nordic states were not the only non-G7 countries contributing to making safe the Russian nuclear legacy 1991-2002, examination of their practical approach and financial contributions provides a bridge between this period and the GP whilst highlighting important aspects of CTR-plus as a whole.

Norway

The substantial nuclear legacy close to the Norwegian border was clearly identified. Norway would be particularly vulnerable to a nuclear incident in NW Russia, and it became involved in discussions with its neighbour immediately following the collapse of the SU. In 1992 it established the Joint Norway-Russia Commission on Environmental Protection, outcomes of which led to the National Nuclear Action Plan in 1995 subsequently updated in 1998, 2005, and 2008. The environmental safety of North West Russia was established and remained in 2012 a Norwegian foreign policy priority. Between 1995 and 2009 NORK1.5B was spent on projects in NW Russia[1] and a study by CSIS following the first Annex A stated that Norway at that point was the third largest national contributor to the GP[2], and, in terms of expenditure on GP programmes as a proportion of national GDP, the highest[3]. Norwegian initiative placed it in the lead of Nordic countries in looking to the improvement of NPP safety in Kola, St Petersburg, and Lithuania; the Barents Co-operation Agreement in 1993; the Arctic Council (the only circumpolar body) in 1996; and the CEG and AMEC. It developed close relations with Russia in a number of fields with joint consultation and monitoring arrangements in some areas[4].

The importance of improving NPP safety is made clear by the following chart produced by the Norwegian Radiological Protection Service.



[1] Report to the Storting 11 2009-2010: Collaboration with Russia on nuclear activities and the environment in northern areas http://www.nrpa.no/en/facts/92534/about-the-nuclear-action-plan Accessed 10 February 2015

[2] CSIS http://www.sgpproject.org/Donor%20Factsheets/Norway.html Accessed 18 April 2005

[3] Strengthening the Global Partnership. http://www.sgpproject.org/Donor%20Factsheets/Project Areas/NucSafety.html Accessed 18 April 2005

[4] 120 of 198 nuclear-powered submarines dismantled by 2010 were in NW Russia. In 2010 Russia had dismantled a total of 120 US 36 Canada 10 Japan 7 and Norway 5 Report to the Storting 11 2009-2010: Collaboration with Russia on nuclear activities and the environment in northern areas http://www.nrpa.no/en/facts/92534/about-the-nuclear-action-plan Accessed 10 February 2015

Table 1 Internationally Reported Incidents at the Kola NPP[5]

It is commonly the practice to report unscheduled shut-downs to the IAEA. Between 2002 and 2012 the number of nuclear power reactors world-wide increased from 286 to 436. During this period the number of unplanned shut-downs fell from 1.06 per plant to 0.59 (excluding 0.63 and 0.66 in 2010 and 2011 which included the consequences of the Japanese nuclear disaster)[6]. Scandinavian concern of the position at the Kola and Leningrad plants (the former illustrated in the table, the latter having reactors of the same type as Chernobyl and unsuitable for major western-style updates) is easily understood.

By 2003 when Norway's activities were subsumed into the GP it had spent an estimated €160M. Its GP pledge was for €10M per year over the length of the programme. There were few operational areas in which it was not represented including submarine dismantlement, MPCA and the ISTC. A major initiative was its taking the lead in the replacement of the RTG used to power northern and Baltic lighthouses by solar power equipment. Its spread of interest was reflected through its involvement in shared projects with the US, UK, Sweden, Finland, the ISTC and the NDEP. Its involvement in AMEC, which raised the level at which it could engage diplomatically, was described in the previous chapter.

A hypothesis for this study was that the initiators of *Nunn-Lugar* had no idea of the extent of the consequences of their actions. Norwegian activity highlights two of these 'unknown' areas – prosperity in non-nuclear fields, particularly through the vehicle of SME; and the acceptance into Russian political culture of the place of NGO's. An outline of some such consequences is provided in the following chapter.

Sweden

Another near neighbour of Russia, Sweden was quickly attuned to the changes in the FSU. Like Norway its first assistance was provided in 1992. Unlike the central organisation of assistance practiced by Norway the Swedish initiatives were steered by a range of agencies. (Reflective perhaps of the difference in size of their populations and economies - Norway at approximately 5M and US$ 2.771B and Sweden 9.5M and US$393.8B and/or the immediacy of the problems geographically where Norway was concerned[7]. The Swedish projects covered aspects of nuclear weapon safety (not warhead dismantling); the fuel cycle; control mechanisms and chemical weapons disposal. By 2001 Swedish expenditure had reached $14.5M of which $6M was for the ISTC. The success of the Swedish programme was possibly owing to its proximity, its non-threatening nature, the range of agencies making individual contacts without the restrictions of a master plan, and Sweden's not being a member of NATO.

Finland

[5] http://www.nrpa.no/en/facts/92534/about-the-nuclear-action-plan Accessed 10 February 2016

[6] IAEA Nuclear Safety Review 2014 p2 https://www.iaea.org/About/Policy/GC/GC58/GC58InfDocuments/English/gc58inf-3_en.pdf Accessed 11 February 2016

[7] The figures are for 2014 from the Index of Economic Freedom (Heritage Foundation and Wall Street Journal) http://www.heritage.org/index/ Accessed 24 February 2014. The relationships have remained broadly similar over the past 20 years

History and the cultural spectrum of Finland - Russian relationships made for greater diffidence in the Finish contribution to CTR-plus. Russia is a major commercial partner of Finland with over one-third of Russian imports by value coming from or via Finland. The two countries had in the 1970's and 80's a unique nuclear relationship in that Russia supplied Finland two PWR reactors which were fitted with western instrumentation and control equipment (as was fitted to Russian PWR reactors following IAEA intervention following Chernobyl). In 2012 they remained operational. Notwithstanding the particular relationship with Russia Finland joined the early consortium headed by Norway. It was a partner in the work to improve the safety of the Kola and Leningrad NPP, a contributor to the NSA; and a founder contributor to the CSF. In 2003 it declared a range of expenditures to the GP but it was not always easy to determine which of these were new and which continuing. It joined the programme to replace RTG's at a relatively late stage, perhaps surprising given its obvious interest in installations in the Gulf of Finland.

European Institutions

The section above related to 1991-2002: this section the complete period of CTR/GP, 1991-2012. A high level of administration by the European institutions set a pattern for GP and some American projects.

European Bank for Reconstruction and Development

Introduction The official history of the EBRD states its first mooting was by President Mitterrand in October 1989 and that it opened for business just 18 months later in April 1991[8]. Its ethos was to respond urgently to needs arising from the collapse of the SU. In 1993 it established the Nuclear Safety Account, the first multilateral fund to finance nuclear safety projects in Central and Eastern Europe. The speed in establishment may have been aided by the majority membership of the G7 comprising EEC leaders. This account identifies briefly three crucial stimuli: the roles of Jacques Attali as initiator and first president, from April 1991 until June 1993; the part played by the G7; and the needs of the NDEP.

Jacques Attali Jacques Attali was French Sherpa 1981- 1990. He had led Mitterrand's campaign for the 1974 and 1981 elections. After the 1981 election he was appointed by Mitterrand as his special adviser incorporating the role of Sherpa. An economist and intellectual, in public life he played a part more akin to that of a principal than a senior civil servant even within the fluidity that characterises French governance. In 1989, in the light of the observed failing of the SU, he canvassed fellow Sherpas on the desirability of an institution along the lines of what was to become the EBRD. In his autobiography he describes himself as Founder and First President. His tenure as President was brief, consequent upon a public row with John Major, British Prime Minister and then Chairman of the G7, when he invited Gorbachev to visit the Bank's headquarters in London at the same time as the G7 meeting. Following his departure from the Bank he became a special adviser on nuclear proliferation to the Secretary-General of the UN.

Background The NSA was the Bank's first multilateral account established as part of the G7 initiative announced at the 1992 (Munich) Summit, just six months after the passing of PL102-228 as part of its initiative to improve nuclear safety in Russia and Eastern Europe. The time was one of feverish activity on the FSU and nuclear weapons fronts. The Lisbon protocol had been signed only 44 days earlier, and the G7 leaders took the unprecedented step of circulating publicly a statement signed by the leaders of the three Baltic States seeking the

[8] Details at the Website of EBRD http://www.ebrd.com/pages/about/history.shtml Accessed 18 December 2013

removal of the Russian military from their soil. Of particular significance in terms of nuclear safety was the decision taken in negotiation between the G7, EU and Ukraine for the installation of temporary safety measures at Chernobyl pending the early closure of the site. This decision was to lead to a further five nuclear safety funds being opened by the bank – the Chernobyl Shelter Fund, the NDEP Support fund, already mentioned, and three international decommissioning funds for countries operating Soviet-era NPP that did not meet international standards – Bulgaria, Lithuania, and the Slovak Republic. Taking into account the initiatives taken at this summit a case may be put forward that it was equally significant with *Nunn-Lugar* and this argument will be introduced in Chapter Thirteen.

Nuclear Safety Account The founders of the NDEP, in the light of the experience of CTR and its members, considered it essential that there be from the start an overarching and enforceable agreement along the lines of the US Umbrella Agreement together with a single system of audit and financial control. At this time the rouble was moving from its command economy fixed rate towards its market force nemesis. The founding nations' GDP's were a fraction the US and co-operation was essential were progress to be made. The framework agreement[9] came with the MNEPR, effective within the following twelve months, and the funding of the NSA completed the necessary foundations for the European programme to begin. The EBRD established its Nuclear Safety Department in 1993 on behalf of the contributing countries. It concentrated within one division of the Bank all the technical, financial, administrative, and legal aspects of the Bank's work in the nuclear field.

Finances By 2010 €320M had been contributed to the NSA of which €100M had been spent on emergency safety upgrades and €1M towards decommissioning FSU NPP. In a special publication to mark the 25th anniversary of Chernobyl [10] the bank reported that 30 contributors had provided €864M towards the CSF and that $321M had been received, to be managed by the NSA for the Interim Storage Site (also established 1997). In its 2012 annual report published in May 2013 it was stated that it had then received donations from 40 governments totalling € 3.5B and that it had made available a further €325M from its own capital. Operationally it reported that the ship *Lepse*, originally an NF transport and latterly a highly contaminated and dangerous floating repository for SNF, had been moved to a secure dockyard where unloading and decontamination work could be undertaken. This was a high priority in 2002 and may be viewed as a significant symbol of progress. The report detailed EBRD and NDEP activities in both NPP and former-military facilities and looked forward to the completion of the next stage in making Chernobyl safe in 2015.[11]

Northern Dimension Environmental Partnership

The founding of the NDEP by Norway Finland Sweden Denmark and Netherlands grew from concerns already evident in the Baltic and Northern areas on the collapse of the SU. With the independence of the Baltic States, their membership of NATO, and accession with Finland, Norway, and Sweden to the EU, national preoccupations concerning the environmental legacy of the SU became more harmonised. An important forum in which discussion took place was the Barents Arctic Circle. In 1997 the European Council took up the issue and further discussion took place in each of the succeeding three years there and in the Arctic Council which, at

[9] The European equivalent of the US Umbrella Agreement signed in Stockholm 21 May 2003
[10] 'Chernobyl 25 Years On' www.ebrd.com/nuclearsafety Accessed 8 February 2011
[11] http://www.ebrd.com/downloads/research/annual/ar12ef.pdf Accessed 19 December 2013

its meeting in 1999, agreed the Bodo declaration which began the formal process to create a multilateral legal framework within which interested parties could provide assistance to Russia on nuclear-related activities. A significant outcome was the MNEPR, and the adoption in December 2001 by the EBRD of rules for the NDEP Support Fund, the single funding source for work under the NDEP.

Immediately following Bodo €62M for earmarked projects was provided by the founders. By July 2002, five states had made contributions under the agreement and approximately €100M, including some from Russia, was available. By May 2003 the membership had been extended to include as well as Russia, Canada the UK and the US, and with this and the agreement and ratification of MNEPR by Russia in December 2003 it was able to commence operations[12]. Funding, stimulated by the initiation of work on the first projects, including the first contribution by the EU, was reported as having reached $123M, which was joined with $144M from non-NEDP sources in a range of projects of which 50% was allocated to projects on the Kola peninsula - nuclear waste and used fuel operations, and safety improvements at NPP.

Key criteria agreed in the selection of nuclear waste projects were that they should accord with Russian priorities and be fully funded prior to commencement. They needed to be selected to fit an integrated holistic approach with all steps necessary in the eventual disposal of the radioactive material established prior to the start of work; build on the experience gained through the existing bilateral programmes and the work of the CEG; and be in line with international practice and rely for support on locally- based Project Management Units with Russian and International Experts[13].

The agreement was termed "environmental". The world's greatest density of nuclear reactors and nuclear materials, and decommissioned submarines, was concentrated in NW Russia where arrangement for safe custody were then inadequate or absent. The agreement included a provision that it "may also apply to projects or any other forms of co-operation in other areas of nuclear activities", and, as will be seen, much was later undertaken under this provision.

Reflective of the detailed consideration of protocols and arrangements under which work could be approved, preparations prior to the commencement of work on the ground were lengthy, detailed and careful. The commencement was in similar vein by both parties –NDEP and the RF. In September 2003, by government decree, Minatom had been instructed to prepare a Master Plan for submarine dismantlement by May 2004. However in December 2003 it was able to present the plan to a meeting of the NDEP Governing Body, the Assembly of Contributors, which received it and forwarded it to its Nuclear Operations Committee for consideration at its meeting in February 2004[14]. Bellona noted the appointment of a senior Russian implementation committee on which was represented the Russian Academy of Sciences Nuclear Safety Institute, the Kurchatov, and the Minatom Research and Development Institute of Power and Engineering, and stated there was a major turnaround in the position of Minatom under an energetic new First Deputy Minister of Atomic Energy. Antipov was quoted as stating that the current first priority was the "drafting of a general master plan for radioactive ecological problems in the North West of Russia".

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[12] The UK was also negotiating a bi-lateral agreement at this time.

[13] Extracted from the NDEP Website http://ndep.org/ Accessed 8 February 2010

[14] Bellona Report "Minatom Adopts sub Dismantlement Master Plan" http://www.bellona.no/en/international/russia/nuke_industry/co-operation/32077.html Accessed 14 September 2004

This moment would appear to be a turning point in the operations to make safe the nuclear legacy of the RF but caution was always, and continues to be, necessary in accepting Russian statements at face value. Earlier reference was made to the importance of auditing CTR expenditure in Russia and in 2004 Russia's Presidential Audit Chamber claimed that Minatom had transferred without authority several million dollars provided for submarine dismantlement, together with $3.9M of scrap metal that should have been returned to the Federal Government, to cover the cost of reprocessing spent nuclear fuel[15].

The NDEP record was impressive. In 2010, the year in which the GP Working Group was considering future directions for the Partnership, NDEPs contributors had increased to twelve States and the EU; six international financial institutions operated as implementing agencies in North West Russia[16] ; and its work was supported by nine "other partners and clients" including the CEG and Development Agencies of contributing nations. In that year it was working on eight major nuclear projects with costs raging from €2.25M to €43M, totalling €95M, and a further 16 non-nuclear priority projects.[17]

Technical Assistance to the Commonwealth of Independent States

In the turmoil of the collapse of the FSU in 1991, the European Commission, the executive of the then EEC, initiated TACIS a programme under which grant-aided technical assistance provided by the EEC was made available to all FSU states. The compass of technical assistance included work in the nuclear field. In 2007 the programme was re-organised and Russian interests were separated with non-nuclear projects being covered by the European Neighbourhood and Partner Instrument, and nuclear projects under the Instrument for Nuclear Safety Co-operation. However, co-incident with the planned life of the GP all TACIS projects programmed from 2006 were guaranteed continuation until 2012. There were four main categories of programme designed to speed transition to modernity, democracy, the market economy, and nuclear safety. The nuclear program, was support for the promotion of an effective nuclear safety culture; the development of spent fuel and nuclear waste management strategies; and participation in relevant international initiatives[18].

The sum allocated in 1991 to nuclear matters was €12.5M from a total of €209.14. In the quadrennial to 1994 no additional finds were spent on nuclear matters although the total expenditure under the programme was €630.9.

However further expenditure was authorized, principally to Russia and the Ukraine (the latter in large measure on Chernobyl projects) as illustrated in Table 2.

[15] Bellona Report "Minatom Adopts sub Dismantlement Master Plan" p6 http://www.bellona.no/en/international/russia/nuke_industry/co-operation/32077.html Accessed 14 September 2004

[16] EBRD, Nordic Investment Bank, European Investment Bank, World Bank, and the Nordic Environment Finance Corporation.

[17] NDEP Website at http://ndep.org/ Accessed 8 February 2010

[18] http://europa.eu/legislation_summaries/external_relations/relations_with_third_countries/eastern_europe_and_central_asia/r17003_en.htm Accessed 19 December 2013

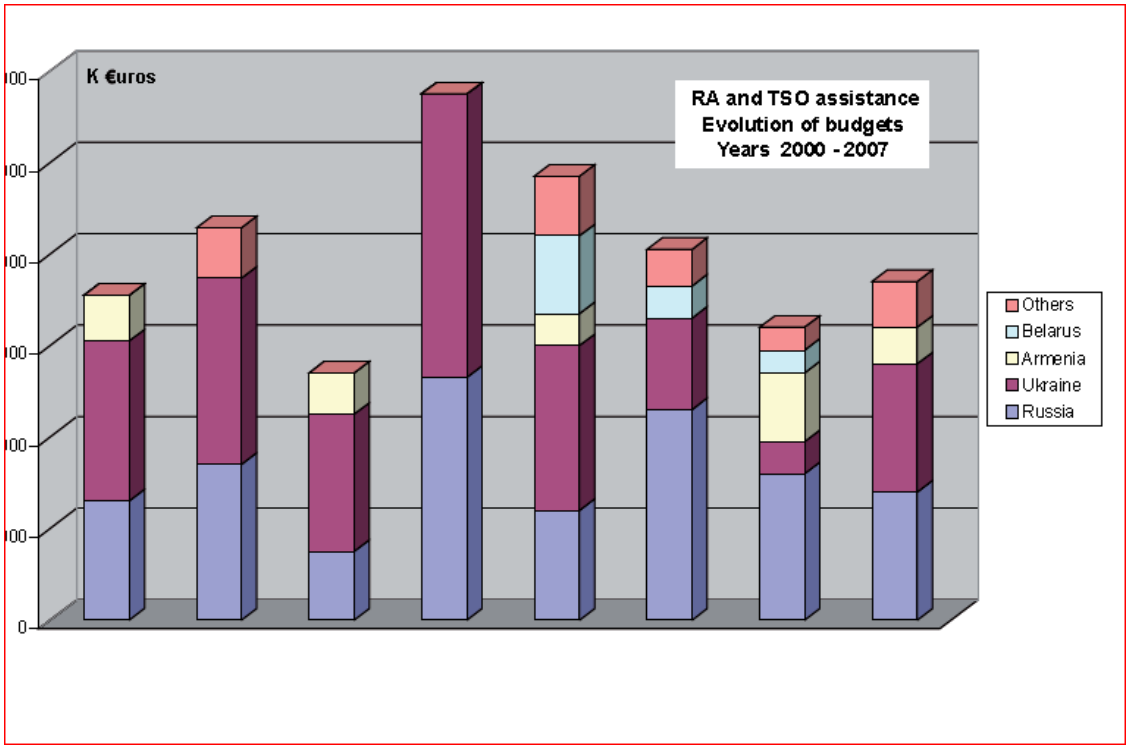

Table 2 Nuclear-related authorized expenditure under TACIS [19]

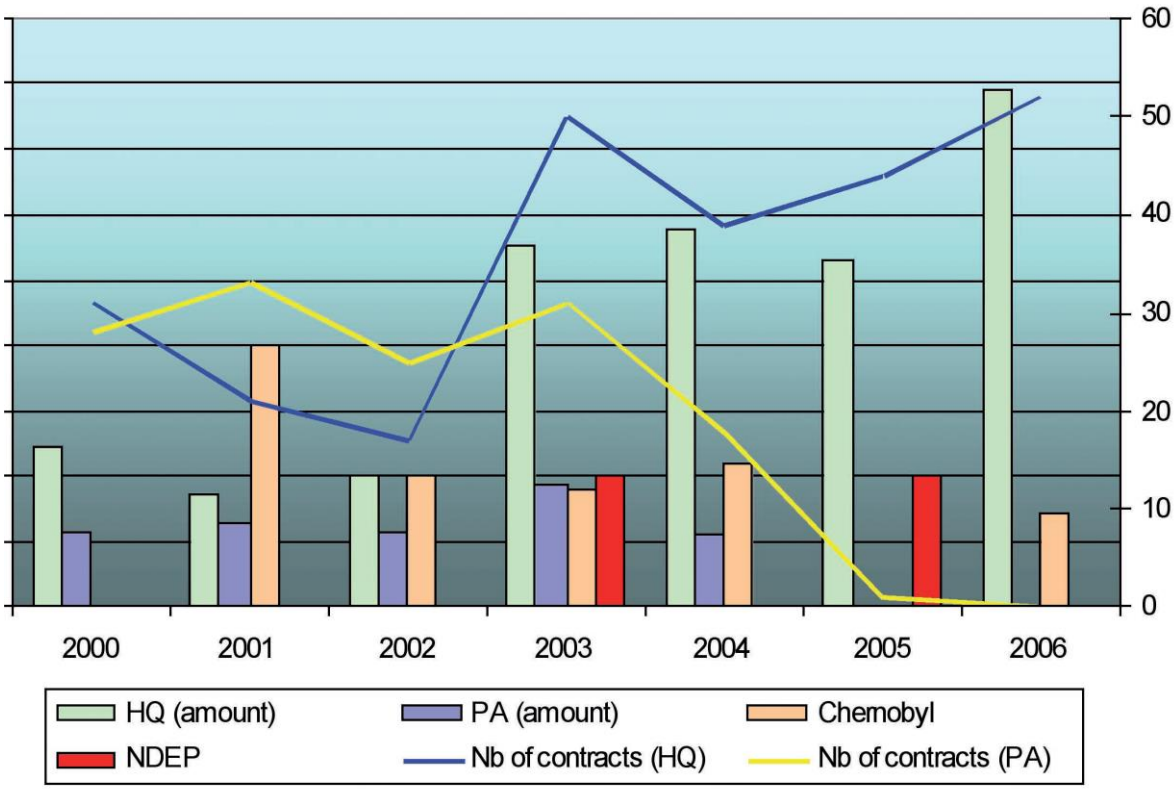

Table 3 TACIS implementation of Nuclear Safety Projects between 2000 and 2006 €K [20]

[19] Ibid

[20] Accessed 2013-12-20 EU Archive http://www.eurosafe-forum.org/files/12-seminar1-CHUILON-TACIS_and_INSC.pdf

The figures are not large. However the TACIS programme is selected for examination for several important reasons. The first authorizations for payments to assist in making safe the Russian nuclear legacy under a programme were initiated in 1991 before the passing of PL102-228. It is one of a number of small programmes tackling the nuclear legacy whereas the public narrative commonly embraces only the larger. It demonstrates the complexity of funding for the overall programme with itself operating through the NDEP, the NSA, and the Chernobyl funds; a complexity illustrating again the difficulty in seeking to establish a grand total of the West's total commitment to CTR-plus. Furthermore much of the funded expenditure is through bilateral agreements rather than the centrally managed ones regarded as essential under the NDEP. Its profile of authorizations and expenditures shows a sharp jump following Kananaskis (although it declines shortly thereafter as a function of the reorganization of the whole TACIS project). The focus of the thesis is on NW Russia. The impact of Chernobyl intervenes periodically and here the relative expenditures on the continuing work in Ukraine are clearly shown. Emphasized here, and returned to later, is a high 'multiplier' effect. Much of the expenditure was devoted to training Russian nuclear regulators to western standards.

Conclusion

This chapter has illustrated important aspects of this study:

firstly, initiatives effectively simultaneous with the launch of *Nunn Lugar* - internationally by the EEC in 1991, G7 in 1992 and 1993, and nationally via Norway and the Nordic countries in 1992 - placed that US initiative as one of a cluster of moves rather than uniquely in front;

secondly, the generosity of nations other than the US;

thirdly, the development of institutions to collectively address the Russian problems which would stand in good stead for the GP;

fourthly, the integrated approach to military and civilian nuclear safety standards;

This point provides a divide between two structural themes of this study – the principally historical account of the establishment of CTR-plus and description and analysis of outcomes.

CHAPTER 8

CONSEQUENCES

Introduction

The first chapters of this study provided an account of the circumstances creating the conditions for the Superpowers to reduce their nuclear arsenals and of Western action in assisting the FSU to achieve that aim. This and the following chapter review some consequences of that assistance and examine it against what is argued a valid comparator – the Marshall Plan.

There are many consequences worthy of examination and the limitations of this study require selection. Examples have been chosen that:

note outcome against an originally stated aim;

have changed the way of doing business between Russia and the West;

are not within the formal canon of work undertaken under the programmes but which would have been unlikely without CTR-plus;

are estimated to continue in influence after 2012;

have led to changes in legislation or practice within the donor countries or internationally.

Some projects exhibit demonstrate more than one of these characteristics. The absence of a well-known initiative from a list designed to meet these criteria does not imply its lack of importance within the programme.

Principal Aims

Analysis of the consequences of CTR-plus must be whether they matched the original aims to,

(1) destroy nuclear weapons, chemical weapons, and other weapons,

(2) transport, store, disable, and safeguard weapons in connection with their destruction, and

(3) establish verifiable safeguards against the proliferation of such weapons.[1]

Throughout CTR Senator Lugar's office issued monthly 'scorecards' of US achievement regularly repeated in official documents and thereby regarded as reliable.

The last such reported[2]:

Detail	Total	Detail	Total
Warheads deactivated	7616	SLBM launchers eliminated	492
ICBM destroyed	926	Nuclear Air-to-Surface weapons destroyed	906
ICBM silos eliminated	498	Bombers eliminated	155
ICBM mobile launchers destroyed	197	Nuclear test tunnels and holes sealed	194
Nuclear weapons carrying submarines destroyed	33	Nuclear weapons train Shipments	590
Nuclear weapons storage site upgrades	24	SLBM destroyed	695

Table 1 Nunn Lugar Scorecard May 2013

This record reflects considerable achievement by the US, the only country undertaking some categories of work within the wider CTR-plus.[3]

This study focuses on CTR/GP activity in NW Russia and this analysis relates principally to that area. It was socially and economically deprived and declining rapidly following the cutbacks of the government budgets on which it was almost wholly dependent. Environmentally it was one of the two most polluted areas in the FSU[4]. There was stark contrast between facilities in the principal ports, and a range of naval satellites bases with poor infrastructure hurriedly erected during the arms race often in isolated locations. However several factors were to

[1] The effective clause of PL102-228

[2] Accessed at http://www.dtra.mil/Portals/61/Documents/20130501_fy13_ctr-scorecard_slides_may13.pdf on 21 May 2014

[3] Submarine dismantling was managed also by Australia, Canada, Italy, Japan, the Netherlands, Norway, and the UK.

[4] The other being Mayak in Central Asia

stand it in good stead. Political problems attached to work in the region were fewer than those at some other locations since the Russian government and its military, not always of the same voice, had both sought help of the US; and because its intelligence sensitivities were fewer than those of the strategic rocket force. Priority projects accorded with the US START I priority of obtaining neutralization of SLBM and operational planners had a clean sheet with which to work since the FSU had taken no effective action to deal with relevant outstanding issues - the first decree (095-026) concerning disposal of SSN had been approved by the Supreme Soviet only in 1986, and the Navy's guidelines for execution promulgated in 1991 and activated in 1992[5]. An important factor was its location close to the boundaries of the Nordic states, with whom as the enlightened came to see, it shared important issues. Location and self-interest fuelled European attention - Norway, Germany, France and the UK, significant submarine operators, had amassed considerable intelligence relating to and were operationally near NW Russia.

The first priority was SSN dismantling. The risks associated with individual vessels varied but almost all decommissioned FSU submarines hosted nuclear and other safety hazards. The cooling systems of many had failed with potentially serious consequences for their power plants; servicing procedures had been abandoned for reactors left fuelled and containing radioactive waste; maintenance crews on board were successively reduced then withdrawn threatening hull as well as nuclear integrity; nuclear missiles and torpedoes were left in place; no steps had been taken for protecting non-nuclear dangerous materials found in such vessels. Discarding radioactive material to the detriment of the environment and without concern for the future was widespread. Contrary to the 1972 London Convention on the dumping of nuclear waste at sea, for the Russians this was a frequent occurrence - even of reactors and whole submarines - in the White, Baltic (and Okhotsk) Seas. When the electricity supply to submariners' quarters ashore broke down vessels with power were crowded with families seeking shelter.

By 2012, the position, though still presenting weaknesses, was transformed. US hands-on activity started in 1993: its focus in NW Russia, the SSBN. References in early chapters may be reprised here to explain the delay before work 'on-site' commenced. They included the delay in agreeing the 'umbrella agreement' and the subsequent planning and project management agreements for the many actions that had been identified; the provision of equipment and agreement of safe working practices at the shipyards involved; the making secure and transportation of decommissioned hulls to the dismantling shipyard and safe storage arrangements for their reactor compartments; the provision of storage casks and transportation equipment for fuel and waste and the building and delivery of specialised railway vehicles to remove these to Mayak. At the yards difficulties emerged that could hardly have been envisaged. There was no experience of the tasks to be undertaken. The work-force was regularly on strike (one inspector noted that wages at one yard were eight months in arrears) and the electricity cut-off because of inability to pay bills. When work

[5] http://spb.org.ru/bellona/ehome/russia/nfl/nfl6.htm Accessed 8 June 2015

commenced much was necessarily undertaken with hand tools for processes that were complicated and in part dangerous. The US also was on new ground and many of the proposed directly-managed arrangements functioned poorly. From 1997 these were changed and contracts were made with the shipyards concerned whereupon, with an array of supporting measures including local management (some of whom were taken to view American dismantling somewhat surreptitiously, perhaps after the style of Velikhov's earlier interventions) new equipment, and importantly, experience gained across a range of submarine classes, each presenting its own dilemmas, the position rapidly improved. By mid-1999, although 180 submarines had been decommissioned only five SSBN had been dismantled with work underway on a further seven[6]. In 2004 it was taking up to eighteen months to dismantle each hull but by 2005, when Norway and the UK had entered the programme, Alexandr Rumyantsev, Head of the responsible Russian Federal Agency (and later that year Minister of Atomic Affairs) reported that 121 hulls had been dismantled and that the dismantling rate had risen to 20 per year with Russia matching the western cost contributions at $70M per year[7]. Significantly in 2006 the dismantling commenced of the first *Typhoon*, the largest submarine class ever built.

Submarine dismantling brought a reduction of strategic and accidental risk. However this was part only of the overall programme. The naval bases still contained abandoned hulls and nuclear materiel major hazards in their own right. Here supportive work, long term and un-glamorous, was later assumed by the Europeans to significant effect.

Andreeva Bay (less than 40 miles from the Norwegian border) had been constructed as a site for the storage of SNF and RW coterminous with the commissioning of the first Soviet SSN in the 1960's. Buildings and equipment were inadequate and of poor construction. Arrangements that would have been regarded as essential in the west for the security and safety of the nuclear materials were missing. In the early 1980's RW storage pools began to leak. Later drums for the dry storage of SNF were found to be not watertight, corroding, and becoming a growing hazard. By 1992 when the facility was closed, 22000 spent fuel

[6] Moltz J. M. *Russian Nuclear Submarine Dismantlement and the Naval Fuel Cycle* Nonproliferation Review Spring 2000 p 78

[7] RAI Novostny 22 September 2005 Accessed 26 September 2005 (Newspaper Daily Edition) This includes hulls in the Far East where dismantling costs were contributed by Japan, as project leader, and Australia

assemblies had been deposited there of which 30 tons were HEU[8]. In 2000 the facility was removed from the military estate and Minatom took responsibility. It became the subject of concern to IAEA, Norway (whose Radiological Protection Service assisted SevRao[9]) Sweden and the UK, and eventually, a major GP project. Early work included mapping contamination that had spread from the failed containment and devising work plans that would permit safe access to the most dangerous parts of the site. Such were conditions that the US undertook a ten-year longitudinal study of the radiological health of workers[10].

In 2010 following a spending review the UK withdrew from funding new projects at Andreeva but contributed £8.67M to NDEP to continue[11]. It was 2014 before the position was sufficiently safe for tenders to be sought for the shipment of waste to Murmansk for onward carriage to Mayak.[12]

Gremikha Bay (now Ostrovny) in some ways presented deeper technical problems than Andreeva. Recipient of all waste following the former's closure it had been the base for Alfa class submarines with liquid sodium cooled power plants which had become lock-solid. The Russians presented a programme for the rehabilitation of the area at the 2003 G8, riding hard on their success at Kananaskis perhaps, and indicative of their concern. In addition to Russian expenditure €70M was pledged over the next ten years by France Italy Sweden US EU and the EBRD.

In 2010, following lengthy preparatory work, SNF was removed from a submarine there for the first time and in 2012 moved to safe interim storage at Murmansk prior to transport to Mayak, with the first reactor compartment prepared for moving to Saida. In 2014 the first solid RW was transported to Saida in a purpose-built ship funded by Italy.

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[8] Presentation to Contact Experts Group Oslo 2011 DECC Website Accessed 20 January 2015. GAO had assessed the RF as capable of meeting START obligations without US assistance - GAO NSIAD 95-7

[9] NW Russia Nuclear Waste Handling Organisation

[10] Radiation safety during remediation of the SevRAO facilities: 10 years of regulatory experience**.** Sneve MK[1], Shandala N, Kiselev S, Simakov A, Titov A, Seregin V, Kryuchkov V, Shcheblanov V, Bogdanova L, Grachev M, Smith GM. *Journal of Radiation Protection* 2015 Sep;35(3):571-96. http://www.ncbi.nlm.nih.gov/pubmed/26160861 Accessed 13 July 2016

[11] UK 8th Report (2010) p17

[12] World Nuclear News 7 February 2014 http://www.world-nuclear-news.org/WR-Tenders-for-Russian-submarine-fuel-removal-0702144.html Accessed 18 June 2015

A Bellona representative visiting the site in 2014 wrote[13]:

> Today, in 2014, 11 years after its conception, it's safe to say that many of the rehabilitation projects for Gremikha's facilities have been a success. The epic of removing spent nuclear fuel from pressurized water reactors between 2008 and 2012 is done. The effort to remove 898 spent nuclear fuel assemblies, 141 of them in damaged condition, was 100 percent successful.

Saida Bay, formerly a fishing village from which the population were reportedly evicted, was by 2012 under the control of the Nerpa Shipyard (one of the three responsible for hull dismantling) and outfitted, largely at the expense of Germany, for the storage of submarine reactor compartments. The original Russian technique had been to leave a compartment either side of the reactor *in situ* for buoyancy, and to leave the ensemble afloat in a quiet spot. With time new techniques were employed and with funding assistance from Germany many were now secured in appropriate containers resting on a hard pad located at Saida where they will remain until it is safe for them to be dismantled. This is similar to US practice. It is safer, more secure, and not liable to difficulties created by the adverse meteorological conditions experienced in the area. Some assemblies remain afloat in protected environments and will be transferred into containers as more are provided. The adjacent compartments can then be safely cut up and remaining metals salvaged. It is intended that the recovered SNF and RW will be protectively containerized at this location.

This view of the consequences of western attention at three former Soviet facilities offer evidence of significant achievement. The outlook is good across an area embracing three countries. Existing difficulties are being reduced and practices which will safeguard the future are now routine. In terms of civic society, where admission was previously forbidden to all but the military, NGO's and local politicians are now permitted access. Local society, to an increasing extent, reflects adjacent western values – the first exercise in public consultation in Russia was undertaken in Murmansk, funded by the EU.

Manifest is the way in which entities have co-operated. At Andreeva it was the British who designed safe and appropriate working practices, the Americans that monitored the workers' health, and the French who took responsibility for managing physical work. EBRD is the project manager at Gremikha, the Germans have funded and manage Saida, whilst the Italians

[13] http://bellona.org/news/nuclear-issues/radioactive-waste-and-spent-nuclear-fuel/2014-09-work-gremikha-naval-waste-site-continues-schedule-says-bellonas-andrei-zolotkov Accessed 18 June 2015

have provided a ship to transport the waste to safer locations and pontoons to safely move reactor compartments to Saida[14] . The US has provided some of the casks required for the transportation of RW. In two of the cases the Kurchatov has been a technical advisor and in all cases Russian contractors have undertaken the work on the ground.

Civil society has been 'thickened' by the (somewhat constrained) presence of NGO's and local representatives, and working relationships across national and international entities. (An example of the latter is that the project manager for UK-funded submarine dismantlement is also the initial contractor for dismantling the UK's nuclear-powered submarines[15].) Conversations within the expert groups have continued despite difficulties in political relationships during the years and progress beyond the terms of treaties and contracts has grown. Examples are a frank description of the dangers of Andreeva by an official of SevRao at the IAEA[16]; and a joint Norwegian/Russian report of nuclear detritus in 2012. The latter was noteworthy by its exceptionally widespread publication, an extract from the official report appearing in the Moscow Times[17].

The Norwegian relationship has been of critical consequence in developing the new relationships of the North West and as noted they sought to establish close relations with the Russians at an early stage of the Soviet collapse. The Nordic Chamber of Commerce was established in 1990 with the Norwegian-Russian Chamber in 1993.

In 1992 the joint Norwegian-Russian Commission on Environmental Protection was established and in 1995 the two governments published a joint Action Plan. Subsequently the Norwegians reported that the Russians were increasingly recognizing their responsibilities and were becoming more committed to environmental matters[18]. Interests which were principally nuclear in the first years of co-operation between Norway and Russia became in due course part only of a growing collaboration. As evidence of a new neighbourliness and the growing incorporation of NW Russia into the northern community a 2013 report from the Royal Norwegian Ministry of Foreign Affairs, in profiling its policies for "The High North", drew attention to the steady increase in the number of border crossings at the (initially only one) official crossing point.

Year	Crossings
1989	2,000
1990	8,000
2005	107,000
2011	190,000 (Est)

[14] To be included within the terms of the law of unintended circumstances perhaps was the agreement of 2005 under which Fincantieri and the Rubin Bureau combined in the design of new Russian-build submarines.

[15] http://www.freyssinet.com/freyssinet/wfreyssinet_en.nsf/0/D4F4807B2AB3F8C5C1257C6A003372BF/$file/RA%20SF2012_EN.PDF This is the annual report for Soletanche Freyssinet Activity for 2012 p. 46 Accessed 11 June 2015

[16] https://www.iaea.org/OurWork/ST/NE/NEFW/CEG/documents/ws052004_Grigoriev-final-eng.pdf Accessed 15 June 2015

[17] http://www.themoscowtimes.com/business/article/nuclear-catastrophe-looms-in-arctic/511150.html 13 November 2014 Accessed 11 June 2015

[18] See, for example http://www.nrpa.no/dav/7e9c054166.pdf Accessed 8 June 2015

Table 2 Murmansk/Norway Border Crossings

Reports went on to state that by 2012 there were 45 Norwegian-owned companies operating in Murmansk, others in the Murmansk and Archangel Oblasts, and some joint Norwegian-Russian enterprises.[19]

A road had been built across the Norwegian border to Murmansk and following steady growth in trade a second opened in 2012. In 2012 the requirement for visas was removed for residents living within thirty miles of the border. Consequences of this and infrastructure development have contributed to the development of maritime services, fishing, and tourism. (The Finns now bring thousands of tourists to "Santa Claus's Home" in Rovaniemi and to live with the *Sami* people in the summer on their side of the border). Despite its isolation and previous run-down condition the Murmansk area is now one of the more prosperous in Russia with relatively favourable employment levels. The peak unemployment rate recorded (reliable records exist from only 1990) was 21% in 1998. In 2012, 7.71%; and in 2014, a record low of 6.3%. This was a lower rate than those pertaining in the adjacent Norwegian and Finnish administrative areas[20]. The economic and cultural development of the Murmansk Oblast, building on a programme initiated by security and environmental concerns, had made the region, despite its remoteness and extreme environment, one of the most prosperous in Russia.

By 2012 the area was more stable in many respects. Most old submarines had been dismantled, but design[21] and engineering teams remained in place, and following modernization of equipment and techniques were again building high value maritime engineering products including submarines. The closure and modernization of military bases reduced population (for example 2000-2010 the population of Gremikha fell from 5000 to 2000) easing stresses on infrastructure and import requirements. Much of the potential for civilian nuclear accidents had been removed with the modernisation of the Kola and St Petersburg NPP (the Kola NPP was modernized with about 200 safety systems upgrades financed in part by the governments of Norway, Sweden, Finland and the EU and USA) and because of a local focus on the vessels and facilities of Atomflot in the town. (A previous mayor reportedly demonstrated to visitors the Geiger counter mounted behind his desk). This discursion exemplifies consequences of CTR-plus not envisaged when non-proliferation projects in Russia were canvassed. All these activities reduced the opportunity for the possibility of nuclear accident or proliferation; environmental concerns, some not detailed here, remained but the area was safer. More difficult to measure, and perhaps on the periphery of US awareness, the long- term outcome will be considerably stronger than the Nunn-Lugar Scorecard would imply.

Changing Ways of Doing Business

[19] http://www.regjeringen.no/upload/UD/Vedlegg/Nordområdene/UD_nordomrodene_innmat_EN_web.pdf

Accessed 13 December 2013

[20] Barents Observer at http://barentsobserver.com/en/society/2015/04/seeking-job-russian-north-08-04 Accessed 11 June 2015

[21] Design teams part of the Rubin Bureau headquartered in St Petersburg which by 2012 was engaged in joint maritime production projects with Haliburton of the US and Fincantieri of Italy

Recommendation C3: Provide technical co-operation to carry out the contraction and conversion to civil activities of the Soviet nuclear weapons complex.[22]

Subsequent to PL102-228 there have been business ventures between Russia and the West that would have not occurred absent CTR-plus. Two enterprises created significant employment opportunities for scientists and engineers in the FSU (and to some extent the US); contributed to the maintenance of a high level scientific base in Russia post-1991; and provided important revenue flows to Russia. They are selected for examination because their consequences became world-wide and since in 2012 their operations did not fade into history, but were at the cutting edge of scientific commerce. Neither could have happened, it is asserted, without CTR.

The US – Russia Highly Enriched Uranium Purchase Agreement

17 - 20 October 1991 a conference to discuss the deteriorating situation in the SU was underway in Washington sponsored by the NRDC and FAS at which was present Victor Mikhailov Deputy Minister for Atomic Energy, whose primary purpose in Washington was to discuss verification issues, and Thomas Neff, a physicist in the Centre of International Relations at MIT. Neff's major interests were energy and the global uranium market. The American scientists were disturbed at the possibility that should the SU collapse their Russian colleagues would be tempted to quit and a possible consequence would be significant quantities of unsecured fissile material. The Russian stockpile was by far the world's largest and as the state's distress grew it was selling such quantities on the world market that prices were becoming depressed. As large numbers of weapons were to be dismantled under START1 the stocks of HEU and Plutonium were likely to further increase with consequent security concerns.[23].

In a conference interval Neff took Mikhailov aside and asked if the SU would consider selling the proceeds of the dismantled weapons to the US. He suggested 500 tonnes would be rational – underestimating by a wide margin how much nuclear material the SU then possessed.

Five days later, on 24 October 1991, Neff urged his proposal in an op-ed in the New York Times[24]. Eventually the proposal was welcomed by both American and Russian administrations. A draft agreement was initialled on 28 August 1992 and announced by Bush three days later. The formal agreement, with the necessary supporting commercial contracts between the American and Russian companies that were to operationalize the arrangements, were signed by Clinton in 1993. Neff carried substantial personal responsibility in realizing this achievement. He estimates he visited Russia twenty times during the negotiation of the original agreements and then regularly over the next five years. Throughout the length of the agreement he acted as an independent advisor to both sides and was held in equally high regard by both.

The measure of success is not that CTR contributed $400M towards expenses of the programme, or that the total value between the commercial entities mandated to undertake the operation amounted to $17B, but that Russian

[22]Campbell Kurt M, Carter Ashton B, Miller Steven E and Zraket Charles A *Soviet Nuclear Fission: Control of the Nuclear Arsenal in a Disintegrating Soviet Union* (Cambridge MA Harvard University 1991)

[23] Engineering and design considerations require for FSU HEU weapons a supply of material several times that of the US equivalent inventory. The safe lifetime of an FSU weapon is believed to be about a quarter that of a US one and a much larger pool of material is therefore required for the re-manufacturing cycle.

[24] www.nytimes.com/**1991**/10/**24**/nyregion/news-summary-986091.html Accessed 29 May 2015

equipment designed to meet the needs of the VPK, equipped with American monitoring units, down-blended 500 tonnes of HEU which when weaponized would have equipped approximately 20,000 weapons. 1995-2013 VPK equipment and Russian technicians worked at Zheleznogorsk, Novo Uralsk, Seversk, Angarsk, and Mayak (sites well known to Cold War strategists); a substantial income was provided the Russian economy through channels which firstly maintained expertise and subsequently enhanced it through the Russian contribution to the nuclear renaissance (western specifications for fuel are finer than those for Russian heritage NPP)[25]; and which through tight US/RF management (illuminated in a Russian television programme at the end of the agreement[26]) provided substantially enhanced security to a sensitive stockpile[27].

One consequence was that for twenty years 50% of all fuel burned in USS NPP was manufactured from dismantled FSU nuclear warheads.

This agreement is rightly heralded a pre-eminent post-Cold War success. A case can however be constructed, not least based on market price collapse, that this operation could have been left to the market. Such a case would however neglect the security element since almost certainly the uranium to be supplied would have come from easily available stocks and not from weapons the dismantling of which was monitored. There would also have been western political opposition to be overcome. The success story of the UPA fails to note the initial concern that the release of the Russian uranium stocks raised. One consequence was measures to restrict or halt the flow via anti-dumping agreements. Six countries took such action. In the US the Department of Commerce initiated an investigation in 1991 and in 1992 an Anti-Dumping Order was made placing a tariff of 11.5% on the Russian uranium. This remained in force to 2008 when removed after Russian pressure.

The quantity of natural uranium equivalent in the purchase agreement amounted to an average at the mine-head of 8850 tonnes per year - about 12% of world demand. Overall the HEU supplied was the equivalent of 14446 tonnes of LEU over the twenty years of the agreement – equivalent to about 2.5 years world uranium demand[28].

Prior to the late 1980's with small exceptions there were two principal markets for the sale of uranium – the Soviet bloc and the Western nuclear powers. Negotiations for the sale of uranium by the FSU commenced in 1988 and the impact of the surplus supplies coming to market were such that new production through mining fell substantially between 1988 and 1992[29] with a consequential income fall to producers.

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[25] Tenex, supplied fuel to some western countries, starting with France in 1971. It was negotiating with US entities directly in 1991. Tenex subsequently made direct contracts with US utilities and by 2014 was supplying nuclear fuel to 32 utilities in 16 countries.
http://www.tenex.ru/wps/wcm/connect/tenex/site.eng/press/media/07a5ef00407b163599ecfbeb14017f9b
Accessed 9 June 2015

[26] Several TV reports may be found at U-tube 'Megatons to Megawatts' Accessed 27 May 2016

[27] A succinct report of the programme can be found in NNSA Press Release of 9 July 2012
http://nnsa.energy.gov/mediaroom/pressreleases/450tons070912 Accessed 10 July 2012

[28] WNA Nuclear Fuel Statistics http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Uranium-Resources/Military-Warheads-as-a-Source-of-Nuclear-Fuel/ Accessed 29 October 2014

[29] World Uranium Supply and Demand: The Changing Market Underhill D. H. and Muller-Kahle E. IAEA Bulletin Vol 34 No 3 1992
https://www.iaea.org/sites/default/files/publications/magazines/bulletin/bull35-3/35302680813.pdf Accessed 9 June 2015

State	Production Decrease (%)
Australia	34
Canada	25
Czech-Slovak Republic	43
France	37
GDR	94
Namibia	43
South Africa	54
FSU	43
USA	64

Table 3 Uranium Production Post-1991

(National Annual Production more than 1000 tonnes)

Until the UPA the US imported uranium in the market and the cutback in imports as a consequence of the purchase agreement was strongly negative for its suppliers. The market had always been labile with sudden troughs and peaks but the trend (notwithstanding one unique year of 13.3M tons) is clear with US imports of 7.7M lbs in 1994 falling to 3.3M lbs. in 2014[30].

That this reduction was consequential on UPA is clear since uranium release from the US military stockpile came much later than in Russia, with the first down-blending being completed in 2001 and the first supply of fuel from this source to a power plant in 2005. In 2013, at the end of the GP, HEU in US and Russian weapons and other military stockpiles amounted to around 1500 tonnes, equivalent to about seven times annual world mine production[31], of which 600 tonnes was US stock, and around 720, Russian. Thus it may be argued that the UPA was an instrument changing the world uranium market for a generation and whilst there were major advantages for Russia and the US much of the economic cost was met by other countries.

There were two follow-ons. The first a further uranium purchase agreement, the second the PDMA. Outwith the UPA, in March 2011 USEC and Tenex signed a further ten-year agreement for US LEU purchase from Russian stock not previously weaponized. A third long-term agreement was under discussion at the time CTR operations were winding down in 2013. The PDMA is not included in this review. Despite it being seen as part of the general package of nuclear-assistance to the FSU, funds having been made available by the US towards meeting Russian costs with contributions from other countries under the GP, because it was more in the nature of a Treaty than an aid package with obligations on the US as well as Russia, and because major elements of its operations were timetabled for 2018, six years following the end of the GP.

Missile Launch Systems

The R36 (SS18) was the world's largest and heaviest ICBM. Its power plant was the Proton rocket manufactured by Khrunichev. Its ability was such that it was the lead item for the Reagan and GHW Bush

[30] US Energy Information Administration Measurement in uranium hexafluoride equivalent. http://search.usa.gov/search?utf8=%E2%9C%93&affiliate=eia.doe.gov&query=nuclear+energy Price information available at http://www.eia.gov/uranium/marketing/ Accessed 9 June 2015

[31] Trade –tech Russia quoted by WNA in http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Uranium-Resources/Military-Warheads-as-a-Source-of-Nuclear-Fuel/ Accessed 29 October 2014

Administrations in arms reductions negotiations - a factor in considering the situations prior to and following 1991. With CTR assistance 254 launchers were destroyed in Russia and 104 in Kazakhstan.[32].

However, in November 1995, a revision of STARTI permitted converted ICBM to be used as space launch vehicles. Russia was permitted to establish space-launch sites anywhere in the world so long as the converted launchers remained under Russian control.

The Russian space budget had been cut by a nominal 88% between 1989 and 1999. In 1993 Khrunichev had announced the commercialization of the Proton and by Presidential decree, the two major Russian rocket manufacturers, Khrunichev and Energia were merged. In 1995, to take immediate advantage of the STARTI amendment, the new Russian entity formed a joint venture with Lockheed Martin, the US aerospace manufacturer, to build launch vehicles for civilian purposes. The new company was registered in the US. The launch vehicles would be based on the Proton and the Atlas rockets. The Atlas rockets, also retired ICBM launchers, were modernized by the fitting of Russian Energomash RD 180 motors. The US government approved but fearful of dumping placed a limit on the number of Protons to be used. The first commercial launch took place 9 April 1996.
29 May 2008 Russia became the majority shareholder in the company[33] although it remained headquartered in the US. By 2012 the Proton, with 350 launches since its first flight in 1968, had become the rocket of choice for 'heavy' satellite launches lofting approximately 30% of the total fleet.
Igor Komorov, Director General of Khrunichev, now the parent company of International Launch Services, speaking in 2014, said the costs of a Proton launch were not less than $105M[34]. With 80 launches undertaken by the company between 1996 and 2014 a crudely estimated $8.4B shared between Russia, Kazakhstan, and the United States benefitted the FSU economies substantially[35].

Other Commercial Operations

One aim of this study is to highlight some consequences of CTR-plus not envisaged at CTR's birth. UPA and International Launch Services played an important part in the rehabilitation of Russia and in edging its economy towards the market. Not only is the trail from CTR-plus easily discerned but also a possible future trajectory predicated on the Russian presence in the nuclear renaissance and international space programmes. By 2012 there were many commercial links between Russia and the West, particularly Europe, and it is appropriate to enquire how much this was dependent on CTR-plus. At first level a response is simply put – a starting point

[32] START 1 permitted 90 much modified SS18 to remain in service. Authorities are inconsistent with the precise number of launchers operational, serviceable, or converted for further use. These figures are taken from FAS http://fas.org/nuke/guide/russia/icbm/r-36m.htm Accessed 28 May 2015
[2]7 http://www.ilslaunch.com/about-us/ils-milestones Accessed 28 May 2015

[34] http://www.spaceflightinsider.com/organizations/space-exploration-technologies/proton-rocket-can-compete-falcon-9-says-russian-space-corporation/ 14 September 2014 Accessed 10 June 10, 2015
[35] Following the conclusion of the US Shuttle Programme the US agreed to pay Russia $76M for each US astronaut conveyed to the International Space Station. USA Today report on House NASA Appropriations Committee http://www.usatoday.com/story/news/2015/05/20/house-committee-spending-plan-for-nasa/27656043/ Accessed 20 May 2015

needs be a direct link to redundant war materiel, practice, or consequences and/or an activity needs to have started as output of the Western programme portfolio including those designed to provide employment to former VPK personnel such as the DOE Scientist Re-direction Program; the Nuclear city initiatives, Enterprise Links from the National Laboratories (US-financed work at the Kurchatov was continuing in 2012); EBRD and TACIS. Nowhere was the link between the growth of commercial activity and employment for scientists more evident than ISTC.

Employment

PL102-228 refers, through reference to defence conversion and displaced weaponeers, employment creation outside the VPK as a priority.

Prior to reviewing the outcome of this policy it should be noted this was an area where initial plans fell short of what could have been achieved. Congress was generally hostile to defence conversion, refusing and revoking previously agreed proposals.

First priority was top level scientists generally, but not exclusively, working in nuclear ZATO's, because of the importance of retaining them in Russia thus denying their high intellectual property-worth to possibly unfriendly entities, and as a conduit to opening these cities and lessoning the possibility of their becoming centres for future unwelcome activity;

Second priorities were scientists working in important institutes (e.g. Kurchatov) and elsewhere (e.g. Akademgorodok at Novosibirsk) and supporting engineers and staff. Below were tens of thousands of workers in VPK institutions and now-redundant military – the area where the refusal by Congress to approve funding impacted most[36];

It is important to note this was a sector where claims of the success of CTR-plus operations cannot always be justified.

An obvious starting point to initiate employment-creation schemes was the ten closed nuclear cities (there were thirty-five other closed cities in the SU in 1991). It was estimated that of a total ZATO population of about 760,000 between 124,000 and 130,000 were employed in the defence industries. They had been the first to make contact with the scientists of the US National Laboratories and represented the pinnacle of Russian nuclear weapons expertise.

It is easy to blur boundaries and four programmes have been selected to compare effectiveness and record the consequences of their activity. They are SERP[37], born of American scientists' dismay at what confronted them in the ZATO's; the ISTC, supported multi-nationally, American-directed, regarded as a model and outstandingly successful in Russia between 1994 and 2007, and which continued to operate outside Russia as a successful legacy post-2012; and two programmes, one US and one British, focused exclusively on eight ZATO's. A brief comparison will be provided of the situation at Novosibirsk.

In 1992 American scientists shocked at conditions they found on visiting ZATO's on their return home organized food consignments to save families from starvation. As noted scientific links had been initiated and developed during the preceding five years and were now extended. A range of initiatives ensured survival and

[36] Although as noted elsewhere Germany made a large contribution.
[37] Scientists Engagement and Redirection Program

subsequently new opportunities for the highly intelligent and qualified residents. Initially without formal organization individuals, groups, and laboratories contributed what they could. Successful arrangements were initially the outcome of individual contact and initiative. Their growth required more formal arrangements and, given that the responsible authority for the National Laboratories was the DOE and that that more formal CTR projects were being planned through the NL and DOE , it was almost inevitable that the informal, on becoming too large to be ignored, should be handled similarly.

Its creation, with welfare rather than non-proliferation as its first motive power, created a profile for SERP distinct from other programmes. A first aim, reflective of the circumstances leading to its creation, was to boost income directly to those who had lost theirs and uniquely grants were made directly to individuals. The second, more measured, was to provide sustainable private sector employment. Recognizing the geographical dispersion of the VPK 80% of the funding was passed to Russia. Reflecting the circumstances of its foundation, there was not at first a formal procedure for evaluating recommendations although systems of some complexity were later developed. Funds were paid directly into the accounts of individuals rather than on a project or results based system through either the ISTC or the non-profit US Civilian Research and Development Foundation (established 1995).

In 2007 the GAO published an excoriating report[38]. There had been considerable mission creep, although much could be regarded as within overall CTR-plus aims. The credibility of the SERP claim that 16,700 scientists had been helped and 2790 long term private jobs created was questioned on the grounds that many helped had never been involved in weapons-related activities. (Ironically one of the Russian officials quoted in the report was so to the effect that a value of the programme was in its deterrent effect on emigration to the West of high-quality workers.)[39]

An early reference to the possible establishment of an institution that was to come into existence as ISTC was first announced ten months *before* the passing of PL102-228. The proposal was initiated by Germany but was lifted-off by the US. The US funding was from CTR but directly managed by the State Department, somewhat outside government conventions until 1997 when under the reorganization of that year the Department took full responsibility. One account reports a State Department claim that in the management of ISTC it was not bound by CTR rules as applying to the DOD and DOE. Such a declaration would not have been without validity given the nature of its funding and governance. A major proportion of the funding, upon which its foundation was critical, was provided extra-territorially to the US. The legal instruments for foundation were novel and it was in large measure diplomatic flexibility that had ensured its launch.

The ISTC concept was seen as sound to the extent that a year after foundation a second was launched in Ukraine (logical given the proportion of the VPK located there). Their operational success was such that activity eventually extended across the whole FSU, and in 2010, when Russia gave notice to withdraw, the other states engaged resolved it should continue absent Russia.

[38] GAO 08-189 Accessed 12 December 2007

[39] For completeness the UK also ran three programmes at monogorods in Lithuania (Ignalina) Bulgaria (Kozloduy) and Ukraine (Slavutych) the sole purpose of which had been the support of major NPP.

The first Director, G.E.Schweitzer, wrote an account of its foundation, and at the close of the Russian program, a review incorporating data prepared for him by the Centre[40]. The figures in the tables below have been selected or derived from that source. From 1994 to 2011 total funding amounted to $858,964,134[41] of which the largest providers were the three founder entities. The totality of project funding was $270,959,730 of which $23,575,280 came from non-governmental sources[42].

EU/State	US $
EU (as successor to Germany)	242,548,575
USA	225,510,152
Japan	64,370,999

Table 4 Project Funding Contributions

State/EU	US$
US	212,719,557
EU	48,257,871
Japan	7,501,167
Korea	1,904,929
Canada	576,026

Table 5 ISTC Partner Projects

By 2010 beneficiaries in eight countries had received ISTC project funding. At figures provided in January 2012, $665,646,146 from a total of $858,964,133 had been spent on 2034 Russian projects to the benefit of 60,575 scientists[43].

The history of the ISTC will not be replicated here but attention will be drawn to some circumstances of its foundation and consequences of its activities.

In his memoir Baker gives an account of his visit to Chelyabinsk-70 on 14 February 1992 when he "described our proposal for a joint scientific center which would act as a clearing house to match nuclear weapons scientists with interesting and intellectually challenging research projects."[44] The timing of the visit and the proclamation is significant – less than two months following PL102-228. Baker describes his reaction to the poverty of the remarkable circumstances revealed to him. The details of his discussions reveal a breadth of understanding and speed of movement, and supports a claim against CTR owing its *whole* existence to *Nunn-Lugar*. His remarks

[40] Schweitzer Glenn E *Moscow DMZ* (Armonk NY Sharpe Inc 1996) and Schweitzer Glenn E *Russia's Nuclear Firebirds* (Athens GA University of Georgia 2013) principal figures pp264-268

[41] Derived from Schweitzer G E *Russia's Nuclear Firebirds* (Athens GA University of Georgia 2013) p264
[42] Schweitzer G E *Russia's Nuclear Firebirds* (Athens GA University of Georgia 2013) p265
[43] Schweitzer G E *Russia's Nuclear Firebirds* (Athens GA University of Georgia 2013) p266 and 269

[44] Baker James A III *The Politics of Diplomacy* p 615

correspond with records of the initiation by Hans Dietrich Genscher, Foreign Minister of Germany, of consideration as to how support might be provided weapons scientists in 1991, and which by early 1992 had been taken up with the US and Russia. In February the idea of the ISTC surfaced. With this momentum the EEC/Euratom became the European partner in succession to Germany, and Japan joined a short while later. Schweitzer records the announcement calling for the creation of a Centre on 17 February 1992 in a tri-partite statement by Kozyrev[45] Genscher and Baker. From then until April three four-party negotiating meetings took place in Brussels and Moscow. On 11 March all the parties issued a statement commending the foundation of the ISTC[46]. Formal Russian approval was granted through Presidential Decree 258 on 18 March 1992, and US legal and financial provision followed in PL102-484, the DOD Authorization Act of 1992.

Detail of early moves has been provided here since consequences of the original proposal impact variously from conception to post-2012. Diplomacy, international agreement, success against the stated aims to a level unlikely to have been envisaged by its proposers, via an institution clearly part of CTR-plus, at an early stage.

Frequently presented as a US initiative, the role of Germany is in plain sight and its realisation is as much European /Japanese as American. Baker's action in putting in place the first CTR project is at odds with claims of possible indifference. The agreement was a model of how things could be done - absent the intervention of Congress or the Duma - by consent and within the framework of Russian, European , and US law.

Its governance, operations of its board, management of applications and grants and transparency were to the highest standards. One Russian criticism was the time it took to complete applications thanks to its care and impermeability to short cuts and corruption. ISTC was the first institution to introduce to Russia a number of now accepted western practices in accountancy and reporting standards, and the concept and operation of intellectual property rights.

The outturn of its operations created commercial contacts between its grant recipients and western companies which were to stand the Russian economy in good stead during the 1990's and beyond, as was its nurturing of SME - a sector altogether missing in Russia prior to the Law on Co-operatives in 1988[47].

Criticism was evident in the US on grounds of part-time employment support (were the recipients back in their laboratories designing weapons when not working on ISTC funded work?) and that, as time progressed, had not all the weapons scientists found employment in the new economy? Responses include such points as part-time paid work in Russia did not imply other equivalently remunerated work being available – the sites involved had no alternate employment and were sometimes (extremely) isolated. As late as 2010 the employment to population ratio for all monogorods averaged at only 48% and it was estimated that 3% of Russian GDP was devoted to keeping them afloat.[48] The ZATO's had been especially privileged prior to 1991 and the withdrawal of their privileges and budgets meant many of those involved were spending their time growing vegetables for subsistence and in what menial work they could find. It was easy for western lawmakers to underestimate the

[45] Kozyrev had been an assistant to Shevardnadze during which time he had been a participant in the Dartmouth Conferences. He had left Gorbachev's administration for Yeltsin and became the first Russian Foreign Minister
[46]Schweitzer Glenn E *Moscow DMZ* (Armonk NY Sharpe Inc. 1996) states 3 March.
[47] There were 2600 registered 'small' businesses by 1990, but more than 80,000 were created in 1991. *Russian Politics and Society* 4th edition Sakwa R (London Routledge 2008) p297
[48] Employment Concentration and Resource Allocation: One-Company Towns in Russia

Commander S, Nikoloski Z and Plekhanov An EBRD Working Paper June 2011
http://www.ebrd.com/downloads/research/economics/workingpapers/WP0130.pdf Accessed 23 June 2015

magnitude of personal difficulties since the schools, hospitals, even the local bus service, had been funded by the employer and in many cases had now disappeared. Most of the previously lower-paid workers - guards, janitors etc. - had few ties to keep them in place and had left at the earliest opportunity.

The majority of grants were made to Arzimas-16 and Cheliabinsk-70, the Russian equivalents of Los Alamos and Livermore. Cognizant of the lawmakers' concerns the possibility of less favourable long-term outcomes from ISTC grants was questioned by appropriate agencies wary of the possibility of the installations receiving life support through them.[49]

Many scientists and engineers did emigrate. Those that could not, required resources to keep their families and communities alive and the income that was received from ISTC and the other partnerships were an invaluable tool in doing this.

Some consequences of the ISTC are clearly demonstrated by the basic metrics:

Category (2034 Funded Projects in Russia)	**US$[50]**
Project Funding	858,964,134
Partnerships with Government Institutions	247,384,450
Partnerships with Private Institutions	23,575,280
Funded fission and fusion projects	109,146,658
Funded physics, not allocated to fission or fusion	108,541,805

Table 6 ISTC Outline Metrics

The largest category of grants made was for environmental projects, fusion and fission projects followed, with physics in third place. This activity must have influenced Russia's future in the utilization of its scientific heritage. A survey has not been undertaken for this study but there could evidence to support a view that this work contributed to the Russian nuclear renaissance and thus its overall economic health. Between 1988 and 2000 one new NPP unit was commissioned. Between then and 2011 three were opened, a dramatic increase in efficiency and safety obtained in existing plants, and long term plans agreed. In April 2015 Rosatom was to announce the building of five NPP abroad with orders for a further 14 in nine countries. Russia was recognized as the world leader in fast neutron reactor technology[51].

[49] The preface to a NATO document to this effect can be found at www.nato.int/acad/fellow/96-98/utkin.pdf Accessed 13 July 2016

[50] Schweitzer Glenn E *Moscow DMZ* (Armonk NY Sharpe Inc.1996) pp264-267

[51] See, for example, WNA Report June 2015 http://www.world-nuclear.org/info/Country-Profiles/Countries-O-S/Russia--Nuclear-Power/ Accessed 15 June 2015

The Russian nuclear industry was re-organized in 2000-200. The three years when the maximum number of project grants were made by ISTC were 2000, 2001, and 2002. In 2015, after raw materials and armaments the nuclear industry was the most Russian export.

The compass of ISTC was not however limited to the ZATO. It is necessary before leaving appropriate employment creation as part of the non-proliferation agenda of CTR-plus to consider two programmes that were - the Nuclear Cities Initiative and the Closed Nuclear Cities Partnerships.

The US (1998) and UK (2002) initiated plans directly focused on projects to provide employment and create new purpose for the ZATO through the closure of weapons-related activities and their replacement by a new generation of activity[52]. It has been claimed that the US program (directed, in association with Minatom) for Sarov, Snezhinsk and Zheleznogorsk provided 1600 jobs in 26 new or developed businesses; converted the Avangard plant (where the first Soviet atom bomb was assembled) at Sarov into a civilian High-Tech Park; organized 600 computer experts in computer centres; and started over twenty commercial enterprises[53]. In 2003 the programme was closed (although existing programmes were allowed to continue until 2006) it was reported when the government to government agreement expired without renewal because of legal (relating to liability) difficulties.[54] The expiry announcement did not reference GAO criticism of aspects of its management and claims of success out-running the reality.

The UK programme (in part managed by contractors) was centred on Sarov, Novouralsk, Ozersk, Snezhinsk, Seversk and Zheleznogorsk and publicity introducing the programme stated the aim was to provide *lasting* non-weapons-related employment to workers with proliferation-sensitive skills and more broadly to promote *sustained* social and economic development in the closed nuclear cities to provide an environment where the individuals concerned could see a secure future for themselves and their families. Recognizing that holistic nature of community, the objective was that at least 55% of the employment should be for former weapons workers[55] to be achieved through four instruments – investment grants, focused training, partnership building with UK companies, and local economic development.

The UK programme met with some success. It succeeded in attracting donor support from other nations[56] and in 2004 was extended beyond Russia. On the city website for one of the former ZATOK's fulsome praise was lavished on the assistance provided by the British. In the final UK report it stated that by April 2010 it had awarded grants totalling $20M to 166 projects expected to create up to 3269 jobs, 2084 for former weapons workers[57].

The purpose of this programme, small in overall terms, can be seen as at least partly realized in its aim of protecting vulnerable communities and their continuation into a new age. The favourable World-Wide-Web endorsement provided by an un-pressured community administration speaks of success.

In Chapter Ten 'Assessment' the economic impact of CTR-plus on Russia, of which employment is part is discussed briefly. However noted here is that NCI and ISTC are components in assisting movement of the

[52] There was also a small European Programme covering two Zatoks supported by the Italians GAO 01 429 p4
[53] There are a number of accounts. These statistics quoted by the Stimson Center at http://www.stimson.org/russias-nuclear-cities/ Accessed 29 June 2015
[54] https://www.armscontrol.org/node/3258 Accessed 29 June 2015
[55] UK Global Threat Reduction Programme Eighth Annual Report 2010 (London FCO March 2011) p 25
[56] For Example Canada, Canadian $1.5M UK Eighth Report (London BERR 2010) p27
[57] Ibid. The FCO Website, accessed 19 June 2015, states 2371 jobs over 84 projects.

Soviet economy towards a market economy – a condition upon which some US lawmakers gave their support – whilst exerting a non-proliferation influence.

A contrast to the ZATOK programmes is provided by reference to Academogorod the institute of higher learning established at Novosibirsk in 1957. Whilst ISTC grants were awarded to projects there it was 'open' space and there was no coherent overarching plan. Such however was its reputation especially in physics and software (rare in Russia at that time) that by the mid-1990's a number of multinationals including Schlumberger[58] and Microsoft had established footholds. Its Chamber of Commerce and Industry website in 2015 was advertising company introductions to potential overseas incomers across a range of computer applications and it claimed 450 small and medium sized enterprises in membership. An illustration that whilst CTR's contribution to employment and the SME sector was important, it was not total.

Some Unplanned Consequences

There were unplanned consequences of CTR-plus.

Lisbon Protocol

One unplanned contribution of CTR was to meet costs associated with the Lisbon Protocol.

In 1992 the US, Belarus, Kazakhstan, Russia and Ukraine signed the Lisbon Protocol to START1 under which Belarus, Ukraine, and Kazakhstan agreed to the removal of nuclear weapons from their territories 'in the shortest possible time' and to become signatories to the NNPT. Accounts of this process may be drawn from mainstream political and diplomatic sources. However, particularly in the case of Ukraine, much of the necessary persuasion was represented by activity on their territories funded by CTR and those managing CTR played an important part in the negotiations. Financial inducement was essential to achieve this important non-proliferation aim. The exigencies of FSU national treasuries were such that even the costs of some delegations to the conference preceding the agreement were paid for by the US.

G7/G8 and Successors

As described in Chapter Five the priorities of the G8 moved onwards towards the end of the decade following Kananaskis. Conterminously so did the profile of the GP, reflecting its successful impact within the FSU, and of its place at the centre of international proliferation management, now focussed as much on terrorism as state action, whether nuclear, as demonstrated by the Global Initiative to Combat Nuclear Terrorism (2006) or other forms of WMD. For the first time also the hand of nature, as it became appreciated that protocols to limit effects of biological warfare might have utility in combating natural pandemics.

The nuclear renaissance grew in strength following 2002 and in its train considerations for and about the countries new to nuclear power and the need of international mechanisms to safeguard the operation of the Nuclear Fuel Cycle. The Kananaskis decision itself brought about changes in the way G8 operated which should be counted part of the GP legacy, in particular the ability to facilitate the initiation of G20 meetings, and in easing the central locus of nuclear proliferation from G8 to the World Nuclear Security Summits. It would be inappropriate to claim these changes could not have taken place had there been no GP but a reasonable case is

[58] The world's largest Oil and Gas Industry Servicing Corporation.

present that the GP and subsequent agreements provided a firm foundation and smoother transition than might otherwise have been the case. The GP had not appeared on the 2002 agenda (there was a like position when President Carter unsuccessfully attempted to hijack the 1997 G7 to progress nuclear disarmament[59]). It was the first at which a standing committee of experts other than Sherpas and subordinate ministers had been convened, and had then established its own semi-permanent support structure. The documentary output was substantial. 'Annex A', reporting national projects presented at subsequent Summits substantially outweighed other papers which until then had been the sparse publicly available output from the meetings.

G8 Meeting	Report (pages)
2004	8
2007	48
2010	130
2012	88

Table 7 Annex 'A' Report length

In the 2012, final, report, there remained 618 projects underway (a number relating to natural disaster/biological) with 53 recipient countries, and as well as the G8's there were operations under way funded by Australia, Czech Republic, Denmark, Finland, Netherlands, New Zealand Norway, Republic of Korea, Sweden, and Switzerland.

NGO's and Civic.

The tenth report to the Norwegian Storting, quoted in Chapter Six clearly describes the growing place of NGO's in NW Russia civic society.[60]

> Environmental NGOs such as Friends of the Earth Norway, Nature & Youth and Bellona are involved in dealing with the nuclear problems in north-western Russia. They play a valuable role in spreading information about the problems in this region and in encouraging debate on various solutions. Through their cooperation with sister organisations in Russia, they also play a part in increasing the focus on environmental and nuclear safety issue in Russia.
> The Norwegian authorities consider it important to support their work, which has resulted in good contact with Russian experts and the publication of a number of reports on environmental problems and possible solutions. These reports have increased international awareness

[59] Record from Callaghan's papers held in the Thatcher Archive http://www.margaretthatcher.org/archive/results.asp?dt=5&btn=Search&w=LondonG7&searchtype=and&t=0&starty=&startm=&startd=&endy=&endm=&endd= Accessed 1 July 2016

[60] http://www.nrpa.no/en/facts/92534/about-the-nuclear-action-plan Accessed 10 February 2015

> of relevant nuclear safety issues. Moreover, it is a goal in itself to support civil society in Russia, which includes environmental NGOs.
> Cooperation between Norwegian and Russian environmental NGOs has also resulted in greater acceptance and recognition of the Russian NGOs in Russian society. Their efforts are raising environmental awareness in the Russian population and encouraging participation in discussions of nuclear safety issues. Input from Russian NGOs to the national debate on nuclear power is now being taken more fully into account; public consultations are being held and affected parties involved. Cooperation between Norwegian and Russian environmental NGOs is spreading information on Russian environmental legislation both in Norway and in Russia, and this is also important for close cooperation between relevant authorities in the two countries.
> By presenting alternatives to nuclear power and strategies for the closure of unsafe nuclear installations, the environmental NGOs are increasing public support in Russia for phasing out these installations.

The opening of the FSU to NGO's was in consequence of the international response to Chernobyl. 1986-2012 saw perturbations in Russia about the place of NGO's but global NGO's of the standing of Carnegie are now represented in Russia as are world-wide confederations such as Greenpeace. Regionally the outstanding organization, Norwegian but with Russian representation, is Bellona, reports from which have been of considerable assistance to government, academics, and local communities. Less known, but important in illustrating unanticipated consequences of CTR-plus, was the founding of Russian-based environmental organizations one example being the Movement for Nuclear Safety at Mayak. Its reputation has been such that it was asked for assistance with regard to Japanese pollution, and the founder of which, Natalia Miranova, visited New Mexico, to advise on the polluting of the Rio Grande by Los Alamos in 2007.

Green Cross was founded following the Rio Earth Summit by Mikhail Gorbachev with Velikhov as a Board member. It has been the recipient of donations from several countries as part of their GP contributions. Its declared aims include non-proliferation, arms control and weapons demilitarization although it does not appear to have been particularly active. It has performed a limited role as information and equipment provider at Mayak and areas where chemical weapon destruction is undertaken.

It would appear environmental NGO's have been accepted with greater tolerance than some others, possibly because the government is itself publicly committed to environmental improvement and receives funding through channels where it is represented such as EBRD. The Murmansk Region's Public Council on Nuclear Safety with NGO and citizen representation has been active (with Norwegian assistance) and has visited former Northern Fleet Bases.

Continuing in influence following 2012

It might be considered premature to anticipate the most enduring consequences of CTR-plus. There are several candidates.

EBRD The founding of EBRD was described in Chapter Seven. By 2012 the Bank was recognized as a major international institution. In contrast to the US where contributions to non-proliferation welfare and nation-building in the FSU often followed separate routes its profile was of a wide collective remit.

The NSA (1993) was a G7 initiative initially to provide urgently required safety improvements to NPP in Russia, Ukraine, Lithuania, and Bulgaria. It remained operational in 2012. Its legacy may be reckoned by what might have happened but for its existence.

The Bank is guarantor of projects important in their own right including the Chernobyl Implementation Plan (1997)[61] funded by the United States and EU; and the CSF to which by 2014 40 countries had subscribed €590M for decommissioning and safety and €1.2B for construction of the new shelter. This legacy will remain evident for a generation after the completion of the new overall protective structure planned for 2017. Its Nuclear Window (2002) prompted by Kananaskis and the MNEPR, remained active in 2012 in mitigating the legacy of the operation of the Russian nuclear fleet in North West Russia on which it had spent €311M by 2012[62].

The Bank's contribution by 2012 extended far beyond its nuclear responsibilities. 2012 it was providing capital and/or services for over 700 loans in Russia, €24.3B by value, principally private but including a number of public authority projects[63]. With operations in thirty countries of Europe, Asia, and North Africa, the Bank may be quoted as an outstanding consequence of western reaction to the collapse of Russia and, since early preoccupations prior to the passing of PL102-228 were clearly linked to the SU nuclear problems, a CTR-plus legacy.

TACIS provides an enduring consequence of CTR-plus. 1993-2006 it provided 'technical assistance for strengthening the capabilities of the nuclear regulator and its technical support organization with transfer of regulatory methodology including the formulation of legislation and regulatory documents'. It worked with FSU partners on NPP licensing assessments, and necessary safety improvements[64]. Reports record disagreement between responsible authorities, particularly the navy, and the now-strengthened regulators in NW Russia, and of political pressure taken against the regulator on account of its stance. Negatives can rarely be proved, or in this case the impact of the regulators' work, but it can only be to the advantage of Russia, its citizens, and their neighbours. SevRao works with its Norwegian equivalent and IAEA, and members publish papers and attend conferences. Difficult to imagine in 1991.

Continuing Institutions and Projects Some practices initiated under the GP continued beyond 2012 – the ISTC, if not within Russia, from 2014. The UK announced the completion of its GP programme in 2012 but simultaneously with the publication of its final report stated its work at Andreeva would continue under the auspices of NDEP.

Commercial streams initiated alongside CTR will continue. Contracts have been planned throughout the decade following 2012 and beyond for the supply of NPP fuel to the US, and satellite launches for the world. Norwegian companies are well settled in NW Russia with mechanisms in place allowing for the planning of joint enterprises and the strengthening of communications (including a railway link joining the two national

[61] http://www.ebrd.com/what-we-do/sectors/nuclear-safety/chernobyl-shelter-implementation.html Accessed 26 June 2015

[62] EBRD Website Accessed via http://www.ebrd.com/cs/Satellite?c=Content&cid=1395236901376&pagename=EBRD%2FContent%2FContentLayout on 26 June 2015

[63] EBRD Website accessed via http://www.ebrd.com/cs/Satellite?c=Content&cid=1395236901376&pagename=EBRD%2FContent%2FContentLayout on 26 June 2015

[64] http://Eurosafe-forum.org/files12- Seminar1-CHUILON –TACISandISC.pdf Accessed 20 December 2013

systems) between NW Russia and Norway and Finland. Finland, closely involved in the environmental clean-up in NW Russia, agreed in principle in 2014 to Rosatom taking a 34% interest in a new NPP planned for Hanhikivi. Links formed during GP maritime projects have led to contacts between the VPK and Western MIC's which could continue. In 2012 France was building littoral combat ships and Italy was co-operating in designing submarines for Russian construction. Under appropriate circumstances common design and build practices could have advantage to both parties.

Academic freedom is likely to be sustained. FSU scholars continue to take their place in journals, conferences, and through exchanges. High level scientific institutes, such as the Kurchatov, are engaged in nuclear consultancy world-wide. Autocracy increasing from around mid-2005 does not appear to be damaging Russian academic facilities which in 2012 had full access to email and the world-wide-web.

Remediation of environmental degradation and the shift in moving forward from past practices may prove to be the longest-lived outcome of the GP. The fjord country of NW Russia has been at the center of this study. Safety of the fisheries is essential for Norway and Russia. The position in the Far East is less progressed and the difficulties of Mayak will take generations to shift, but the radical solutions achieved at locations such as Andreeva and Gremikha, which will be continued with the legacy of equipment and practice supplied under the GP, are of significance. It may be argued that, with amongst other factors, the involvement of the IAEA, the increased effectiveness of regulators, the contribution and commitments of neighbours, the downsizing of the nuclear powered fleet, and the growth of the environmental lobby, the work achieved will not be undone and that effort will continue whilst issues remain.

Conclusion

Some CTR/GP projects achieved important but simply described aims from which undisputed consequences can be drawn. Dismantled submarines cannot act as launch platforms for SLBM. ICBM cannot be launched from back-filled silos. Downgraded uranium cannot charge warheads. The publishing of such successes remain important for it is through them that the support of lawmakers backed by public opinion is maintained.

Less well acknowledged schemes project consequences beyond the hardware, but how long will the effects of endeavour without hard edges be felt? How long will community pride initiated by western involvement continue? Will a civil society strengthened by achievement, day-to-day contact with western norms, monitored by public consultation, and prodded by NGO's, prosper? Will appreciation of environmental regeneration foster a new feeling of responsibility? The interval will be long before answers are clear.

A Grand Irony

One area may be identified where CTR-plus schemes meld - ISTC, NCI, EBRD, UPA and work undertaken by contract in the higher scientific institutes. This is in the 'nuclear renaissance' and might be illustrative of the theory that it is a democratic victor who meets the cost of war.

The US, the greatest contributor to CTR-plus by multiples, was in 1991 the major world player across a wide spectrum of nuclear activity. This positioned it to take the lead in refashioning the nuclear community of the FSU. However, following the formal conclusion of much Russian nuclear-related involvement in the GP in 2012 the position appeared somewhat different. As with all surveys considerable care is needed.

Activity	US	Russia
NPP building (of which overseas)	0	9 (5)[65]
NPP Planned and Proposed (Overseas)	5[66]	31 + 18 (19 in 9 countries)[67]
Tonnes of MOX manufactured (Total)	First production planned for 2019	Originally planned for 2012 First serial production fuel under test from 2014 at 1 MOX-burning plant 8 MOX NPP to be operational by 2030[68]
Nuclear Fuel Rod/Assemblies Manufactured Tons/year[69]	3700	1600
HEU manufacturing capacity (Uranium hexafluoride Equivalent Units)[70]	3,500	26,000

Table 8 Russian Nuclear Renaissance 2012

[65] http://www.world-nuclear.org/info/Country-Profiles/Countries-O-S/Russia--Nuclear-Power/ Accessed 2 July 2015
[66] http://www.world-nuclear.org/info/Country-Profiles/Countries-T-Z/USA--Nuclear-Power/ Accessed 2 July 2015
[67] http://www.world-nuclear.org/info/Country-Profiles/Countries-O-S/Russia--Nuclear-Power/ Accessed 2 July 2015
[68] http://www.rt.com/news/188332-mox-nuclear-fuel-production/ Accessed 27 July 2015
[69] http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Conversion-Enrichment-and-Fabrication/Fuel-Fabrication/ Accessed 28 July 28, 2015
[70] http://www.world-nuclear.org/info/Nuclear-Fuel-Cycle/Conversion-Enrichment-and-Fabrication/Uranium-Enrichment/ Accessed 28 July 2015

CHAPTER 9

COMPARISON

1948 - 1952	**US Recovery Plan for Europe**
1991 - 2012	**Western Disarmament and Non-Proliferation Plans for Russia**

Introduction

Qualitative and Historic Comparisons

Some Quantitative Considerations

Conclusion

Introduction

The first research hypothesis for this study was that the promoters of PL102-228 had no conception their action was a starting point for what this study seeks to assert was to become one of the most significant international achievements of the succeeding twenty years - what has been termed CTR-plus. If this assertion is to be justified their plan, and others associated with it, must be compared a benchmark. The comparator chosen is the Marshall Plan. The reasons are diverse, and the qualifications necessary to make a comparison sound, not simple. This introduction will set out grounds justifying the choice of Marshall as a comparator before comparing the programmes in qualitative and quantitative terms. The comparison is with CTR-plus - all the programmes designed to assist the FSU in WMD disarmament and to make safe its nuclear legacy.

Marshall is recognised as the world's largest aid programme to 1952 and one responsible for bringing about great change in Western Europe. Were the CTR-plus programmes' aims characteristics and successes sufficiently close to render comparison meaningful? How does longevity, or magnitude - in absolute terms or in proportion to contemporary GDP's - compare? Are programmes other than Marshall more appropriate comparators?

In aim similarity can be claimed. Marshall sought the restoration of Europe to prevent Communist ingress following World War II. CTR-plus was intended, in part, to render the Communist empire to history and to aid

the foundations of its replacement with Western-style market democracy. Both were preventive in aim – envisaged catastrophes were on the horizon – peaceful in intent and planned to ensure their impact was lasting. In structure Marshall and the GP compare in having fixed terms with an identified end-date. An argument can be made that their donation and receipt profiles were similar. In 1948, of the later G7, only the US was of sufficient economic health to carry the burden: in 2002 the major economies together were positioned to share it. In both cases the recipients were regional groups of powers facing similar problems[1].

Neither was the largest nor the longest-lasting US or international aid commitment. That may be identified as being between the US and Israel, which between 1949 and 2014 had amounted to $124.3B in 'current non-inflation dollars' (the face value at time of authorisation) the great majority of which related to military aid[2]. There have also been other larger grant programmes which whilst not for military purposes have been tied to military aims – Vietnam and Afghanistan. None of these examples qualify as valid comparators. They are neither preventative (they were integral to or supportive of civil/military campaigns) nor applying similar standards and requirements across a range of states, and whilst contributions have been made by a wide range of nations and entities, are not embraced within an overall planning and monitoring envelope. NATO may similarly be discounted as a vehicle for aid since whilst, as promised in President Truman's 1949 inaugural that, "we will provide military advice and equipment to free nations" the assistance may be seen as being of mutual co-operation, despite the dominating US contribution. Larger sums of aid disbursement have been reported by USAID and the Development Assistance Committee of the OECD, but do not make for this comparison as the reported grant-making represents 'bundles' of multiple separate projects.

The Marshall Plan as a Benchmark

The Marshall Plan is deeply rooted in the American and European narratives as a saviour of post-World War II Europe and falls to hand as a metaphor for the need for urgent and large scale support in major crises. Reagan, without whom it has been suggested in this study CTR would unlikely have come about, wrote in April 1981, "We spent $billions after WWII to assist countries damaged including former enemies and those coming from under the yoke of colonialism"[3]. Later in 1987 (following Reykjavik) during a visit to Berlin he wrote, "I was reminded of the Marshall Plan and how America spent billions after World War II helping rebuild the shattered economies of Europe, including two of those of our former enemies, and wondered what other nation on earth would have done that"[4]. Jack Matlock, US Ambassador in Moscow (1987-1991) wrote, in criticism of GHW Bush's failure to organise a new Marshall Plan for the FSU, "Bush failed to take full advantage of the unprecedented opportunity Gorbachev offered to influence the evolution of the Soviet economy to market-based capitalism. Instead of organising early in the process - say in 1989 or 1990 at the latest - an international effort

[1] Canada, with the US (other than Pearl Harbor) had avoided significant enemy action on its soil. However the growth of Canadian GDP over the war years had been less than one tenth the US figure. Its 1949 GDP in 1990 was US$95,146 and the US $1,339,505. Historic Statistics of the World Economy www.ggdc.net/maddison/Historical/ horizontal-file02-210xls Accessed 8 July 2015.

[2] Congressional Research Service Report RL33222 10 June 2015

http://fas.org:8080/sgp/crs/mideast/RL33222.pdf Accessed 7 July 2015

[3] Reagan Ronald *An American Life* (London: Hutchinson, 1990) p 265.

[4] Reagan Ronald *An American Life* (London: Hutchinson, 1990) p 680

to advise and support the difficult transition, he in effect stood aside and waited until Gorbachev could devise a plan that merited support.[5]

Historical coincidences

Secretaries Marshall and Baker both chose to make seminal announcements about the programmes at University gatherings – Marshall at Harvard on 5 June 1947 and Baker at Princeton on 12 December 1991. The backgrounds to the speeches though were significantly different. Marshall's, although the prospect had been exhaustively discussed within the State Department, was the first public statement of intent, and the Act giving effect to the intention, PL80-472, would not be signed into law until 3 April 1948. Baker's was the day PL102-228 had become law.[6] His presentation was positive, "If, during the Cold War, we spent trillions of dollars on missiles and bombers to destroy Soviet nuclear weapons in time of war, surely now we can spend just millions of dollars to actually destroy and help control those same nuclear weapons in times of peace.[7] Years later international recognition came to the programmes' initiators in like fashion. Marshall received the Nobel Peace Prize in 1953: Nunn and Lugar were nominated for the same honour in 2002.

A Wider Environment

The initial positioning of the programmes was very different. Economically and financially Marshall was planned to absorb a major share of US Government resources. The initial resources approved under PL102-228 were infinitesimal in Government expenditure terms and permissive not obligatory.

During the currency of Marshall there were other US aid programmes, but they were few and small. Prior to, and during the currency of, *Nunn Lugar* there were many, and expenditure upon them large. Presidents Truman and GHW Bush (and later Clinton) were pre-occupied with the totality of the assistance being offered by and around the respective plans. Preoccupation with the welfare as well as the military position of the FSU was almost a constant. Returning to Chapter One Reagan's diary on his first full working day after recovery from the Hinckley assassination attempt (24 April 1981) read: "Staff meeting at 9.30 then met with Al Haig and Jack Block about lifting grain embargo. I'm reluctant about it but think it will reassure our allies that while we're hardnosed about the Russians we aren't refusing to talk."[8] And, from his diary on 2 June 1981, "Cabinet meeting re the Selling (sic) of 100,000 tons of butter from government stock-pile. [To the SU] Only real price would be $1 a lb. Americans are paying $1. I have proposed finding what we can do toward giving it to hunger areas instead."[9]

Public Opinion

The arena within which both operated at start-up time was not without sensitivity to public attention and awareness of its importance was ever-present in 1948 and 1991. For Marshall a "Citizen's Support" Committee was formed October 1947 under the Chairmanship of Henry Stimson, a former Secretary for War, with

[5] Matlock J *Superpower Illusions* p107
[6] Politics Interview on Nunn, Nunn-Lugar and Reagan Diaries Indiana Political Website http://www.howeypolitics.com/ Accessed 11 December 2009
[7] Baker James A III *The Politics of Diplomacy* p 562
[8] Reagan Ronald Ed Brinkley D *The Reagan Diaries* (New York Harper Collins 2007) p 15
[9] Reagan Ronald Ed Brinkley D *The Reagan Diaries* (New York Harper Collins 2007) p 23

membership from the Council for Foreign Relations and Carnegie. In five months it raised more than $165K - spent on publications, mailings, and other forms of publicity. In 1991 the position was more austere. As noted in Chapter Three Aspin and Nunn felt compelled to withdraw a bill to provide Moscow with humanitarian aid, technical assistance in transporting and dismantling nuclear and chemical weapons, environmental improvements and housing in light of the omens of the Pennsylvania bye-election.[10]. In noting similarities in the environments surrounding Marshall and *Nunn-Lugar* it is important to recognise the role of Carnegie which 42 years after its contribution to Marshall contributed to the costs of the Harvard paper, on which the PL102-228 Bill was based, and the lobbying meetings of Nunn and Lugar.

Marshall was a plan with a programme, agreed funding, and timetable. An early consideration is whether CTR-plus can properly be considered equivalent by these criteria. The first permitted expenditure for CTR was permissive not mandatory; throughout its first ten years funding was subject to annual Congressional appropriation (and an argument can be made that despite a presidential undertaking its second ten years also). Not a strong case. However the GP, undoubtedly met these criteria, and incorporated the CTR, now covered by Presidential undertaking and international agreement. A ten-year programme is impressive. However in 1989 the G7 had called for the creation of EBRD in response to the difficulties of the SU, and in 1991 it opened its doors. Its remit was wide and inclusive of nuclear safety issues. Opening marginally earlier than PL102-228's passing, in response to many of the same pressures, and with the same constituency, the case that CTR-plus existed for twenty years becomes sounder. As the preceding chapters make clear the positions of CTR and EBRD-supported schemes moved closer with time. In 2010 President Obama in reflecting on the American/Russian nuclear relationship in a meeting with President Putin endorsed CTR as a twenty-year programme.[11]

In the next section emphasis is primarily on the US as the accepted progenitor of CTR-plus. The non-US contribution is emphasised in the succeeding, quantitative, analysis.

Qualitative and Historic Comparisons

Evaluation of comparative expenditures is a necessary but incomplete action in comparing CTR-plus and Marshall. Other characteristics important in assessment include identification and comparison of the promoters ambitions, the recognition of achievable aims and the drivers necessary to secure them; institutional structures in place or established to secure them; the extent to which they were influenced by their contemporary cultures; and eventual outcomes, sought and otherwise.

Qualitative comparisons will be made initially through a survey of similarities and differences, followed by issues open to question. The order of comment reflects chronology not comparative importance.

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[10] Bernstein and Wood state Nunn described this as the Anti-Chaos Initiative. Bernstein Paul I and Wood Jason D *The Origins of Nunn-Lugar and Co-operative Threat Reduction* Center for the Study of Weapons of Mass Destruction Case Study 3 (Washington DC National Defense University Press 2010) p5 Accessed 21 August 2012

[11] https://www.whitehouse.gov/the-press-office/2013/06/17/remarks-president-obama-and-president-putin-russia-after-bilateral-meeting Covering note only when re-Accessed 4 March 2016

Some difficulties are self-evident in seeking such an analysis. CTR-plus, excluding EBRD and TACIS, encompassed distinct phases – 'original' *Nunn-Lugar*, CTR 2002-2012, and the GP excluding CTR, 2002-2012. Meaningful comparison of programmes of four-year and twenty-year length undertaken during one and six presidential terms respectively offers clear difficulty. Uncertainties intrude, however the purpose in this chapter is an attempt to grasp the grand design not to place day-to-day business beneath a magnifying glass. An underlying aim of this study is to examine whether CTR-plus can be counted one of the greatest aid programmes in terms of its effects (and beyond what was envisaged by its originators) with Marshall an internationally accepted benchmark.

Similarities

Nunn-Lugar and Marshall were both born of shadows of dread – the first a world-wide incubus and the second realised. At the inception of both there was danger of a power vacuum and possible anarchy in some to be recipient states. One followed military victory in which the US was a major partner in the winning coalition: the other a claimed victory. In short, neither could have existed without the Cold War.

Resemblance is identified in the conception of both programmes. There are numerous claimants to parenthood for Marshall. Prompting for the proposal may have been initiated by junior staff (accounts are not certain) and worked its way upwards. Prior to the carefully calculated address at Harvard in which his thoughts were articulated, George F Kennan and Charles Bohlen had been asked by George Marshall, the respected former Head of the Army and at that time Secretary of State, to work independently on ideas, some of which from both were incorporated[12]. In *Nunn-Lugar* it was two respected Senators who set out to convince Congress, and the Administration of the importance of their proposals. As planning for both proceeded negotiations between DOD and State Department were difficult: inter-institutional rivalry was as strong in the 1990's as it had been in the 1940's. The changes for CTR in 1997, whereby funding for non-DOD sponsored activities went directly to the State Department and DOE, could be likened, as was a settlement of arguments between the same parties over Marshall, to recognition of a necessary truce between powerful players, and two of the several approaches American diplomacy can take.

It can be argued that *Nunn-Lugar* and Marshall both emerged in part from some sort of failure. In the case of Marshall a factor had been the allies' failure to agree a plan for the restoration of Germany. In 1991 the failure was in timing and a lack of experience – a failure firstly to have recognised or react to the impossibility of Gorbachev's position before, and certainly immediately after, the August 1991 *coup*; and subsequently not to understand sufficiently well the ramifications of the command economy and the measures that would be necessary to convert the SU to a market economy. As noted earlier some, such as Matlock the influential US Ambassador in Moscow at the time, thought the opportunity of an internationally-based Marshall II had been lost.[13] In short, the time for both was of major political and economic uncertainty.

An essential pre-requisite for the launch of both programmes was that sufficient resource be available. The American economy was strong on each occasion. In 1947 it was seen as solid with great promise: in 1991 it

[12] The Marshall Plan *Allen W Dulles* (Providence Berg 1993) Ed Wala M p vii

[13] Matlock J *Superpower Illusions* (New Haven Yale University Press 2010) p 107

was clearly identified as the strongest in the world[14]. Despite this strength Marshall was a commitment of such magnitude that some saw it a possible risk to the US economy. However in 1991 the original *Nunn-Lugar* requirement was minute in relation to government expenditure. Despite the disparity, in both cases, American funding can be seen as providing a pump-primer to the recipient nations. In the case of Marshall this assertion can be easily identified but it is frequently overlooked in *Nunn-Lugar*. Its support, at a time of great deprivation, encouraged the Russians to continue to allocate funds to reduce and make safe their nuclear arsenal throughout the chaos of 1990's, and in 2002 they were to make the second largest pledge, after the US, to the GP – a political as much as an economic gesture. Success in Ukraine urged other states to partnership.

One principle in gaining domestic support for the programmes was that each would be an important stabilising element. Accepting Russia's narrative that it is a European country Marshall and *Nunn-Lugar* both recognized this principle at times when the US economy was dynamic and optimistic and those of Europe in the first case and Russia in the second, enfeebled. Both were initiated when there was lack of clarity as to what the future might bring, and were to succeed outstandingly in their professed aims. There was a fear of starvation in Europe in the early post-war years and in the FSU in the early 1990's, when ration cards were issued in Russia.

There was novelty in both plans, and each was to require considerable planning on the part of the recipients were the aims to be realised. There were broad correspondences in the principles of their planning. In both care was taken to ensure American-led solutions were not imposed upon the partners – although in each the recipient's views were from time to time to the contrary. Under Marshall European-based planning measures were agreed that were to prove bellwethers for the EC. In CTR-plus it was emphasised that Russian priorities were to be followed. Those priorities were enunciated by Putin at Kananaskis and followed for the length of the GP. It was Minatom that prepared the Master Plan for NW Russia, which was then financially and practically assisted by NDEP (1996) and MNEPR (2003). A critique of this claimed similarity would however draw attention to there being no Russian equivalent in CTR to the European democratic influences in play in Marshall, to which appropriate rejoinder would be to note the infancy of Russian democratic process at that time with a plethora of proposals across civil society.

The supporters of each harboured varied motives, and this is evident from the literature – particularly the Congressional record. In the public domain both programmes attracted critical comment on the basis their funding released resources for activities inimical to US interests. Marshall, it was claimed, permitted European countries – specifically Britain France and the Netherlands – to continue imperial adventures; whilst CTR contributed to resources permitting the RF to develop new weapons. However both were supported on grounds that can be seen as related. In the 81st Congress[15] it was argued that the costs of rearmament for the US would be greatly in excess of Marshall were the communists to take charge in Europe, and in the 102nd frequent reference made to the costs of the US nuclear inventory authorised to match the Soviets relative to the costs of

[14] Paul Kennedy 'The Rise and Fall of Great Powers' (1987) with his analysis of the *relative* decline of the US was perhaps premature in his assessment as to when decline would start questioned this; and the Financial Times in an editorial of 1 August 2015 was able to write of the US '. . . nothing beats the pre-eminence of its currency. The US may account for just a fifth of Global GDP, but dollar assets make up three times as great a proportion of global reserves.' The challenger in 1991 was Japan and that of 2015 China.

[15] Congressional record as quoted by Hogan Michael J *The Marshall Plan* (Cambridge CUP 1987) p 190-192)

contributing towards their dismantlement. An early public pronouncement to this effect from the administration was Baker's Princeton speech[16].

As both enterprises progressed increasing public attention was directed towards them, Marshall far more so. Common to both was their position as flagship programmes of the time, and that they were to an extent the tip of the iceberg. $9B of aid was provided to Europe in 1945[17] and from 1949 $1.5B annually to western European countries under the Mutual Defense Assistance Programme[18] in addition to Marshall. Assistance to the FSU between 1991 and 2012 has been estimated at exceeding $100B[19].

Both sought to change political problems into technical ones – with in each case only partial success. Each in its turn created structures not envisaged at their beginning. Marshall, perhaps the EU eventually: the GP, as noted in Chapter Five, the structure of the G8 Summits. At the second tier it was managers who were in control in both instances from business and bureaucracy, in that order, for Marshall; and for bureaucracy (represented on the Russian side by Rosatom and the 12th Military Directorate) and science for CTR-plus – although the amount of business represented in the ISTC, NCI and other programmes must not be ignored.

Both programmes, provided links between domestic and foreign policy at times when recipient partners were facing problems with the potential to overturn their then current polities, and were seen by the US as part of its security structure. Whilst the Soviet Union was offered partnership under Marshall, the Administration was pleased for political reasons when this was rejected, as the Plan proposals were already being seen as a wide-game to restrict Soviet aspirations. CTR promoted in part on the economy of dismantling SU nuclear weapons against the vast expense of countering them might be claimed a book-end in securing the success of that American policy some forty years later.

As both progressed, as could be expected, there were policy shifts within their envelopes. In both there was a move from what might be described as "first aid" measures to structural changes. In Marshall emphasis moved between countries as the perceived communist threat ebbed and flowed: in *Nunn Lugar* shifts across the FSU and within technologies as priorities became more nuanced. For both there was considerable negotiation between giver and receivers. With Marshall, in a straightforward sense, with France continually working towards the receipt of aid on its terms; and in a more nuanced way the UK, with Sterling Area and Commonwealth preoccupations and with a relationship distinct from that of other recipients as a 'junior' victor and the comfort of common language and some shared cultural attitudes. In the case of *Nunn- Lugar* there was hard political (as opposed to technical and legal) bargaining not only with Russia (particularly over liability issues) but also the Ukraine as part of the quadrille prior to its accession to the Lisbon accord, and Kazakhstan seeking "reward" for its surrender of nuclear material.

Bowing to pressure in Congress in each case legislation was drafted to provide opportunity for American business. In each there was opportunity for workers. In Marshall emphasis was placed on tours and

[16] Baker James A III *The Politics of Diplomacy* (New York Putnam 1995) pp 562-3
[17] Schain M (Ed) *The Marshall Plan: Fifty Years After* (New York Palgrave 2001) p 71
[18] Schain M (Ed) *The Marshall Plan: Fifty Years After* (New York Palgrave 2001) p71
[19] Estimates unexpectedly vary widely. GAO reports an American estimate of $66B between 1991 and 2000. GAO 01-8 Nov 2000 p9 Accessed 23 June 2016. Offers of aid to the FSU were much greater than aid delivered as some were conditional on terms that could not be met (for example from the IMF) or which were recorded elsewhere (for example export credit guarantees)

programmes designed to transfer American technical and production skills to the European nations. In the UK in particular these programmes were heavily supported by Stafford Cripps, President of the Board of Trade, who, despite the extreme economy of the time was able to use US Treasury funds to support the establishment of the British Institute of Management, providing a boost to medium sized business and protected workers.[20] Visits to US installations for Russian officials scientists and engineers, reflected some of the Marshall profile. Training courses for FSU staff in western countries were significant in GP programmes. Under CTR-plus the ISTC and NCI programmes provided work for many scientists and engineers who would otherwise have been under or unemployed and provided a basis for the embryonic Russian SME sector. Ironically in both cases, in the event, US enterprises received little advantage; and in the case of CTR legislative requirement regarding the supply of US equipment for tasks in Russia, attracted criticism from GAO as well as the Russians, who commonly had suitable equipment available with which some projects could have been completed less expensively.

Marshall is seen as an economic programme and CTR-plus as a disarmament and non-proliferation one but the legacy of each included political and social benefit. Both brought western allies closer– and the latter, in the GP, sought additionally to cement Russia into the international community following its admission to the G7/8 five years earlier. A spur to Marshall was the ghost of Versailles and the failure to return Germany to the community of nations. That fear can be equated to some of 1991 with western concern at growing Russian instability. It is necessary to take into account the role of all aid to Russia. Initial failure of the US overtures over Germany in 1946 and 1947 can be equated with concern in the West at Russian economic and political failures during the 1990's and an aim, as the decade progressed, to compensate for initial western over-confidence and inexperience in seeking to convert at Russia at unrealistic speed to a democratic/market economy.

Marshall represented a turning point in US foreign policy in its rejection of US isolationism, the pre-World War II posture, in favour of making America the leading international power. CTR represented a turning point in that the US, seeing itself as 'the victorious power', moved to assist the 'defeated power' in terms of some partnership, unlike 1945 when the victorious powers, in the immediate post-war period ,argued over the head of the defeated about arrangements for the disposal of German assets. (Whilst 'Victory' remains a disputed term in the Cold War lexicon it was used extensively by Bush and senior members of his Administration, and whilst he had already taken steps to de-activate US weaponry, it is a marker from which the twenty-year programme is sometimes measured[21]. Whilst the apparent failure of Versailles sounded a tocsin in 1947 the circumstances leading to it were greatly different from those of 1991.

This brief US-centric view of necessity omits account of the wider international aspect represented by the G7, where it was a leading player, and through it the creation of EBRD and remediation of consequences of the Chernobyl disaster, some details of which can be found in Chapter Seven

[20] A S Milward argues that the improvement had already started by this time. The Socialist background of the Attlee government and strong trade union support for it would also have been important factors.

[21] Other, but less strong, candidates would be the provision of US funds following Chernobyl and US recognition of the need for major humanitarian political and social aid for the FSU of which Nunn-Lugar can be seen a part.

Points of Difference

An early and significant difference between the two programmes was that for Marshall an announcement of policy preceded the appropriation of funds whereas with *Nunn-Lugar* funds were appropriated on the basis of its promoters' prospectus when there were no Administration plans for their utilisation.

Whilst there can be scholarly argument around the margins for Marshall the totality of its expenditure, within tight limits, is agreed. That for CTR-plus may be impossible to determine.

For Marshall at an early stage in the process detailed plans were drawn up and at the Paris Conference in July 1947 four general principles were adopted in accordance with which approvals were to be granted. For CTR there were no initial targets or specific principles only permissive funding and an aim. There was no calculation as to what might be required for what purpose. There was no organisation in the RF capable of providing a coherent plan at that time. By the start of the GP the position was different. Principles and procedures had been hard-won during the currency of CTR and Russian priorities were adopted and applied for the wider endeavour. Similarly with MNEPR, principles, some of which were to be varied in response to difficulties encountered, were established before commencement, and the Russian authorities responsible for producing a plan for NW Russia were able to do so ahead of timetable.

The Marshall Plan was the cornerstone of contemporary US foreign policy and the funds it disbursed the greatest aid package in peacetime foreign policy at that time. It might be seen as *complete*. *Nunn-Lugar* was one in an inventory of policies and its costs a proportion only of funds appropriated to assist the FSU, and a small proportion of those expended on US foreign policy projects as a whole across its lifetime.

From the beginning Truman worked hard to achieve unanimity between his Administration and Congress and with the two parties to achieve consensus; whilst at the beginning of *Nunn-Lugar* almost all the work of harmonisation and support was undertaken by the two Senators whilst President Bush publicly appeared to stand aloof.

The promoters of Marshall sought nothing less than major influence in the economic and political structures of the recipients whereas the aim of the promoters of CTR-plus was simple and focussed.

Marshall funding was integral to the economies of recipients with provision for them to acquire imports from the US necessary to kick-start production in essential industries. CTR-plus was peripheral. It did release pressure on the recipients' economies through provision of funding for essential nuclear safety requirements, but the amount was generally relatively modest and the linkage to the wider economies more subtle.

Marshall ran for five years: CTR was operational over ten as a US stand-alone operation and a further ten as 50% of the GP. Marshall was terminated early, partly because European economies had recovered more swiftly than anticipated and since following the outbreak of the Korean War an increasing proportion of the aid delivered was military related and not designed to assist economic recovery. As described in Chapter Five the GP ran to its timetabled end with some aims fully achieved and others scheduled to continue as individual projects.

Marshall was remembered 40 years later as an international game-changer as noted earlier in Reagan's comments on visiting Berlin in May 1987, and by former President Nixon who also invoked Marshall with a call for a new plan for Russia, as did in 1994 NATO and the IMF. In contrast *Nunn-Lugar*, CTR and the GP are barely known in the post-Cold War public narrative. They certainly did not enjoy the contemporaneous street-poster endorsement which was a public manifestation of Marshall.

Operationally the Marshall Plan, despite its simple litany of principles, was extraordinarily complex to manage. In contrast whilst many difficulties were faced in the execution of CTR-plus projects, and much time spent in negotiating the agreement of conditions under which work would be undertaken, these were generally technically complex but less so in political and financial terms.

Points open to Further Review and Discussion

Whilst similarities between Marshall and the stand-alone *Nunn-Lugar* have been identified there is opportunity for further research. Comparison between Marshall and CTR-plus offers substantial challenge.

Britain, primary ally and recipient, was central to Marshall. Britain was the first nation alongside America in 1992 in providing "first aid" help in immediate reaction to the difficulties facing Russia in safing and transporting FSU nuclear weapons.[22] Can it be claimed that the UK, despite its role in one as recipient and the other as donor, was a senior partner in both enterprises? The answer is almost certainly not. Histories of Britain's financial negotiations post-war reveal that to the US it was seen as an irritant and failed to achieve much of what it sought. In 1992 there is little doubt that the UK was seen, certainly in military circles, as the closest ally, and that Mrs Thatcher had been an admired political partner of President Reagan on both sides of the Atlantic and a valuable interlocutor between the US and the SU,[23] and it could be concluded there was some special connection or influence[24]. However whilst the British contribution on the ground in the FSU was second in time the financial value of its first contribution at £37M was not large, and the State Department's principal recorded discussions on additional support were with Germany and Japan. Ten years on there are indications that President Bush omitted to share his thoughts at an early stage with Tony Blair, who may have been wrong - footed at Kananaskis. Grounds are also weak to support an argument that both plans carried a psychological boost for the recipient partners. Reviews of Marshall conclude this was dependent upon time, location and personality. In some, principally the smaller states, appreciation was constant and genuine, whilst in the larger it was subject to contemporaneous events. In the UK relief did not always go hand-in-hand with appreciation. In the case of CTR no record has been found of Russian media or government reference to the programme before 2002.

For CTR initial discussions had been between scientists (well represented in the Communist elite but waning to disappearance under President Putin) and western confreres of the Dartmouth and Pugwash conferences who

[22] British First Report on CTR http://www.dti.gov.uk/DTI/Pub6842/2k/11/03/NP.URN03/373 Accessed 18 March 2013

[23] She left office in November 1990

[24] Conversation by the author with Field Marshal Lord Vincent, a former CDS, concerning visits he was asked to make to Russian military installations around 1992.

were now able to work openly together[25]. *Nunn-Lugar,* and much larger welfare packages, came to Russia at an extraordinary time of freedom, desperation, emigration for those able to take the opportunity, and a thirst for all things western. Despite a freshet of information Russian public knowledge of the VPK remained mostly non-existent, and as a separate factor, absent in consideration as to benefit. The position at elite levels was different. Politically, as Gorbachev had warmed to membership of the G8, senior politicians and new-found men of influence fawned at the impression of equality – a trend that might have peaked with Putin's telephone call to Bush following 9/11 or the acknowledgement of Russia as a partner in, and not a supplicant of, the GP.

Were there boosts for the national psyche in the US as the only Marshall donor and the principal CTR-plus donor? In neither situation was the path smooth. Whilst for Marshall support remained firm at the top levels of the Administration and there was little lack of confidence that Marshall was the 'right thing to do' and that it was contributing to the role of America as international leader, lower down there was friction and annoyance at what was seen as British capriciousness and the alleged use of US funds by Britain France and the Netherlands to maintain imperial realms. The position regarding CTR was strongly argued. Chapter Three references pressures following the bye-election that forced abandonment of the initial Aspin/Nunn proposals and Chapter Four the contests between Administrations and Congress to keep the programme alive. Indeed the creation of the GP was in part the consequence of a GW Bush Administration wish, on the back of fears of terrorism, to maintain a rolling programme that would be less subject to Congressional pressures.

The smooth operation of plans was hindered to some extent by financial instabilities – Marshall by the sterling crisis and CTR twice by the collapse of the ruble. Some supporters of both hoped they would be transformational but in each case that hope was disappointed. The extent of the financial difficulties and the aspirations of proponents are worthy of brief examination. The strength of the US economy during the lifetimes of both was such that they were absorbed and that greater stresses could have been – less so in the case of Marshall but easily for CTR. The transformational element requires deeper consideration. In politics and economics outcomes are frequently delayed beyond the expectation of proponents. For Marshall there are claims that its initiatives provided an essential groundwork for European institutions familiar today – not least the EU. For CTR the position is less clear. Technical achievement has provided nuclear safety not just for Russia but internationally and whilst in 2012 Russia's government was authoritarian rather than democratic, lines can be drawn to practices which softened hard edges of the Soviet profile that may be traced to *Nunn-Lugar*, such as adoption of international protocols and practices, public consultation, and an acceptance of NGO's. There is a claim to be examined that without CTR-plus Russia would not have been a major player in the nuclear renaissance following 2010.

There were discussions around Marshall as to whether private funding might have supported the changes needed in Europe. Supporters argued to the contrary - that the markets had failed to address structural macroeconomic problems throughout the 1930's and it would therefore be impossible for them to deal with the post-war position. This view has been contested with claims that the recovery was already under way by the time of Marshall's adoption[26]. It might be thought impossible that private enterprise could have handled the disarmament of the FSU but arguments can be made. Firstly, the UPA and use of 'redundant' launch vehicles

[25] A significant number of Russian members either retired to the US or had their archives lodged there.

[26] See, for example, Milward A S *The Reconstruction of Western Europe, 1945 -1951* (London Methuen 1984)

are commercial programmes operating within the structure of government-to-government. Secondly, incorporating a non-proliferation dimension, Russia's accession to IAEA protocols following Chernobyl removed a barrier to its participation in the international nuclear market. Thirdly that much of the work undertaken by the US National Laboratories was and is executed by contractors and that in a more market economy/democratised Russia the same could be the case. Fourthly a proportion of the commissioning of activities initiated through the ISTC, employing weapons scientists and engineers, or under its auspices, is for private industry[27]. Illustrating these points was an announcement in 2016 that Rolls Royce had secured a contract to provide the safety monitoring equipment for Russian NPP to be sold abroad[28].
Whilst both programmes at their start had formally limited boundaries there was consideration that they might be extended more widely. In the case of Marshall, Dulles contemplated whether China might be eventually included[29]. For the GP this was realised as programmes came to encompass a world-wide spread.

Comparison may be made also in the monitoring of the programmes by lawmakers and officials. For Marshall 200 members of the Senate and Congress made visits to Europe to assess the position[30] - there were no doubt many supporting officials. For *Nunn-Lugar* the GAO drew periodic attention to the costs of the large number of visitors allegedly finding it necessary to check the position on the ground. In early 1993 it reported that to that point 343 visits had been undertaken by 185 staff at a total cost of $1,67M of which only $359K, had been charged against *Nunn-Lugar* the other $1,31M being met from a variety of sources[31]
Worthy also of consideration is a comparison of the attitudes of the US as 'Victor'. Reference has been made to some of the US references at the end of the Cold War. A parallel for Marshall might be found in a speech by Governor Dewey who was to be President Truman's republican opponent in the 1948 election.

> We have no choice today whether or not to act in this emergency. It is unthinkable that, after a successful war at a staggering cost in blood and resources, we should now stop and surrender the fruits of victory. We shall be doing just that if we permit the free nations to fall into economic chaos and then under Soviet control"[32]

A short editing of his words could describe the 1991 position not inappropriately.

Some Quantitative Considerations

[27] $23,575,280 Schweitzer Russia's Nuclear Firebirds p265
[28] World Nuclear News 1 December 2015 http://www.world-nuclear-news.org/RS-Rolls-Royce-teaches-Russia-how-to-approach-regulators-overseas-01121501.html Accessed 1 March 2016.
[29] *The Marshall Plan* Allen W Dulles (Providence Berg 1993) Ed Wala M p 21

[30] *The Marshall Plan* Allen W Dulles (Providence Berg 1993) Ed Wala M p 60
[31] GAO NSAID-93-154 published 8 March 1993 http://www.gao.gov/assets/220/217529.pdf Accessed 1 March 2016
[32] Quoted in The Marshall Plan *Allen W Dulles* (Providence Berg 1993) Ed Wala M p 91

Absent a lengthy econometric analysis comparison of Marshall and CTR-plus can at best be only broadly illustrative. That which follows is sufficient for this purpose. Issues examined include accounting practices, baselines, longevity and factors external to the programmes.

Accounting Practices

Different countries, and indeed their agencies, can follow different accounting practices. One GAO report of CTR noted three sections of DOE alone were using different conventions. When expenditures are reported they may relate to those authorised over a single or a span of years and include some properly spent on the task in hand but drawing on non-project resources – e.g. the State Department meeting some expenditure overseas incurred by other agencies, and DOD funding support provided by military units. Some expenditure if separately appropriated can be in in arrears, some remains classified[33]. Audit trails are difficult to establish. The outline framework budget for the EU can relate to expenditure over a five or seven year period with annual budgets (and revisions) set with regard to this. A consequence is the possibility of a range of figures describing a single activity, dependent on the point of the budget/expenditure cycle when they are published.

The range of terms used can, without care, cause confusion. A single operation or budget period in the US may be referenced by the *appropriated* amount - the funding legislated by Congress; the *obligated* amount - funds for which there is a legal requirement for expenditure even though it may not at that point have been appropriated; the *authorised* amount - that approved under the procedures laid down for the particular grant-in-aid; the *reported* amount - as required under some legislation in reports from the President or an Office of State and which can run several years late if a project is complex; and the figure reported by the GAO following an audit. With regard to non-US GP expenditure national practices vary as is evident from Annex A where some states report figures only at the conclusion of projects and others expenditures to the reporting point.

Over a period of years obfuscation can arise as the consequence of bureaucratic change, requirements of governments, and infighting between agencies. At an early stage of CTR the US confirmed that the DOE would be responsible for non-proliferation activity and the DOD for threat reduction: in 2005 the GAO published a list of overlapping activities and practices between them amounting to $333M in the FSU alone in 2004[34]. In later years the NSC was responsible for co-ordinating work but refused on at least one occasion to discuss financial questions with GAO. In the US funding channels changed periodically. Pre-1996 CTR funding was channelled via the DOD and afterwards directly, but stickiness and variations in inter-agency transfers could mislead, with for example the State department supplying funds for the employment of weapons scientists under DOE arrangements in 1994. In 1999 non-proliferation work in the DOE was transferred to the NNSA. Whilst most of the funding related to the FSU, some related to the US itself. In 2005, in response to urgent need, retrospective approval was given for previously approved funds to be spent in Libya rather than Russia[35].

[33] GAO 11-227 p10 reported 15 December 2010 that with regard to the Global Nuclear Security Program it 'found that absent an implementation plan essential details with regard to the four year initiative remain unclear including the Initiatives overall estimated costs.

[34] GAO 05-157 Washington 28 January 2005 pp34-35 http://www.gao.gov/products/GAO-05-157 Accessed 2 March 2016

[35] GAO 05 -157 Washington 28 January 2005 p1 http://www.gao.gov/products/GAO-05-157 Accessed 2 March 2016

The forms of recording activity can themselves on occasion obscure rather than enlighten. In the US, at one stage, the DOD and the DOE were required to report annually whilst the State Department reported tri-annually on arms control. By 2005 there were no less than six outstanding reports or plans on activity sought by the Congress. One practice which has provided problems in analysis has been the varying financial years between countries and enterprises. For the UK's Closed Nuclear City Programme different expenditures appeared in reports of the FCO and the DECC and for the latter obfuscation as to whether records did or did not include the contributions of other countries to the overall programme. Countries were not consistent in reporting currencies – Norway did so in USD, Euro and Kroner. ISTC reports were circulated in 10 languages.

These comments may be sufficient to describe the difficulties in establishing actual grant expenditure. Those relating to the finances of commercial and commercial-like expenditure can be more complex.

Baselines

Any quantitative comparison at the level achievable in this study can provide an answer only within wide margins. To achieve even this there must be consistency between the baselines. This is obtained by taking the figures approved in the founding legislation and the Kananaskis declaration; PL80-472 in 1948 for the start of the Marshall Plan; PL102-228 in 1991 for the start of CTR; and the 2002 Kananaskis Summit pledges for the GP. This will permit clear comparisons of authorised and pledged amounts and expenditures. As the analysis develops the position with regard to the GP becomes simpler than that of CTR for the additional acceding countries frequently recorded their contributions as allocations to wider programmes or as percentages (frequently 100) for the costs of particular projects or items. Separately identified will be associated programmes; such as those managed by the EBRD, and during the period 1992-2001, by non-US states.

Consequences of the Programmes' Longevity

Throughout, the programmes reported figures have been subject to inflation within, and constantly changing exchange rates between, at the peak of the GP, around forty contributors. The structures of the economies and the political and cultural institutions of benefactors and recipients have changed, with subsequent variations in their indices - but not at constant rates. Application of inflation rates year by year are theoretically possible but would not take account of baseline changes which have taken place on several occasions at different times in each country. Precise knowledge of exchange rate adjustment would require the times and days on which transfers were made with additional complexity where funds were deposited and withdrawn over time from international programmes. The most accurate are purchasing parity comparisons but the penalties of use include the number of assumptions and disproportionate amount of time required seeking a precision not required for this generalised review[36].

One answer would be to measure historical GDP's and the proportion of them devoted to the programmes. This is practical over short periods and has been employed in studies of Marshall where the programme length was four years and when exchange rates were fixed and inflation low. Such constancy does not apply over the twenty years of CTR. An example of the "GDP Trap" may be made by reference to the Berlin Airlift, underway while the Marshall Plan was under construction and measured today as an iconic success of the Cold War. The official total of the number of aircraft involved, flying 277,000 flights, was 300 of which a number were

[36] One hurdle was the 2011 decision of the IAEA to account in Euros rather than USD – with an option of exchange rates - in its 2012 Annual Report

C54/DC4 the then, with 84 seats, largest popular airliner of the day[37]. In 2012, at the conclusion of the GP, FAA records showed there were 7185 airliners with more than 90 seats operating on the US Register.[38] The then cost of the DC4 was $160-180,000. A present contemporary (there have been roughly the same number built) is the Boeing 777 the list price of which is $261.5 – 300.5M[39] Applying published rates of inflation to the price of the DC4 (the last examples of which now fly as museum pieces) gives $1.524M [40]. There is clearly little resemblance between the products and their prices. At the Earth summit in Rio in June 1992 it was estimated that Chernobyl had cost Belarus alone 206 billion roubles or 16 times the annual national budget - "not including moral and social costs"[41] a further example of the dangers of the straightforward application of indices to complex international financial problems.

Financial factors external to both programmes

In Marshall considerable efforts were exerted to link aid to particular industrial/commercial programmes. Details were provided in Chapter Nine of some post-START consequences through the UPA and satellite launchers. The difficulties of measuring their effects on the programmes are profound. They will be regarded as second-order consequences and the analysis in this section limited principally to primary features. Activities of programmes such as the Scientists Redirection Programme and the NCI produced 'profits' from many projects. Published figures have been accepted at face values.

Practices Followed in this Chapter

As in the case of studies by GAO, and the accounts of the ISTC, there will be no adjustments for inflation. The sums used will be those of the original 'authorities', as employed in most US reviews, and as reported in 'Annex A'.

Expenditures have been converted to US$ at the exchange rate applying at the time of announcement excepting EU GP payments where, given the wide variation, the average of rates between 1991 and 2012 is used. Figures relating to ISTC are the national rather than project totals using figures supplied by the ISTC to Schweitzer.

It is again stressed that there are many factors for which adjustment is not easily made and that the outcomes reached should be regarded as no more than approximations.

Global Partnership

It is important to note pledges were not necessarily "new" in their entirety. The EC hosted a conference with the European Parliament in November 2003 to review the EU position following Kananaskis. As with US accounting, difficulty was experienced in attempting to reconcile different budget lines. It was estimated that under the expenditures approved under the 1999 'Joint Action to Support Co-operative Non Proliferation and Disarmament Programme in the Russian Federation' (which had recently been extended to 2004) EU

[37] http://atwonline.com/aircraft-amp-engines/faa-us Accessed 14 April 2014

[38] *http://www.dw.de/the-berlin-airlift-in-numbers/a-3435561-1* Accessed 14 April 2014

[39] Boeing Aircraft Price List http://www.boeing.com/boeing/commercial/prices/ Accessed 14 April 2014.

[40] http://www.usinflationcalculator.com/inflation/historical-inflation-rates/ Accessed 15 April 2014

[41] This figure, or the US$ equivalent is quoted in several documents. Possibly derives from UN work on the impact of Chernobyl on Belarus summarised at http://www.un.org/ha/chernobyl/belarus.html Accessed 9 October 2015. The World Bank reported 'Belorussian' GDP for that ear as $17,022,180,272 which would yield a *total* of $272B http://data.worldbank.org/indicator/NY.GDP.MKTP.CD?page=4 Accessed 20 June 2016

expenditure, including that on TACIS and ISTC, was 50% of that necessary to meet the EU 2002 G8 pledge[42]. The report continued 'Confusion reigns as to how much the commission actually spends on non-proliferation due to the fact that relevant projects fall under diverse budget lines. . . However, a senior Commission official highlighted that the real figure on non-proliferation and disarmament programmes may be far lower'.

The Marshall Plan

For Marshall a range of variations have been published many relating to the figure initially appropriated[43]. The government official total was £12.59B plus a 'Commodity Reserve' of $11M. In Schain M (Ed) *The Marshall Plan: Fifty Years After* (New York Palgrave 2001) three authors quote different figures in the same volume. Gardner in a paper in that work (p120) lists the allotments for individual countries from which an overall total with a collective of $12.71B has been computed.[44] For the purposes of this study a figure of $12-$13B is sufficiently accurate.

Starting the Comparison

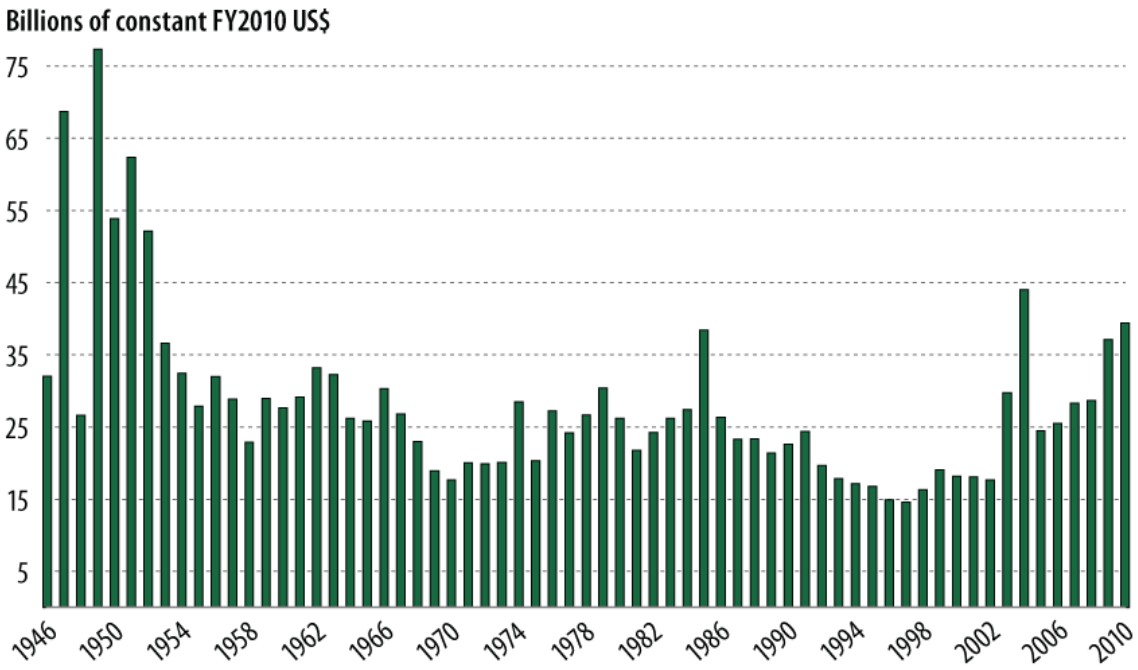
More than baseline figures are required to gain a perspective of the theatre within which Marshall and CTR-plus were conducted. It is helpful to appreciate the proportions of total aid that Marshall represented in the US 1940's portfolio and CTR-plus plus between 2002 and 2012. The figure beneath illustrates total US Aid between 1946 and 2012. The two peaks generated by Marshall and the GP are clearly identifiable. Whilst Marshall Aid terminated at the conclusion of its mission, assistance to US allies with the rise of the Cold War continued at something like the 1946, pre-Marshall levels, for the succeeding ten years. The peak at 2004 coincides with the first full year, excluding US, programmes of the GP.

[42] ' EU member States Pledge 5 Billion Euros to Tackle WMD Proliferation' Quille J *European Security Review* No 20 December 2003 Not paginated Given the EU budgeting arrangements there was clear confusion as to the correspondence between the original EU budget plan and its continuing G8 commitment.

[43] $13B under Economic Co-operation Act of 1948, Sec 102(a) Title 1 of the Foreign Assistance Act 1948 signed into PL80-472 by President Truman 3 April 1948

[44] Gardner R (p211) in Schain M (Ed) *The Marshall Plan: Fifty Years After* (New York Palgrave 2001). Gardner's figures) contain arithmetic and presentational errors. Details of the adjustments made to those figures are available (Author's note 14.416). The $12.71 figure relates to $12.62B (Schain); $12.0B Hogan Michael J *The Marshall Plan* (Cambridge CUP 1987) and $13B (Citibank in Financial Times 7 July 2012)

Figure 9 Total Aid US$B adjusted to 2010$[45]



The US between 1992 and 2007 provided more than $28B in aid to the FSU. The proportion devoted to CTR and CTR-related activities increasing from 23.7% in 1995 to about 67% in 2006 (there having been a jump from about 40% following 9/11 when anti- terrorist consideration grew.) 40% of the funding was to Russia. From 2007 concerns about Iraq and Afghanistan coupled with the Russian economic revival led to a major change in the direction of American aid as demonstrated in Table 2.

[45] **Sources:** U.S. Overseas Loans and Grants (Greenbook), Office of Management and Budget Historic Budget Tables, FY2011; annual appropriations legislation and CRS calculations. As replicated in ***Foreign Aid: An Introduction to U.S. Programs and Policy (***Washington CRS Tarnoff 2011)[45] Accessed at https://www.fas.org/sgp/crs/row/R40213.pdf 14 August 2015

2000	US$M	2010	US$M
Israel	4069	Afghanistan	4102
Egypt	2053	Israel	2220
Columbia	899	Pakistan	1807
West Bank/Gaza	485	Egypt	1296
Jordan	429	Haiti	1271
Russia	**195**	Iraq	1117
Bolivia	194	Jordan	693
Ukraine	**183**	Kenya	688
Kosovo	165	Nigeria	614
Peru	120	South Africa	578
Georgia	**112**	Ethiopia	533
Armenia	**104**	Columbia	507
Bosnia	101	West Bank/Gaza	496
Indonesia	94	Tanzania	464
Nigeria	68	Uganda	457
Total	9271		16843

Figure 10 Major US Aid Recipients 2000 and 2010[46]

(emphasis added)

Assessing Expenditure

Given the uncertainty of many figures the impossibility of providing a total expenditure for GP-plus that would not provoke energetic debate must be appreciated. A range of valuations of various of the programmes, and their consequences, will therefore be given to enable a very approximate view to be taken of their magnitudes. There remain fertile areas for disagreement. The establishment of the EBRD as a component of programmes associated with CTR in the early 1990's was debated earlier, but this was not in doubt post-2002 when national contributions to EBRD were listed in Annex A. Intention to distinguish pre- and post-2002 programmes in assessment of the impact of the non-US GP programmes is not easily achieved. Where States have combined to fund major programmes those donations may appear in the national as well as project tables - for example ISTC- and the same figure may appear in input and output columns.

Judgement is required as to where the boundaries of CTR-plus lie. UPA and satellite launch operations have been included since their possibility was likely only because of CTR. €24.3M of loans made to FSU operations by the EBRD is excluded. Many are one stage removed from CTR-plus - upgrading district heating plants and environmental programmes of the NDEP - although some of the latter could be included under a wider definition than that employed. Annex A for 2012 raises questions about some inclusions examined in Chapter Ten 'Assessment'.

[46] **Source:** Department of State, Foreign Operations CBJ FY2002, FY2011. Accessed at https://www.fas.org/sgp/crs/row/R40213.pdf 14 August 2015

There is an adage 'the truth is many-sided'. The vignettes that follow are not a succession of tables but CTR-plus observed from a range of viewpoints over time. The boxes are labelled to aid analysis in this and Chapter Ten.

A First View: Some Basics

US appropriations under CTR between 1991 -2002 were[47]

$4,006,400,000
1

The Kananaskis pledges were provided in appropriately rounded figures. When exchange rates for non-USD contributions were applied the following week the total was $5.6B greater than the headline pledge.

Figure 11 The GP Founding Undertakings 2002-2012

State	Pledge	US$ Exchange Rate 1 July 2002[48]
US	US$ 10B	10,000,000,000
Germany	€1.5B	1,486,950
UK	US$750M	750,000,000[49]
France	€750M	743,475,000
Japan	US$ 200M	200,000,000
Italy	€1 B	991,300,000
Canada	Can$1B	658,328,000
EU	€1 B	991,300,000
RF	US$2 B	2,000,000,000[50]
Total (Inc. RF) 2		25,656,790,350

The baseline figure is therefore, in 'contemporary dollars', up to:

29,263,590,350
3

Whilst this is twice the amount in 'contemporary USD' as Marshall, taking account of the caveats provided earlier, it would be facile to consider this a comparable order of magnitude.

[47] Figures from Congressional Research Service Paper CRS31957 Accessed at https://www.fas.org/sgp/crs/nuke/RL31957.pdf on 27 July 2015 This figure does not include permissive amounts detailed in Chapter 7 pages 11 and 17 - $100M Foreign Assistance Act; $400 under the Secure Disarmament Talks provision of PL102-484 and State Department Funds required for International Organisations (IAEA).

[48] Accessed@ http://www.oanda.com/currency/converter/10August on 10 August 2015

[49] Sterling was rising strongly at this time. By expressing its commitment in US$ the UK Government 'saved' £2.25M between Kananaskis and 2 July http://usd.currencyexchangeratehistory.com/fx/gbp-to-usd/month/june-2002/ Accessed 28 June 2016

[50] Included for illustration and not incorporated in calculations of aid to FSU

[51] GAO notes US contributions to IAEA accounted at 'actual rate' rather than pledged amount GAO 06 93 p36

It was the intention of the GP that other countries would be invited to join the endeavour. The commitments of non-G8 donors published in Annex A for 2012 (excluding Belgian, Irish or Polish contributions[52]) total:

9, 001,607,728	
4	

This figure includes some expenditures prior to 2002. Not all countries included this in their 2012 Annex A returns. This figure is not less than:

102,778,000	
5	

However it will be recalled from Chapter Eight that in the original declaration at Kananaskis it was intended to extend the programme beyond the FSU. As this study relates solely to the FSU it is appropriate to deduct from the Annex A reports expenditure in countries neither of the FSU nor included within international programmes including the FSU as one of its partners. That figure is:

1,278,589,093	
6	

A crude reckoning at this point for CTR to 2001, the G7 Kananaskis pledges, and adjusted figures for non G-7 contributions to the FSU therefore might total:

37,089,786,585	
7	

(3 + 4 + 5 – 6)

A Second View: Some Basics Elaborated

It will be recalled that CTR appropriated expenditure 1991-2002 and the US pledge at Kananaskis totalled:

14,006,400,000

(1 + US2)

There were frequent US expenditures directly relating to CTR that were not formally included within the CTR appropriations. Examples include the GAO 1993 report that at that point $1.31M had been spent on US officials

[52] These figures are as reported under Annex A. UK 6th Report (2008) reports Belgian commitment of €8.2M. The Irish pledge was $10M pa for each of 12 years. UK 4th 2006 and 5th Report 2007 reports £0.06 and 6th (2008) €4-plus commitment. The Polish pledge was $120,000. Work is marked as completed in 2004 Annex A but no costing entered. US reports notes commitment (GAO 06/692) of funds but not allocation to project (Sweden similarly). Contributions were 'piggy-backed' and although not reported under Annex A were almost certainly spent.

[53] Expenditures at this point were $5,822,591,819

visits to the FSU in connection with the programme that had been met from other budgets; and in 1999 a special grant of $325M been made additional to the expenditures of the UPA to keep the programme viable at that point. As noted a decision on funding other than the annual CTR appropriations was via AMEC where DOD believed, given the atmosphere in Congress, the proposal would not be approved and this was therefore 'hidden' in DOD accounts. AMEC was later included within the annual appropriations but for the purpose of this illustration the allocated expenditure to 2002 is included.

On this basis an amount can be added to the previously recorded US appropriation of:

26,635,000
8

It was argued in Chapter Four expenditures relating to nuclear safety might be legitimately included in the reckoning of CTR-plus. (A difference between US and non-US practice is that non-Americans included such contributions within the reckoning of GP whilst the US generally did not). The IAEA NSF established in 2002 and later extended through 2012, is not specifically an FSU fund although Russia has hosted its largest single project. Non-Americans routinely included contributions to it as part of their GP contributions. A US position vis-a-vis IAEA contributions to special funds is difficult to determine with generous payments made over and above its assessed UN norm to general operating expenditure, and through assistance in kind. An arbitrary but rational route has been followed by taking the average payments of special grants over three years and applying that average to each of the years between 2002 and 2012[54]. The resulting sum to be added to the US contribution is:

473,000,000
9

Contributions were wider than governmental. Commercial organisations were partners in ISTC, and elsewhere – to be covered later. In terms of project grants NTI made or guaranteed three of which two are added here[55].

1,400,000
10

A crude working total for the US contribution only using the preceding figures at this point might be:

14,507,435,000
11

(1+ US2 +8 +9 + 10)

And for the non-US contributions as adjusted:

23,083,386,585
12

[54] 34% of IAEA safeguards budget alone 1998-2004 ($ 88.4M) met by US GAO 06-93 Accessed 20 July 2016

[55] The third was $10M towards the costs of an International Fuel Bank to be established at Mayak under IAEA Supervision (2008)

(Non-US2 + 4 +5 - 6)

Bringing a crude working total to not less than:

37,590,821,585
13

(11 + 12)

A Third View: Third Parties

Thus far, excepting ISTC and NTI, consideration has been given to government/EU managed operations. That focus will now be widened to include operations managed outside the strictly governmental. Whilst they are European-based the US was also a contributor. It will be recollected that EBRD was a G7 response to concerns over the FSU in 1991. A first priority was the NSF (to which eventually 40 countries subscribed). By 2013 contributions totalled €3,990,000, or USD

4,668,300
14

The EBRD also administered the NDEP. In 2010, at the height of the programme 8 of the 24 major projects were nuclear.

The cost of these amounted to €95,000,000, or USD,

111,150,000
15

The TACIS programme focussed on the provision of assistance to FSU regulators, and funded by the EU amounted to €12,500,000, or USD

14,625,000
16

European-based contributions thus were USD:

1,304,433,000
17

At this point the figure accumulated in the study for this chapter might be recorded as:

37,721,264,885
18

[56] US records note contributions to US programmes from other countries of $47.1M 2006-2010 GAO 12-71 p64

(13 + 14 + 15 +16 + 17)

The European figure quoted here is an underestimate since it is assumed that TACIS, NDEP and CSF contributions were met from the €1B pledged amount. However the figures for Annex A exceed the pledge and this and other amounts (not least €450M met from EBRD's 'own' funds) given the overall inaccuracy of CTR-plus figures are accepted as providing a sufficient balance.

This is an appropriate point for an interim review of Marshall and CTR-plus expenditure.

Total Marshall Figure	Marshall Adjusted for Inflation[57]	CTR-plus As illustrated, possibly, and not less than
12,600,000	111,260,000	38,120,864,885[58]

A Fourth View: The Inclusion of Outliers?

The first three views outline briefly funding at the core of CTR- plus. There are other operations that would have been unlikely without its success, and awareness of some related financial characteristics is important in attempting to gauge an overall magnitude of CTR-plus influence. Easily accessible metrics are not the same for each activity and include contract figures, launch fees, and project funding. However the purpose of inclusion is not for financial analysis but as an aid to grasping the extent of its reach. Figures published by those responsible for the UPA, US/Russia satellite launch operations and ISTC commercial project funding - amount to $25,423,575,280[59].

These three elements of commercial activity alone are in total 200 times larger than Marshall adjusted for inflation. Taking the total recorded figure for ISTC alone, government and commercial funding, operations and projects, total $270,959,730, or twice the inflation-adjusted total for Marshall – remembering the caveat of the GDP trap.

It was proposed earlier that in seeking a defensible comparison in quantitative terms between Marshall and CTR-plus account should be taken of the size of US GDP at the material times. In 1950 this was $300.2B and in 2012 $16,163.2B – almost 54 times larger, and representing approximately one fifth of world GDP.[60] Marshall represented around 4%. Should a comparison be regarded as valid, CTR-plus as spelled out in this section, excluding the figures in the "Fourth View", amounts to 0.04%,

[57] Inflation Rate of 783% between 1951 and 2012 Accessed at http://www.usinflationcalculator.com on 14 August 2014

[58] Accepting President Obama's figure of $18B US (page 33 beneath) the US and non-US figures for operations as a whole can be accepted as approximately equal.

[59] The total for these activities as described above

[60] Figures from US Bureau of Economics at http://useconomy.about.com/od/GDP-by-Year/a/US-GDP-History.htm Accessed 24 August 2014

In March 2010, President Obama in pressing for funds to carry forward his Nuclear Posture Review, including an aim to secure all loose nuclear materials in the succeeding four years claimed $18B, as the CTR bill. A rare case, perhaps, of political rhetoric, more modest than the reality.

Endnote

It is emphasised that the figures in this section lack precision and that almost every assumption may be challenged - hence the employment of 'views' in their review. There are many idiosyncrasies and some creative counting in the national statements of GP contributions (which are themselves inconsistent). Among those to which particular attention is drawn is:

the original GP strapline of *'Ten plus Ten over Ten'* appears universally accepted in official documents as recognition that non-US contributors would match a US commitment of $10B. In practice, because of the translation of pledge values to current rates, the initial non-US undertakings amounted to over $15.5B. Official papers, but frequently not commentators, are careful to add the qualification *'up to'* in describing national contributions;

the likelihood of understatement - the high proportion of uncosted Japanese commitment in GP reports; a low final figure for the UK not reflecting a commitment to continue to fund work after the end of the formal programme in NW Russia;

omission in the figures above of expenditure on Operation Sapphire, publically regarded as part of CTR;

the permeability of target and achieved dates – the entire period of the second Danish programme included in the 2012 Annex A was timetabled to take place *after* 2012;

transfers between states and international funds, such as the NSF, which are tied (and which accordingly frequently appear under the state's national programme) and those that are not;

and the cat's cradle of financial records where funding for one project can appear as different amounts in more than one report – and in input and expenditure columns.

Conclusion

Much of this chapter has been devoted to caveats warning of the danger of attempting comparison of the Marshall Plan and CTR-plus. Notwithstanding this caution crude comparisons have been attempted. The US aid commitment across its full spectrum and proportionately CTR and Marshall to GDP, have been noted.

The economic and political differences between the late 1940's and the 1990's are easy to overlook. Accepting that CTR-plus operated between 1991 and 2012 within that period there were extraordinary changes within and between national and international political structures.

One can compare elements individually such as longevity, achievement of aims, and consequences beyond them - the establishment of new institutions, and their place against other contemporary expenditures, but in the round difficulties arise. The comparisons must be broad. Each programme must be viewed within its time. Were they uniquely significant economic and aid programmes of their eras, did they share a nobility of purpose and was that achieved, have they left their mark on the institutions and in the minds that will follow them?

Qualitatively

A significant difference in emphasis between Marshall and CTR-plus was in one aim of Marshall being a restructuring of the economic and political landscapes of Europe (the success or otherwise of which is not covered by this study) whereas no such intention was present in the initiation of CTR although some such ambition became apparent as CTR/CTR-plus progressed. Attention may be drawn to such success as a by-product of CTR-plus in NW Russia.

One marked difference between the programmes is in public perception. Marshall remains on the lips of politicians and in the media, whereas CTR and the GP are rarely referenced. This will be discussed in Chapter Twelve.

Marshall was tightly focussed with keen American concern that there should be no spill-over to the colonial interests of the recipients. CTR was tightly focussed on the FSU (with enlightened self-interest particularly in the cases of the US and the Nordic countries) but following the wider aims for the GP adopted at Kananaskis, spread world-wide.

Quantitatively

This has been the broadest of brushes in viewing expenditures that may be properly considered related to CTR-plus. For the purpose of comparing CTR-plus and Marshall Plan for this study that is sufficient. The test is whether CTR-plus funding is of a magnitude sufficient to be regarded as a significant marker in an overall comparison. Excluding measurement based on GDP proportions against which arguments have been provided, at not less than one-third that of Marshall, excluding the commercial operations unlikely to have existed without it, a comparison is valid.

It is clear that the constructed funding profiles are distinct. That for Marshall is simple and may be tracked in totality through Congressional records. With weighty caveats it may be translated into contemporary cash levels. For CTR-plus the complexity of over four years' appropriations must be extended to twenty. The sole source of Marshall must be extended to more than twenty donors and over thirty-five recipients with complex series of inter-relationships. Outputs may generally be measured for Marshall appropriations but for CTR-plus they were on occasion inputs for later stages in a chain of operations creating potential for further difficulties in defining measurement and validity.

Overall

The success of Marshall in the narratives of the US and Europe is frequently regarded as a given. This study claims a comparable success for CTR-plus in its primary aims – no nuclear events, no significant proliferation from the FSU. For both there were failures, small in magnitude and commonly overlooked.

Both were accompanied by programmes that could be seen as the obverse of the coin. Marshall became accompanied by re-armament aid as it progressed. CTR was arms-related but some operations benevolent in the provision of employment. It was accompanied by humanitarian and 'civic' aid seeking, or conditional upon, moves towards democratic market economies. Had Aspin's original plans encompassing disarmament and butter been found acceptable CTR-plus might have been viewed more akin to Marshall. Both had designs (CTR post-commencement) to bring about a transition in the societies towards which they were directed.

There are many official viewpoints from which CTR/GP may be observed and hence often different versions of events and achievement, not least from the 27 NATO [61] and over 220 US Government committees involved[62]. This was not the case with Marshall. With one donor and an operational life of four years the focus is clear: with more than twenty donors over twenty years it is diffuse. For the observer this might be the most significant difference.

[61] Laurence Eagleburger then Assistant Secretary of Defense for International Security Policy quoted by Schultz.
[62] Congressional Research Service Report R43143 (Washington 2013) https://www.hsdl.org/iew&did=743292 Accessed 20 July 2015

CHAPTER 10

ASSESSMENT

1985 -1989	**Reagan - Gorbachev dialogues.**
1989 - 2012	**No military or civilian nuclear accidents in the FSU**
1991 - 2012	**Thirty-five countries assist the FSU to safely disarm**

Introduction

Definitions

Assessment of Issues

Conclusion

Introduction

The study has selected and analysed important characteristics of programmes established to assist in the disarmament of, and to prevent non-proliferation from, the FSU.

This chapter will assess some issues relating to the programmes as a whole from the SU's collapse in 1991 until 2012 when operations in Russia under the GP (but not all components) ceased. It will commence by seeking to define when the programmes started and when they can be regarded as established.

Definitions

CTR

Chapter One suggests the CTR could not have happened firstly without the interaction between Presidents Reagan and Gorbachev November 1985- January 1989; and second, possibly, the Chernobyl disaster of April 1986.

CTR was created by the US following the FSU's collapse to assist the successor states to meet the terms of the disarmament agreements of the Reagan/Gorbachev era. It was not itself an agreement to disarm. Those agreements were necessary pre-conditions to CTR and would have existed irrespective of any plans subsequently made to assist the FSU, particularly Russia as the internationally agreed successor, meet its obligations.

Chernobyl lifted a veil of secrecy for the Soviet hierarchy and Gorbachev in particular. It did not create an immediate climate for disarmament but it spurred Soviet views in that direction. The disaster's consequences created side-effects to prove valuable in making economic and social changes in the FSU/Russia - particularly the defenestration of the VPK, opening of doors to NGO's, framing what was to prove an invaluable connection with the IAEA, and legitimising environmental concern as a political interest. Chernobyl was the starting point for western technical assistance to the SU and its successors. Retrospectively significance could be seen in a false dichotomy of civilian and military nuclear safety as western civilian and military experts came to work side-by-side at Chernobyl, and then elsewhere. Initial funding on Chernobyl remediation cannot be counted as the first CTR initiative. Funding was provided spontaneously by states/EU in advance of any demilitarisation programmes.

The PL102-228 Soviet Threat Reduction Act popularly known with successor Acts as *Nunn- Lugar* after its creators, or CTR, a term coined by President Clinton, was designed to deal with military nuclear consequences on the collapse of the SU. It did not embrace all the provision made by the US around that time. The Freedom Support Act (PL102-551) of September 1992 widened the purpose of PL102-228 with a preamble that links to a strapline for the G7-inspired EBRD.

The study title is 'The Establishment and Some Consequences of the Combined Threat Reduction and Associated Programmes' and in assessment it is necessary to consider when CTR achieved acknowledged status as a secure programme unlikely to be terminated by whim or misfortune. It was fragile in its early days and its establishment was not that of its start-date.

Presidents succeeding GHW Bush have invariably referred to *Nunn-Lugar* as the start of CTR. Is their retrospective assumption accurate? Clearly its passing was an outstanding achievement remembered not least as one of the less common occasions when Congress rather than the White House formulated foreign policy. Are there other claimants? The US had been providing food to the SU for decades and assistance post-Chernobyl since 1986, but the study rejects them as measures which qualify as early actions under CTR-plus. There is however another US claimant.

In Chapter Six reference is made to the meeting between Neff and Mikhailov 17-20 October 1991 at which the proposal was considered that the SU sell 500 tonnes of surplus uranium to the US for reasons similar to those that had prompted the Nunn-Lugar proposals. The detail was carefully negotiated and an agreement made that with extension was to operate for twenty years, but the deal was not signed-off until 1993.

At this point therefore a claim that CTR started in 1991 might be sustained. The passing of PL102-228 was the first and outstanding legislative move which came from unique circumstance via exceptional initiatives. It is the date ascribed by national myth. It must be recognized however that it was not, as frequently assumed, an isolated action either in America or beyond. The discussions about excess Soviet uranium were proceeding, associated legislation was passed within a year, and negotiations about other forms of assistance were

continuing. In EBRD the White House had approved an initiative that was to be an important international vehicle in the remediation of FSU difficulties including nuclear consequences. It had opened in April 1991. If CTR's start date was 1991 when might it be regarded as 'established' in the sense its existence was secure and generally recognised, it was engaged in the activity envisaged by its initiators, and its course unlikely to be terminated?

This status was achieved through the step-by-step accretion of measures which, it is argued, collectively fulfilled the definition.

1992	Signing of the 'Umbrella Agreement' between the US and RF permitting work to commence in Russia
1993	Signing of the Uranium Purchase Agreement permitting the start of operations
1994	PL103-160 authorising rather than permitting the virement of the funds necessary for CTR
1994	Signing of the agreement to establish and fund the ISTC with Russia EU and Japan
1997	US funds disbursed directly via responsible departments rather than through DOD

Within the definition provided therefore it may be safely concluded that the CTR was 'established' by 1994 and mature by 1997.

The Global Partnership

The Global Partnership is clearly defined by its foundation declaration at Kananaskis in June 2002. Whilst pledges made by some G7 leaders required ratification by their governments there can be no doubt that the start date and date of establishment were the same. It is commonly seen as the associated or partner programme to CTR with its relationship clearly established by the slogan of *'ten plus ten over ten'*. As noted, the G8 plans included attracting other countries to join in their plans which they did over the next ten years. The success of the GP however was not dependent on this aspect of its prospectus. The Partnership was to prove also a good vehicle for rationalising operations by non-US countries in the FSU, and extending its work beyond those borders. This too was not to the detriment of its initial aim.

CTR-Plus

CTR and GP do not wholly contain the portfolio of work undertaken in the FSU by the West and it is for this reason that 'CTR-plus' was chosen for this study as a collective term for all programmes or activities undertaking, assisting, or supporting the disarmament of and nuclear proliferation from the FSU, and improvements in the safety and environmental consequences of its nuclear activities.

The G7, concerned at the position in the SU, at its meeting in 1989, had agreed to the establishment of EBRD, which opened for business in April 1991. Whilst the environment agriculture and business were, and are, its prime areas of responsibility nuclear safety was and remains an important part of its portfolio. With *Nunn-Lugar* it was a prime formal respondent to the SU emergency. As noted a contemporary strapline matches the

preamble of the Freedom Support Act, 'the EBRD has a political mandate in that it assists only those countries 'committed to and applying the principles of multi-party democracy and pluralism'. Influence, perhaps, of G7 discussions.

The TACIS program commenced also in 1991, the first British and French programmes in 1992, and many others during the decade. EBRD as fund-raiser and project-manager has an outstanding and continuing record – and like some initiatives established under the GP carries responsibilities beyond the FSU. In consequence it is argued that the major non-US contribution to assisting in the nuclear cleansing of the FSU began not in 2002, as is often taken to be the case, but coterminous with that of the US in 1991. It is therefore consistent that CTR-plus be regarded as established from that date.

Assessment of Issues

Could only Presidents Gorbachev and Reagan have initiated the disarmament treaties which were the necessary precursor to CTR-plus?

Absent either the succession of deputies close to the leadership and sharing the same policy aims (Reagan to GHW Bush) or the delegation of high level of policy making and execution (Clinton's Gore-Chernomyrdin Commission) generational achievements as significant as the end of the Cold War are unlikely to take place. Schultz, Baker and Shevardnadze illustrated the necessity of commitment by the leaders' most senior advisers. The contra is illustrated by Brzezinski, Carter's National Security Advisor 1977- 1981, whose views varied from the President's and whose advice damaged Presidential aims.

Brezhnev had followed his predecessor Khrushchev's policies, specifically détente, although his priorities were frequently elsewhere. Ford inherited Nixon's policies in foreign affairs but was mostly preoccupied with domestic economic difficulties, although he and Brezhnev agreed the Vladivostok Accord in 1974, an attempt to move forward from SALT 1 due to expire 1977 towards a possible SALT 2. This failed in large measure owing to hostility in Washington.

Carter was the third US President to face Brezhnev - in power 1964-82. With practical experience as a nuclear pioneer in the US Navy and of strong moral conviction Carter would appear in many ways the US leader most likely to have engaged successfully with the Russians. He had entered office with a commitment to improve US/Soviet relations and the aim of seeking new arms control agreements. The leaders signed the SALT 2 Treaty in June 1979 which, despite Carter's aims proved of little practical effect. The Soviet invasion of Afghanistan in December 1979 did nothing to build confidence between the leaders and Carter had to withdraw the Treaty from the Senate before ratification, although both sides agreed to follow its terms. Despite Carter's aims, the four years of leadership shared with Brezhnev (1977-8) saw the superpowers move further apart. The SU had decided to match its armed forces with those of the US (and in so doing planted the seeds for its collapse ten years later) and the US, alarmed, commenced a five year increase in military spending to counter 'Russian re-armament'.

A period of stasis overtook the final year of Brezhnev's leadership. His health declined to a point where he was unable to exercise authority. He was kept alive to protect powerful interests and the country stagnated save for the ever-growing VPK seeking to achieve the agreed military policy.

Enter Reagan in January 1981. Brezhnev had died in November 1982, his successor Andropov in 1984, and his successor Chernenko in March 1985. Dialogue was impossible for Reagan. Andropov, unlike the later Brezhnev and Chernenko, geriatric invalids in office primarily because of the uncertainties of a spent Central Committee, was keenly aware of the need for change. He was handicapped by inability to envisage the continuation of Communism given the extent of the reforms he saw as necessary, and by chronic, later terminal, illness. He was succeeded by Gorbachev in March 1985.

This account might encourage supposition that progress is possible only when leaders have reasonable time for interaction. That may be dismissed by examination of the Reagan - Gorbachev calendar. This was from March 1985 until January 1989 – less than four years – shorter than the Nixon, Ford, and Carter, tenures with Soviet leaders.

However both had been reviewing the position before their leadership pairing started. Reagan was champing at the bit to meet a Soviet leader: Gorbachev knew urgent action was required if disaster was to be avoided. The outcome for disarmament was to be successful and speedy with only eight months to Geneva and twenty-five months from Geneva to the INF Treaty. The table illustrates the urgency with which they proceeded.

Date	Event	Days	Total Days
11 March 1985	Gorbachev's accession to power		
7April 1985	Gorbachev announces suspension of SS20 missile deployments in Europe	28	28
29 July 1985	Gorbachev announces unilateral suspension of nuclear testing	81	109
27 September 1985	Shevardnadze visits Washington to discuss arrangements for a Summit	40	149
19 November 1985	Geneva Summit	53	202
15 January 1986	Gorbachev proposes the elimination of all nuclear weapons by 2000	57	259
11 October 1986	Reykjavik Summit	269	528
28 May 1987	New military doctrine for the SU under which the primary doctrine become the prevention of war	229	757
27 May 1988	INF Treaty signed	365	1122
20 January 1989	Reagan leaves office	238	1360
31 July 1991	START 1 signed	922	2282
25 December 1991	Gorbachev leaves office	147	2429

Figure 12 Reagan- Gorbachev Timeline

Both had circumstance on their side. Gorbachev, the new broom, could introduce fresh and enabling policies. He was assisted in building a team of energetic supporters by a series of events that played into his hands, and by the support of senior scientists then important in Soviet political life. Reagan unlike Carter had the confidence of his military commanders and strong support from the country, having in 1986 been re-elected by a landslide, winning 49 of 50 states. Circumstance too, unlike earlier occasions, assisted the process with Chernobyl (April 1986) and its aftermath producing a paradigm shift towards nuclear disarmament and recognition of the need for better nuclear safety in the Soviet Union, and impacting strongly throughout Europe, and in the US. It is self-evident that there would have been no place for CTR without previous agreement on disarmament and Chapter One claimed that such disarmament would not have been possible without the parts played by Presidents Gorbachev and Reagan. This assessment supports that assertion.

Was there a need for the GP and if so what was its importance?

An assessment of the need for and the importance of the GP is worthy of detailed study and consideration here can be no more than cursory. The partnership was important to the US and RF for the domestic reasons of both. 9/11 was a huge shock to the US with a need to respond. There was a shift in the perceived primary threat from that of state action to terrorism. There was the need to maintain a relevance for and funding of CTR and the President's "War on Terror"[1]. For Russia a relatively new President was eager to demonstrate the stability of his administration, keen to be a close ally of the remaining Superpower, and wishing to operate in the one milieu where a seat at the top table could be guaranteed. Appearing as a partner rather than a supplicant he was able to roughly double the amount of external resource to be devoted to a still-important need. A two-handed relationship was changing to a round table of nine, seven of whom were collectively his closest trading partners and, should the need arise, possibly capable of manipulation.

Kananaskis was a tipping point. The funding doubled, negotiations for Russia were no longer solely with the principal Cold War victor and initiatives adopted in part a softer tone (although it is important to note that many US priorities had by this time been met).The US Administration was able to further the 'War on Terror'; protect CTR funding against Congressional threat; and draw in allies to take a far share. In 2008 when, following the Georgia War, there was a cooling in relationships and a slowing in American assistance, the diffusion of relationships can be seen as assisting in the maintenance of the work in hand. The value of the non-US part of the partnership may be seen, in part, in the growth of non- governmental instruments (a European preference) in managing the assistance to Russia.

Were Financial Undertakings Met?

In Chapter Nine it was emphasised that an accurate assessment of expenditure might be impossible. It is however possible to assess whether the West met its funding promises to Russia, and to offer an insight into some aspects of the operation.

One of the causes of bad feeling between Russia and the West during the 1990's was the former's failing to receive the levels of aid it was anticipating. In terms of assessing the financial contributions attaching to the

[1] Bush first used the term formally in a television address on 20 September 2001

undertakings of the GP therefore a reckoning of the pledges made by the G7 and EU against expenditure and commitment can provide confidence in assessing the success of the Partnership. Chapter Twelve in making a comparison between the Marshall Plan and CTR-plus supplied some basic figures.

Headline	Amount	Reference (Chapter 9)
G8 and EU Public Declaration 2002	20,000,000,000	*Fig 3 p26*
G8 and EU Declaration using contemporaneous exchange rates between the partners	25,657,189,950	*Box 3 p 27*
G8 and EU expenditure and commitment in the FSU (Annex A 2012)	24,824,199,547	*Box 12 Page 29*
New partner's expenditure and commitment in FSU (Annex A 2012)	7,620,240,635	*Boxes 4 –5- 6 Pages 27/28*

Figure 13 Promises and Reality: The Global Partnership (US$)

It is clear that expenditure and commitments by 2012 exceeded the stated foundation grants of the opening slogan and was within the margin of error for the more closely calculated figure taking account of exchange rates between the partners in the month the agreement was made.

Annex A records, incomplete in a number of respects, indicate it was to 'exchange rate figures' that the partners were working. Furthermore, whilst some grants from new contributors went to non-FSU countries, their support to (principally) Russia were a valuable additions to the original G8 pledge.

The aid promised for disarmament and proliferation to the FSU collectively and individually under the Partnership was met and exceeded: a position not always evident in international agreements.

Supporting the original announcement commentators assumed, or were briefed, that the US had provided $10M in the preceding ten years. This figure must be examined. As with those in the table above there is considerable understatement and, unlike those above, uncertainty, since not all derive from official announcement and some are dependent on unverifiable calculation. The European practice has been followed in including expenditure for civilian nuclear safety.

Funding Source	Amount (US$	Reference
CTR Authorised	4,006,400,000	Chapter 9 Box 1
Identified spending from other budgets	26,635,000	Chapter 9 Box 8
Funding to IAEA for special projects	473,000,000	Chapter 9 Box 9
GAO Identified as assistance with safety and protection in civilian nuclear	55,000,000	GAO RCED 96-4 p21 Not included in Chapter 9 Box 8
Operation Sapphire	8,000,000,000	Information including some declassified papers now available at the NSA with no costs revealed. Unofficial estimates range between $6M and $10M

		but these do not appear to include considerable expenditures of the USAF[2]. This figure is an estimate of the author.[3]
Federally Funded Research approved for NASA to spend over three years	300,000,000	
Total	12,861,035,000	

Figure 14 US expenditure 1991-2001($)?

These crude figures indicate that if all the funding to the IAEA, much of which related to post-Chernobyl and other Russian issues and the authorised expenditure in Russia by NASA in the 1990's was deleted from the table, the assertion of the American commentators around Kananaskis was justified[4].

Can CTR-plus be assessed a success?

Chapter Eight outlined some consequences of CTR-plus, and Chapter Nine offers a comparison between it and the Marshall Plan. These accounts are insufficient to appraise its achievements in the broadest terms.

A case on the grounds of purposeful longevity and fulfilment of aims is clearly established. Negatives are usually impossible to prove, but no more Chernobyls, no significant proliferation of radioactive materials, no unplanned detonations or launch-pad disasters as the consequence of unsafe or abandoned weaponry, and the avoidance of major new contamination in northern seas and Pacific Ocean, make the case.

A 2012 report by SIPRI stated that Russia had 2427 launch-ready warheads and 8573 in reserve. This compared with the total of over 27,000 in 1991[5]. The 2011 SORT agreement between the US and Russia requires each nation to deploy no more than 1550 strategic nuclear warheads by 2018. The earlier Russian reductions are unlikely to have been achieved without CTR since the US programme in the FSU had by October 2012 deactivated 7,659 warheads, destroyed 1041 ICBMS and 729 SLBM, scrapped 39 ballistic missile submarines and 155 bombers. Russia and countries other than Russia and the US have paid for, project-managed, or undertaken the scrapping of, approximately 160 SSN[6].

[2] http://nsarchive.gwu.edu/NSAEBB/NSAEBB491/ Accessed 2 October 2015

[3] One unofficial estimate widely quoted is from Schwartz Stephen I *Atomic Audit Costs and Consequences* (Washington Brookings Institute Press 1998) p344 where he states $7M from *Nunn-Lugar* Funds plus "undisclosed funds of between $7M and $30M to the Kazakhstan government". Extract now available at https://books.google.co.uk/books?id=safduT80AHMC&pg=PA344&lpg=PA344&dq=US+Operation+Sapphire+Costs&source=bl&ots=fBjuwCPMi0&sig=KMwMKh-y2rebsqwIKuHszkj3R8A&hl=en&sa=X&ved=0ahUKEwiejZngvLHLAhVEPRQKHQ5BAVEQ6AEIUjAJ#v=onepage&q=US%20Operation%20Sapphire%20Costs&f=false Accessed 8 March 2016.

[4] Details of NASA activities in Russia may be found via http://moscow.usembassy.gov/nasa.html

[5] US DOD gives US Max as 23,000 in 1991 with a peak of 31,000 in 1967. FAS stated in 1993 that the peak for the SU might have been over 40,000

[6] Calculated with reference to the Nunn-Lugar Scorecard and information on the Bellona Website https://www.google.co.uk/search?q=Bellona:+Russian+Submarines&biw=1440&bih=805&tbm=isch&tbo=u&source=univ&sa=X&ved=0CC8QsARqFQoTCJPHh5XAqMgCFcJCFAodKrYPQg Accessed 4 October 2015 This information updates that of Chapter Eight Table 1 [Further Details to 2004 in SG Archive 14.247 (Subs)]

1995-2010 approximately half the output from American NPP was generated from re-manufactured Russian warheads – a total of 14,000 tonnes of uranium. Employment was found for perhaps 150,000 former weapon scientists in peaceful occupations between 1994 and 2012. Many programmes to restore the environment and to protect it from further despoliation had been completed or were underway in 2012. The Lisbon protocol was a triumph for a diplomacy which enfolded CTR, which met much of the necessary expenditure.

Whilst not nuclear - the central focus of this study - a massive operation to enable the dismantling of much of Russia's chemical weapons, funded by the UK Canada, US and other nations became operational in 2009. Indirectly the success of CTR-plus plans has helped in a number of ways the growth of Russian civil society through some acceptance of NGOs; the first public consultation in the country; the lead by Russian nuclear industry in adopting international accounting practices, and the acceptance of IAEA established protocols. The latter points assisted Russia to the vanguard of the nuclear renaissance. Marshall was undoubtedly the greatest twentieth century success in the deployment of aid to states in need. Should a contest be held to identify the most significant programme of international assistance for the twenty-first century then, on the evidence to 2012 alone, CTR-plus with its nobility of purpose, the new connections it helped forge between formerly totalitarian states and the democracies, the totality of its expenditure, and the longevity of its programmes, together with its ability to inspire nations and organisations to its purpose - and its success in avoiding a doomsday scenario - must be a strong contender.

Were there outstanding but unrecognised consequences or achievements of CTR-plus?

Does this canvas omit other significant achievement? The purpose of this question is not to review influences on changing Western and Russian economic and political relationships by CTR-plus but to identify successes that may not have been recognised. Some remain little known despite public announcement, for example the UPA. Others are known to industry but not wider, perhaps because of a complexity not easily translated into media-friendly terms. Some were not easily conceived in 1991 but were by 2012 accepted, if consideration was given at all, as part of the background to life. Four examples chosen make the point.

The first is the use of launch vehicles for western satellites by re-configured Russian rockets and the installation of Russian boosters to US launch vehicles for the lofting of US satellites both initially under a joint venture with Lockheed. The second is the outcome of the UPA whereby between 1994 and 2014 half the fuel burned in US NPP (and every US NPP received at least a small quantity) was re-manufactured Soviet warheads. The third, the contracting of NASA work on the International Space Station to Russian laboratories at a time when US technicians were being declared redundant. The fourth, looking to the nuclear renaissance, was the US funding of fissile research at the Kurchatov.

These projects are chosen as being symbolic of the understated effect of CTR-plus in sectors of the US scientific profile. Perhaps the understatement is in part owing to all being initiated by engineers rather than political imperative – and of there being no disasters.

Could CTR-plus be have done better?

In marking the successes of the CTR-plus it is important for balance to review, if briefly, whether projects could have been undertaken effectively - that is more completely or more speedily. This consideration will be

undertaken in two parts – CTR until 2002 and for the GP period. It is certainly the case in the early years that enquiries and seminars hosted by NAS in which Russians played an important part, and investigations by the GAO, revealed deficiencies. It is important to distinguish the type of problems that arise in any bureaucracy from those specific to CTR. Many difficulties which came to light were of a bureaucratic nature – inappropriate accounting, missed deadlines, under-utilised assets, and so on.

To the extraordinary nature of the moment can be attributed some problems – the platoons of American politicians, officials, and experts visiting Russia – whose costs were met from a range of open purses. Many visits were little more than sightseeing, in the course of which undertakings, sometimes with little grounds for authority, were provided to Russian counterparts creating uncertainty and subsequently distrust in an atmosphere that was to some extent already paranoid.

The uniqueness of the situation demanded careful consideration of the potential dangers and difficulties. Critics of the library of tightly-drafted US protocols in later years give insufficient consideration to the technical issues of the time. The growing awareness by the west of the low levels of nuclear hygiene; of weapon system design issues distinct from those of the US; and the constraints imposed by economic and cultural issues, justified the US approach. The Russian side was concerned, of American intention to take advantage of, their then, position. A Russian attitude, not limited to the nuclear field, was anticipated but unfulfilled gratification. Following the SU collapse there was widespread feeling, perhaps prompted by the opening of access to western media, that life had changed, and that all would soon be living the life illustrated in Hollywood movies. At official level there was little if any understanding of the workings, particularly the checks and balances, of western governance and how long could be the elapse of time between a political promise and its realisation.

The nature of Congress with its constantly shifting patterns of interest frustrated American officials as well as puzzled the Russians. Why did they have to wait months for the delivery of equipment when they had the equivalent standing idle; why did so manifestly sensible a programme, such as defence conversion, be pushed for two years and then abandoned? In their turn Americans pondered the value of their efforts when faced with an uncertain and non-functioning President and Duma, and for their constant subjugation to corruption at, not always the lower, levels of officialdom.

Within the mainstream it was the case of delays beyond the hoped-for, some because of the novelty of the situation and others of the nature that regularly beset bureaucracies and large investments. There is no evidence that such delay, in the event, resulted in major qualitative failure in putting programmes in place. However the slowness with which the Russians implemented some programmes, American financed but under Russian management, particularly ones involving MPC & A and site security, caused considerable US concern. It might be said that luck here played a part and that there were opportunities open to terrorists that were not taken, and that had they been, a less sanguine outcome would have resulted.

There were programmes that came on stream quickly and worked immaculately. ISTC, open for business after some neat footwork around the Duma in 1994, and the UPA signed in 1993 and with the first shipment in May 1995. In these cases there were no grounds for claiming there could have been improvements in delivery or its timing. The elimination of defence conversion was however a clear American failure. The fewer the manufacturing facilities and the stronger the economy the less the incentive to sell arms.

2002 represented a tipping point in several respects. Politically the Russian turmoil of the 1990s had been replaced with strengthening budgets and balance of payments. A stable President with tamed legislature whose relationship, as proven in the creation of the GP, had become a close and understanding one with his US counterpart. GP initial protocols followed those earlier negotiated by the Americans and their instant adoption reduced delays in implementation. Notwithstanding this, and understandably, the new arrangements took time to become operational and by 2006 the Russians were again complaining of delay.

On this occasion, unlike in the 1990's, the complaint was not justified: the rate of progress quickly increased thereafter as was demonstrated by Annex A for 2004 and 2005. The European countries were the Russians' most important trade and investment partners and the close relations engendered by this probably acted to advantage. Together with learning from American technical experience the rate of work was speeded. The expertise gained in areas such as submarine dismantling quickly spread. Experience and confidence from the earlier years produced a liability protocol for the European partners lighter than the American original, which the Americans in due course were to adopt themselves. Countries combined in the financing and execution of a number of programmes to advantage.

There were distinctions in the US and non-US profiles. The Americans continued to provide assistance at the sharp end of disarmament, the Europeans taking a share in non-proliferation and a lead in NPP safety, with an emphasis on environmental matters. The latter may be assessed as being an outstanding success. Many difficult technical issues were handled, the span of work was much wider than originally contemplated, and the co-operation of the Russian regulators assured. Whilst not necessarily to a western standard, NGO representatives and the press were invited to inspect progress.

However as the decade advanced American progress slowed within Russia although not in other FSU countries. The Russians having moved from supplicants to partners between 1991 and 2002, now, with a stronger financial base and returned national pride, considered themselves to be diminished in receiving help from the former adversary. On the basis of their arsenal, they saw themselves still a Superpower and continuing involvement of the US began to rankle. Perhaps knowledge that funding was being received from much smaller nations did not help. The strength of the relationship between the two states weakened from 2006. In the early 1990's the end of the Cold War had been a dominant theme. In the 2000's American interest was turning towards Afghanistan and Iraq. Unease over the handling of Chechnya weakened the pro-Russia lobby in the US. A direct result of the Georgia War was a review of the American position and a reduction in staff handling CTR matters in the Moscow Embassy. The souring of relations, despite several attempts at 'resets', continued with Russian unhappiness at American missile defence proposals considered to have the potential to compromise the value of its forces. These changes slowed progress. As reported in Chapter Five despite the willingness of other G8 nations to continue there was no decision to renew the GP, and the Russians, in July 2011, requested that the Moscow ISTC close with all work to be completed by 2015.

The CTR-plus legacy includes work in important respects scheduled to continue after 2012. Could the undertakings of the preceding ten years have been done better? Reports to the G8 indicated a burgeoning of activity in scope and magnitude with work continuing forward under Russian agreement despite the ending of the GP. Notwithstanding the poorer relations with the US, Presidents Obama and Medvedev signed the new START agreement in 2011 and, shortly following the end of the GP, a new 'umbrella' agreement. Plans were

under way for a new UPA to take effect from 2015. More might have been undertaken during this period had the relationship between the US and Russia been better, but the essential groundwork had long since been undertaken, the Russians had the capacity to meet the continuing need, and the knowledge-base and operational arrangements between all the involved nations was much stronger than it had been when the GP started. The Partners' undertakings in funds and in kind had been met and the aims mostly so. Within the context of a remarkable achievement in international affairs any failings can be assessed as no more than marginal.

What might have taken place absent CTR-plus?

This question has ramifications across in many fields in terms of degree and timing. Some only are identified.

Different operational arrangemens for later G8 initiatives such as the African Debt programme would have been necessary, but none have touched the complexities of the GP. Of crucial importance was the structure of committees and experts that drew authority from the Summits and without which the Summits could not have progressed. There were benefits to follow from this but it is not evident similar structures would have emerged had not the GP led the way.

A major proportion of the FSU weapons and platforms on their territory would have been dismantled by the Russians. START, the obligations of which they had accepted required this. Their commitment remained substantial during the 1990's despite chaotic financial conditions. During his presidency, Medvedev was quoted as saying that nuclear weapons were a lot more expensive to dismantle than they were to manufacture.
This was though only a fraction of the problem. There were offensive weapons in three states with R and D and manufacturing facilities across the former Union. The protection of these weapons and facilities was a major American priority. CTR funds were used firstly to persuade, then to meet the costs of transferring weapon systems to Russia, to acquire the adherence of Belarus Kazakhstan and Ukraine to the NNPT, dismantling immovable assets and removing material with weaponising potential from the countries concerned. Meeting such expenditure from CTR could be seen as a convenience rather than necessity since given the priority almost certainly the required funds would have been found from elsewhere in the US budget. Indeed much of the costs of the removal of material from Kazakhstan were found from elsewhere (and the British paid for the removal of nuclear materials from Georgia).
The submarine situation was different. They might have been left to rot because the Russians saw them initially as a nuclear waste problem in their own back yard, and once START obligations regarding SSBN met, not a strategic issue. It could be that those of the Pacific Fleet, laid up far from international borders and centres of population, absent Western pressure, might have been left *in situ*. There would have been pressure on those in NW Russia following Nordic (and Japanese) reaction to revelation of at-sea dumping and in line with the continuing wary concern following Chernobyl.

Given distinction between UPA and CTR activities there is a reasonable case to argue that, with the growing appreciation of the quantities of uranium (much not weaponised) in the SU at the time of its collapse, the Russian need to move it, the state of the world uranium market at that time, and the involvement of commercial entitites, some agreement for the sale of uranium to the West could have happened without CTR. Evidence in support of this is the later success in Russian manufactured nuclear fuel supplied western NPP.

Where civilian nuclear safety is concerned Western assistance following Chernobyl had begun well before public recognition of SU collapse. Sensitivity remained across Europe and European-inspired civilian nuclear safety projects subsequently provide a case that these would have continued irrespective of CTR. Whilst some countries listed their allocations to Chernobyl projects under the GP there was no reason why their conributions would have ceased absent the GP . CTR work was undertaken at NPP, reflective in part of the former VPK control and their role in plutonium manufacture, but had the need arisen, could have been categorised as assistance at non-military locations.

ISTC was distinct from other CTR programmes. In foundation, a German initiative: in sustenance, only partly American, although the US was responsible for administration. The only multi-governmental CTR-plus organisation established by formal international agreement headquartered in Moscow. Widely praised in its critical years and responsible for many connections with commercial entities the negotiations that led to its establishment were in some measure distant from those of mainstream CTR. This, one step distant from the foremost strategic considerations of the time, might have provided it an existence had CTR not proceeded.
In NW Russia there is a case that some at least of the programmes initiated by the Nordic countries would have gone ahead absent CTR/GP. Norway was greatly concerned about the possibility of nuclear accidents and the possibility of contamination near its border and in the northern fisheries, and was a major actor and spender from 1992. Sweden and Finland were similarly concerned about contamination in the Baltic and areas near their borders pre-2002 . The work to make safe and refurbish the Kola NPP (essential for the economic health of the region) was undertaken largely with European money. Whilst there were political difficulties in liaison between Russia and the states concerned in some measure the area post-1991 was seen by Moscow as a backwater and local initiatives were able to proceed without overbearing interference from Moscow.

What, if anything, will be remembered?
Sixty years on Marshall is still referenced in glowing terms. Whilst some continuing Western political and economic interests might claim an atavistic relationship with Marshall most cannot, and in like vein it should be remembered that some CTR-plus achievement would have happened in any event.
The Russians might have left much contaminated detritus with consequential steadily worsening environmental implications. The removal of the submarines and modern methods of containment for their reactors, and the

introduction of modern regulatory regimes will be remembered by environmentalists. This and other work in the North West has contributed to its becoming, with infusion of foreign capital and expertise, one of the most prosperous areas in Russia with, in 2014, the lowest unemployment rate in the RF. This will be a lasting legacy. These 'on the ground' changes are important. Internationally the significant measure brought about by American money with skilled and persistent diplomacy was the accession of Ukraine, Kazakhstan and Ukraine to the NNPT. This, rarely in the public eye, could prove of significant importance should there continue to be difficulties in Russia's 'near abroad' and may be viewed as a substantial remembrance in which CTR can rightly claim a share.

'Marshall is the Greatest' – How does CTR measure up?

Chapter Twelve examined specifics of Marshall and CTR-plus, but it is appropriate in assessing CTR-plus to attempt a brief comparison in general terms. There had been few aid programmes easily recognised in 21st century terms prior to the Second World War. Marshall was, within its era, by multiples the largest aid programme there had ever been and remains outstandingly significant, whilst CTR was one of many concurrent aid programmes for the countries of the FSU; whilst other factors increased in importance as its tenure continued, Marshall was for most of its life the single largest foreign policy issue for the US and most of its recipients, whereas during CTR-plus there were multiple issues facing the US in the FSU and more widely and for those states themselves.

With one donor, by contemporary standards a limited media spectrum, and delivery over four years the Marshall programme would impact more strongly than one with over thirty donors, delivery over twenty years, and with, by the standards of the 1940's, an unimaginably varied and active media. The recipients of Marshall were allies of the US, shared many of its aims and acknowledged publicly their gratitude, whilst for CTR, Russia, if no longer an enemy, was not an ally. Some senior officials on both sides viewed the CTR-plus negatively and some Russians, perhaps as well as demonstrating patriotism or xenophobia, anticipated income from corruption opportunity, and some initial support withered when this was not forthcoming;

Marshall recognizably changed, for the good, the overall economies of the recipient countries which recognised this, and contributed to the strengthening of the political structures of some to the detriment of parties on the left. CTR neither changed the economic mayhem of Russia during the 1990's nor brought the gold at the end of the rainbow foreseen by many Russians on the collapse of the SU. Russia remained a nuclear power unwilling in some measure to forego an imperialist past. In disposing of army surplus, CTR might be seen as a useful off-shore contractor whose bills were met by a helpful charity.

Within the public narrative Marshall was gratefully received by the disadvantaged at the end of a 'hot' war, whilst at the end of the Cold War the nuclear threat and CTR-plus were quickly forgotten.

Given its importance why is CTR so little known?

Firstly, the modern media requires continuously breaking news to be seen as successful. These programmes are seen as very old news. Furthermore relationships between Russia and the West have since about 2008 (the Georgian War) been seen as more symptomatic of historic relationships than long-standing links with peaceful aims.

Secondly, unlike Marshall, it seemingly has little relevance to the person in the street.
Thirdly, whilst its birth parents were politicians its subsequent carers have been principally (although not exclusively) officials. This may have been protective of wider forums.
Fourthly, there have been attempts, particularly in the US, to keep it in part under the carpet there being resistance in some American constituencies to foreign aid.
Whilst there have been at least two Russian TV programmes on the operation of the UPA, conference proceedings have declared there to have been not been a single press conference or release on the programmes in Russia[7]. It might be that that such publicity, revealing perhaps that Russia has been receiving help from such small countries as Belgium and New Zealand; and former members of its bloc, Poland and the Czech Republic; would not be in accord with Moscow's present self-image as a state second in power to the US.
Finally, perhaps, because it has all been so successful. The media response may be imagined had an obsolete weapon exploded, another nuclear pile melted down, or if Al Qaeda had been able to acquire some HEU.

Conclusion

This chapter has assessed some aspects of CTR-plus between 1991 and 2012. The next will review the position at the end of the GP as it applied to Russia in 2012 and consider possible situations had the circumstances described this far not come about.

[7] Barents Observer based in northern Norway has been an important and unbiased news source covering NW Russia.

CHAPTER 11

CONCLUSION

Introduction

It may not be grandiloquent to describe CTR-plus as a multi-faceted contribution to international security with faces of varying dimension, shape and intensity. As the previous chapters describing some consequences, comparing it with the Marshall Plan, and assessing some issues as a whole have indicated, its achievement and influence exceeded immeasurably the initial aims of its progenitors.

The facets may be seen as little more than taxonomy in this limited study. Their impact continues beyond the date at which the GP formally concluded its programme in Russia. The effects of some CTR-plus initiatives are partial or shared, whilst others attributed to it would likely have been undertaken in any event. The consequences of CTR and GP, and associated programmes will be open to discussion for an extended period and some may never be agreed.

There must be caveats to such discussion. Some literature has implied the nuclear issues facing the FSU were unique and the western contribution towards their resolution essential. The first belief is exaggerated. There were unique characteristics but many difficulties - dismantling weapon systems, decommissioning nuclear powered ships, closing plutonium-creating facilities - are common to the West. The magnitude of the Russian problem in some sectors though is unique – environmental damage and the size of the decommissioned submarine fleet, for example. It is possible also, from studying western literature, to believe the costs of FSU disarmament fell almost in their entirety on western nations. This also is mistaken. Russia, even in the difficult years of the 1990's, spent heavily in this regard.

Extensive literature emphasises differences in the Superpowers' political structures. In acknowledging these it is important to recognise some similarities in their political profiles. Both governments supported (or faced) powerful bureaucracies, each had large and influential MIC's, and both had institutional revolving doors through which important players progressed. These were factors that bore on the progress of the Cold War and later in the creation and execution of CTR-plus.

The CTR-plus programmes incorporate all WMD and embrace all countries of the FSU (and by the conclusion of the formal GP programmes in Russia other countries and threats beside). This study has focussed on nuclear - the issue that initiated CTR - and (principally) NW Russia, where many of the difficulties have been played out.

A pre-eminent concern of the G8 in discussions following 2002, by 2011, when the Heads of Government faced the decision whether to continue after what was by any reckoning an outstanding success the GP report was no higher in the closing statement than paragraph 78. The interests of the leaders had moved on. A worthy initiative was history - but its beneficial influences would continue to be felt.

> We recognize the concrete achievements and measurable results of the Global Partnership against the Spread of Weapons and Materials of Mass Destruction launched in Kananaskis in 2002 for a 10-year period. We remain committed to completing priority projects in Russia. Our assessment of the Partnership recognizes the significant progress the 23 Partners have achieved on the full range of WMD non-proliferation activities worldwide. The assessment also provides directions for the future. As such, we agree to extend the Partnership beyond 2012, based on the areas of focus enunciated at Muskoka (nuclear and radiological security, bio-security, scientist engagement, and facilitation of the implementation of UNSCR 1540). We will work with all Partners in discussing assistance needs and coordinating possible projects in the above-mentioned areas, and we will expand membership of the Partnership. Partners will decide on funding of such projects on a national, joint, or multilateral basis. [355]

The subsequent withdrawal of Russia from projects in its homeland, and the weakening of the ties with the US that had brought about previously unimaginable achievement in NBC safety, completed the activities on which this study is based. Eras are not always book-ended. CTR 1991-2012 and GP 2002-2012 do provide finite points between which an outstanding feature on the international landscape may be measured.

Realization

Assertions put forward in the Introduction are secured without question. No further plan with the embrace of the GP has emerged. President Obama's concerns gave rise in 2010 to the first Nuclear Security Summit of 47countries. These provided for wide discussion but no co-ordinated plan for international execution. The series concluded after four meetings and the withdrawal of Russia. It has been shown that CTR could not have 'hit the ground running' without the extensive range of interests and practices established and developed during the quadrumvirates' years. In terms of 'aid' the America offered no value-limit to the FSU but spent beyond Congressional appropriations and the GP partners collectively exceeded their original pledges and succeeded in meeting the aim of additional funds from further contributors. CTR-plus and the IAEA changed beyond recognition practices of the Russian nuclear and shipyard industries some of which spread internationally. The economic progress of NW Russia makes the case for unintended consequences.

[355] French Foreign Ministry http://www.diplomatie.gouv.fr/en/deauville_declaration_final_ _ eng_h Accessed 1June 2011

Not initially asserted but clear from the analysis is the speed of successful campaigns. Reagan and Gorbachev in establishing the foundations for disarmament: Nunn in securing support for American assistance to Russia.

The study should not be vacated without reviewing its financial magnitude against other appropriate contemporaneous programmes. Recalling *'ten plus ten over ten'*, a Washington Post report one year after Kananaskis stated American expenditure on missile defence for that year alone exceeded $10B[356]. The IMF, following the Gleneagles G7, reported the value of anticipated African debt relief agreed as being $55B[357].

Earlier chapters described aspects of programmes in detail. Here events, not all of which were immediately associated with CTR-plus, illustrate the breadth of its influence between 1981, when Reagan, arguably initiator of the nuclear disarming process that was a cornerstone in ending the Cold War entered office, and 2013, when negotiations about the conclusion of GP projects Russia were underway, are recorded. The categories are not exclusive.

Historical	The turning point in East West Relations signified by the Geneva Summit 1985 The first time discussions between the leaders of the US and SU resulted in such far reaching changes in attitude between the *blocs* The shifting of emphasis from arms limitation to arms reduction The FSU coming 'within the tent' of the International Community with meaningful participation in international organisations, accession to Western norms in business, and Joint enterprises with non-FSU entities
United States Political	The creation of a program attracting admiration nationally and internationally over 20 years of existence An initiative enabling the US to take the lead in world-wide disarmament and anti-terrorism activities
	The "Global Partnership" may now be seen as **the** "Global Initiative" through the successive : Global Initiative to Combat Nuclear Terrorism Global Threat Reduction Initiative Global Nuclear Security Programme

[356] Washington Post November 11 2003
http://www.greencrossinternational.net/Communication/DigitalForum/digiforum/articles Accessed 9 June 2004

[357] at https://www.imf.org/external/np/exr/facts/hipc.htm Accessed 23 June 2016

International Relations	Establishment of the World Nuclear Security Summit series NNPT regime strengthened owing to the stream of US/Soviet-RF activity from Geneva onwards The extension of the GP beyond the FSU and WMD to cover these and wider issues world-wide Strengthening IAEA and setting in place practices to maximise safe practice
G8	Following the Kananaskis Agreement secretariats to monitor and develop the GP, mechanisms to manage the increasingly complex G8, and facilitating the G20 and World Nuclear Conferences
Rehabilitation and Development of the FSU	The modernisation of the Russian nuclear industry obtained in part through introduction of international protocols, the UPA and PMDA, the introduction of western-style contractual and intellectual property protection and international financial reporting standards The work of ISTC and other programmes in providing employment for highly skilled defence and nuclear workers, a nursery for talent, and contributor to the nucleus of an SME sector for the Russian economy
Environment	The securing of maritime nuclear facilities in NW Russia and the Russian Far East Provision of secure storage for nuclear waste in NW Russia, Mayak and the Russian Far East NDEP – an extensive range of environmental projects in Russia and Belarus
Technical	Conferences and courses to extend scientific, academic, business, and technical exchanges and developments Western financing for high-tech entrepreneurship:- R and D Nuclear Technology Laser technology Consequential work to specific projects including very high water pressure cutters to replace oxyacetylene, and robots, in dangerous/ radioactive areas

Legacy	An imprint discernible in major trans-national boundary issues including the NNPT but also, for example, global warming since, without the conversations that initiated nuclear disarmament talks and then the work of and related to the CTR between the US and Russia, the timetables of international negotiations taken for granted in the 21st century, would be unlikely to enjoy the foundation and stability they do World Nuclear Security Summits and other international security structures Protocols for the Organisation of G8 and G20 Summits and their initiatives The continuing strengthening of world security resulting from Ukraine, Belarus, and Kazakhstan returning weapons to Russia and acceding to the NNPT Operations that continued beyond the formal end of the GP:- UPA PMDA ISTC in FSU States other than Russia NSA CSF Practical consequences of the modernisation of the Russian nuclear industry:- Russian provision for storage and fuel reprocessing under IAEA monitoring for the increasing number of countries with NPP but not fuel cycle capability Developments permitting the export of installations, equipment, and fuel;

Counter- Factual Possibilities

It is appropriate in reviewing what may be credited CTR-plus to consider possible circumstances had events not proceeded as they did. Four alternative scenarios are explored:

if Reagan had not been elected President, or having been so, had succumbed to the assassination attempt by John Hinckley;

had Gorbachev not succeeded Chernenko as General Secretary of the CPSU;
had Gorbachev not yielded as President of the SU;
had the G8 meeting at Kananaskis not approved the GP.

Reagan not Elected or Assassinated?

As with GHW Bush, Carter's previous public service provides some inferences as to possibilities had he been re-elected. Of US presidents he was the best informed on nuclear technical matters. A regular naval officer he had volunteered to become an early member of the highly successful US Navy nuclear submarine programme in 1952. He was the commander of the US Navy party sent to assist at the Chalk River accident in December 1952. He was to reflect in later years that his experiences in the early nuclear era were to shape his views of nuclear weaponry. He had been identified as a high-flyer likely for eventual promotion to Flag rank but family circumstances compelled him to resign his commission. Far from continuing a member of the military family, in office he was often in conflict with it – not least in prohibiting inflationary pay increases (the reversal of which was one of the early boosts to Reagan's warm relationship with the armed services). His scepticism, based on personal experience of certain military claims, was to lead to his being regarded with contumely by some senior officers.

It was widely thought Carter's handling of the Iran Hostage Crisis and the Soviet invasion of Afghanistan (the suspension of SALT talks, the ending of the détente, and withdrawal from the Olympics) was poor[358], and that he was ill-suited to lead the nation in the event of major difficulty. Domestically he was deeply concerned by the economic situation. As his presidency continued his approval rating dropped from 66 to 34%.

He was a Christian who wore his heart on his sleeve and was deeply concerned by the human rights situation in the SU. The KGB and GRU analysed his actions reference his likely attitude to the SU in the event of a crisis. The GRU were convinced that he would never endorse a *first strike* against the SU. The KGB saw the possibility of his becoming a major weapon that could destroy the SU should his emphasis on human rights infect the Soviet population[359].

If re-elected Carter would unlikely have had the support Reagan gained from the military, he would have struggled with the economic situation on which Reagan put a positive slant. He was seen as weak by the Russians and might have been further weakened had there been no resolution to the Tehran hostage situation –in contrast to Reagan whose rapid expansion of military expenditure created major concern in the Russian higher echelons. Carter and Reagan shared concern over humanitarian rights in Russia but despite the worries of the KGB this was not likely to be a realistic point of pressure.

In these lights it might be surmised that Carter, if re-elected, would have failed to make the progress of Reagan but this could be mistaken. In the SU American leads in most weapon systems were seen as significant and the *nomenklatura* were awakening to the potential economic disaster facing the state. Given Carter's personality one may presume he would have responded well to a Soviet approach but it might be reasonably assumed, with the assurance of our knowledge of the Soviet era 1982-1985, that an approach would have been unlikely. If elected Carter would have stood down in January 1984 fifteen months before Gorbachev, the General Secretary who did make an approach, assumed power in March 1985.

Carter could have had a Democrat or Republican successor other than Reagan (if four years on Reagan, who would have been 73 years old, had failed to achieve nomination or had decided not to run.) Such an election would be hard to call – it almost certainly would not have presented the 49 states to one record of Reagan against Mondale. Mondale, Carter's Vice

[358] Despite his initiating the supply of arms to anti-Soviet forces which was to become the largest CIA operation with an expenditure of $630M in 1987, its peak year.

[359] Suvorov Viktor *Soviet Military Intelligence* (London Hamish Hamilton 1984) pp 46-47

President, and Hart, his closest competitor for the nomination, effectively withdrew from public life following the election and it is not easy to assess their possible attitude towards the SU had either been elected. The position with regard to the Republicans is easier to explore, since Bush would have been successor to Reagan had he died in office, and likely Republican nominee for the succeeding election, as indeed he was on Reagan's retirement.

If Bush had succeeded to the presidency consequent on Reagan succumbing to the Brinkley shooting, his first period of office would have concluded in January 1985, two months before Gorbachev became General Secretary, and there would have been no overlap. Reagan had no success in attracting a co-operative response from Brezhnev, ill, and dead in November 1982; Andropov (modernist, but fearful of the impact of reform upon the CPSU and state, and unwell throughout his period of office) who died in 1984; and Chernenko who spent virtually the whole of his period of office between February 1984 and March 1985 on his sickbed. Reagan had no success in establishing a working relationship with any Soviet leader during his first period of office. Given the measured approach of Bush, and the then gerontocracy that was the CPSU leadership, it is unlikely he would have been successful in establishing a relationship.

It can be argued that Bush would not have brought to a successful bid for the Presidency in 1984 the authority that Reagan did. It might be considered, given his actions when he did become President in 1989, that he:

would have been unlikely to have inflated the economy through deficit financing to the same extent, thus foregoing some popular support;

would not have expanded the US military as far or as rapidly implying he might have had less support than Reagan from the military and less strength in projecting military might to the SU;

would have been unlikely to adopt SDI (announced by Reagan in March 1983) as a panacea against missile attack which, as late as Reykjavik, was seen by most of the SU non-scientific leadership as a serious threat to security.

Furthermore his reputation as a thoughtful leader unwilling to move until sure of his facts, the absence of Reagan's strident anti-Communist record, and personal distance from some of the Republican Party's richest supporters made his domestic position less secure. However, had he faced Mondale, given the reputation of the previous administration, of which Mondale had been Vice-President, there would have been a strong possibility of success. Had he been successful, his record following his election in 1989 shows there would have been a strong chance that with Gorbachev in position in Moscow they could have achieved a relationship with consequential disarmament.

Gorbachev not Becoming General Secretary?

It might be argued there were no effective leaders other than Gorbachev at the time of Chernenko's demise. Gorbachev and his supporters had been carefully organising for the future during his time as "Second Party Secretary" – an unofficial title awarded by the editor of Pravda. Of the old guard, Grigori Romanov, responsible for the Central Committee VPK portfolio, proposed 70 year-old Viktor Grishin, the only alternative being Gromyko, now 79. The necessary meetings to anoint Gorbachev were hurried, with only 300 of 400 Central Committee members present. Gorbachev's appointment was agreed *nem con* in contrast to the previous unanimity in endorsing new General Secretaries. There was no alternative Soviet leader capable of making an accommodation with the West although that did not appear to be an issue in the deliberations. The other potential candidates in common with much of the Central Committee, were elderly, secure in the traditional communist mind-set, and ignorant of the West and its leaders to the extent necessary for leadership. This study claimed in early chapters that Gorbachev was indispensable to the process that initiated disarmament. Potential alternative US leaders to Reagan

might have been unlikely to initiate an approach but by background and ability they would have been able to respond to a Soviet initiative had one materialised.

Had the call for nomination of Gorbachev gone unanswered it is likely the SU would have been led by its fourth successive geriatric. The economy would have continued to falter: agriculture would have continued to fail to deliver. The SU, to a greater extent than it had under Gorbachev, would have sought growing quantities of food aid from the West. The tensions within the VPK could have become extreme. Were disaster to have been avoided intervention might have come from a leading scientist with SU political and American connections such as one of the regular Dartmouth attendees. Perhaps, indeed, that sort of approach that brought Senator Nunn to Moscow at the start of this study.

Gorbachev Continuing as President of the SU/Russia post-1991?

To use a nuclear analogy Gorbachev had "fizzled" before 25 December 1991. He was intellectually exhausted from attempting to balance his left and right and had lost the initiative in combating the VPK and KGB, which believed they had much to lose from *perestroika* and *glasnost*. However far he went in his desire for modernisation and disarmament he could not bring himself to discard the comfort blanket of the Party. He tussled with his wish to modernise but maintain the CPSU as an instrument of governance against the intellectual weapons of his twin slogans, and, partly in consequence, had turned Yeltsin from ally to opponent. He had lost his feel for the way things were going and frustrated his friend and strongest ally Shevardnadze, whose ear was closer to the ground. Greatest was his failure to understand that in the prevailing mood, of which he was the principal architect, he needed to legitimate his position by some form of popular election. Elections moved authority from party to state. Following the August 1991 coup attempt some of his more able assistants, constrained, transferred their allegiance to Yeltsin, the prime mover in modernisation. Gorbachev's ability to act diminished rapidly and he increasingly surrendered the initiative to Yeltsin.

One therefore might ask "What Gorbachev?" Had this been the General Secretary of two or three years earlier it might be presumed progress in the rehabilitation of the SU (for such it would have remained) including movement towards nuclear disarmament would have been better than in the eventuality it was. His relationship with the West was better than Yeltsin's ever was, with his supplications for economic and humanitarian aid bearing fruit. He would have retained Shevardnadze as the effective deputy in international affairs and the bright young men recruited from outside the Central Committee apparatus would not have deserted him. Numbers of scientists, officials and military men were making their own connections across the crumbling iron curtain. Despite his faults he knew how to press the western flesh and he organised successive acts logically. He was gaining an understanding as to how a market economy and genuine democracies operated.

A reasonable claim may be sustained that Yeltsin was the instrument of the SU break-up. What might have happened had he disappeared from the scene? The coup was in protest at "modernisation". To this point Gorbachev was the recognised leader of this movement and against whom the protest was directed. Yeltsin, a moderniser, made his name as the counter-coup leader. The coup leaders were incompetent and Gorbachev's supporters failed to act purposefully. It is possible that had Yeltsin disappeared from the scene there would have been a period of civil unrest with various elements of the 'Old Guard' incorporating factions of the army, KGB, and Party vying with the modernisers (with or without a weakened Gorbachev) for control. There were continuing political difficulties across the SU – particularly in the Caucasus. With no centre of power, using as a guide what did happen in 1991-2, there would have been uncertainty, possibly civil unrest even civil war, and attempts by republics to leave the Union. In 1991-2, within the then level of stability large amounts of military equipment was being sold; soldiers - as individuals or in formed units - were available for hire, and there are popular

accounts of meetings between westerners and "businessmen" offering opportunity for the acquisition of nuclear devices. A weakened or absent Gorbachev, with no Yeltsin, post-*coup* could have faced unrest to the extent that it would have been difficult for the West to have found a responsible Russian interlocutor. In consequence it would have been unlikely that a coherent programme along the lines of CTR could have been initiated in the early 1990's.

The situation might have been less febrile had a Yeltsin "disappearance" occurred between August and December. The closer the end of the year the better settled and organised was the RF bureaucracy. The parallel talks between Gorbachev (making the SU a genuine Federation) and Yeltsin (independence for all states then within the Union) and the leaders of the larger republics had made good progress and either plan would have faced the possibility of adoption. Indeed had the "Yeltsin Plan" been adopted immediately post *coup*-attempt an adroit and energetic Gorbachev, absent Yeltsin, could possibly have become the new President of Russia. He would have needed to face down his reluctance of popular election (easier than before perhaps with the Yeltsin precedence) and would have had to deal with a bureaucracy with which he was familiar had they chosen to accept the situation and stay on board. This scenario could have played out not too differently from that postulated earlier, and could have led to better working relationships with the West during the 1990's than was to prove to be the case with Yeltsin.

The Kananaskis G8 meeting not agreed the Global Partnership?

The adoption of the G8 Global Partnership Against the Spread of Weapons and Materials of Mass Destruction in 2002 may have been a close run thing. Some circumstances are described here as illustrating *inter alia*:

the role of personal relationships at Summit level;

that despite careful choreography, the ability of leaders to override arrangements made by their Sherpas;

flexibility in managing high level arrangements;

the use of the Summit to steer domestic policy.

Putin had attended the 2000 (Okinawa) G7. He had outlined Russia's financial position and told the leaders he believed there were sufficient resources to repay debts coming due.[360] At 2001(Genoa) against the advice of officials, he decided not to raise the question of disarmament and accordingly there was no reference in the papers. However he took the opportunity of a bilateral meeting with Bush to suggest a deal might be done linking missile defence with the reduction of nuclear weapons.[361]

In late 2001 early 2002 the relationship between the US and RF were at a high. Putin had offered assistance immediately after 9/11. Following their first bilateral meeting in June 2001 (GW) Bush spoke warmly of Putin, "I wouldn't have invited him to my ranch if I didn't trust him".[362] The two men had extensive opportunities for discussion following the Genoa Summit, on Putin's State visit to the US 12-15 November 2001, and on Bush's to Russia in late May 2002, when both spoke in warm terms of the other, and Bush of the importance of the agreements they had signed. They met again at a meeting of

[360] Bayne N *Staying Together – The G8 Summit Confronts the 21st Century* (Aldershot Ashgate 2005) p85

[361] Reports appeared in various news reports including the Financial Times, The Guardian (http://www.theguardian.com/world/2001/jul/23/usa.russia) and on CNN (http://edition.cnn.com/2001/WORLD/europe/07/22/bush.putin/) the latter two Accessed 14 March 2016,

[362] White House Press Office Archive at http://georgewbush-whitehouse.archives.gov/news/releases/2001/06/20010618.html Accessed 14 May 2015

Heads of Government under the auspices of the NATO-Russia Council on 28 May - four weeks before Kananaskis. At a concluding press conference Secretary of State Powell spoke at length of the importance of CTR.[363]

Tony Blair keen to keep the special relationship between the UK and US close, the first western European leader to visit Washington following Bush's election, and who was to emphasise the role British foreign policy could play in association with the US, with typical adroitness, had also been the first western leader to visit the new President in Moscow, at a time when relationships between Russia and the other European countries were weak. In his autobiography he speaks of the strength of his relationship with Putin in its early days and of his attempts at reconciling conflict in the Russian's mind between the interests of Russia's "near abroad" and its people's wish for democracy[364].

Blair had also been in frequent contact with Bush. He visited him for the first time, at Camp David in February 2011, and spoke with him in New York and Washington after 9/11, later noting that, "I was talking to George throughout". [365] In April 2002 he stayed at the Bush ranch. Much of the conversation was with regard to plans for Afghanistan and Iraq[366].

At each G7/G8 it was customary for a major theme to be introduced. At Genoa this was the relief of African debt. A working party had been established and despite the pressures for the primary discussion at Kananaskis to be counter-terrorism the Canadians negotiated an agenda that prioritised both items. Blair was strongly supportive of assistance to Africa.

It has been reported anecdotally that following a bilateral between Bush and Putin, Bush, at a casual encounter following a visit to the gym in the early morning presented Blair with an ultimatum to support the GP proposal or he would be unable to recommend the funding for the African plan to Congress. Blair was reported as looking shocked.

At the conclusion of the meeting there was a break with precedent when, in place of the normal communiqué, Chretien, the Canadian Prime Minister and host, issued a summary covering only the points made by the leaders on the African plan, the GP, and Russia's role in the G8. Bayne describes some decisions as being made only by the leaders and to the surprise of their Sherpas[367].

Bayne writes,

> Bush only agreed to $1B for debt relief because the others had agreed $1B for each of 10 years for GP. This could only have been agreed by the Heads – and with Putin who was now prepared to guarantee the necessary access and legal protection – even though it transpired he was not able to meet his promise in full. Bush knew that elements in Congress were so keen to clean up installations in Russia that they would regard $1B in debt relief as an acceptable price. Could not have been done if everything had been pre-cooked.[368]

In his autobiography Blair's reference to Kananaskis amounts to six lines mentioning the GP briefly. The Sea Island meeting the following year is described only as having taken place. His description of Gleneagles, two years later, starts

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[363] White House Press Office Archive at http://georgewbush-whitehouse.archives.gov/news/releases/2002/05/20020525-4.html Accessed 25 May 2015

[364] Blair Tony *A Journey* (London Hutchinson 2010) p243-245

[365] Blair Tony *A Journey* (London Hutchinson 2010) p399

[366] Meyer C *DC Confidential* (London Weidenfield and Nicholson 2005) provides some detail of the discussions around Crawford particularly pp244-248

[367] Bayne N *Staying Together – The G8 Summit Confronts the 21st Century* (Aldershot Ashgate 2005) p129

[368] Bayne N *Staying Together – The G8 Summit Confronts the 21st Century* (Aldershot Ashgate 2005) p203

with a bilateral with Bush over breakfast the conclusions of which were Bush failing to commit to developments post-Kyoto, but, "He was more or less there on Africa."[369] There is considerable reference to Africa and the extent to which Bush had followed up on assistance following Kananaskis. There was no reference to an agreement reached in a side meeting un-sticking the PDMA which had been stalled for three years over liability issues[370].

It was customary for the UK Annual Report on its CTR projects to carry forwards from each of the three Ministers whose departments shared responsibility for the programme. For the third (2005) report this was replaced with an upbeat message and rallying cry ornamented by the 2005 G8 logo, placing the signatory, Blair, at the centre of developments. Any weakening in good relationships would appear to have been restored.[371]

It is intriguing to ponder whether Blair was wrong-footed by Bush and to suggest that had he not been or had he not made a deal on Africa, whether the GP would have gone ahead at Kananaskis - or perhaps at the following (Sea Island) Summit, where Bush, as Chairman, might have wielded sufficient influence - to get his way. The significance of Blair's co-operation is that the Americans thought without it they would be unable able to persuade Chirac or Schroder. It is intriguing to ponder also whether Bush felt under any filial tie to mark the tenth anniversary of his father's signature on the, by then highly praised, PL102-228[372].

Had the GP not been announced at Kananaskis or Sea Island what might have happened? It is possible that, had Bush proved able to maintain the CTR, there might have been not a great deal of difference. The British, Canadians, EU and Japanese had active programmes in the FSU as did other countries not members of the G8. TACIS had spent €2.464B on Russian projects 1991- 2001[373]; the NSA had by the end of the GP in 2012 received donations amounting to €365M and raised a further €325M on its own account. The CSF by 2013, had raised approximately $1.4B of the then estimated $2.1B to complete the project.

Another Chernobyl?

The International Nuclear and Radiological Event Scale, by which the severity of nuclear accidents may be assessed, was developed by the IAEA following Chernobyl. There have been two assessments of the top category (7) - Chernobyl and Fukushima. In the years preceding 1990 there were a number of accidents in the FSU that would have recorded levels below 6. The consequences of Fukushima in a relatively well-prepared nation remain severe, with at the peak exclusion of 70,000 people[374] previously living near the plant and with the expectation of radioactive contamination for up to 80 years[375]. Whilst planning exercises are regularly undertaken as part of the risk assessment for all NPP, the variables in play - severity, location, season, time, reaction - are such that any estimate of the consequences of a future nuclear accident in Russia could be little more than speculation.

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[369] Blair Tony *A Journey* (London Hutchinson 2010) p563

[370] Stimson Center http://www.stimson.org/liability-issues-in-cooperative-nonproliferation-programs-in-russia-/ Accessed 29 June 2015

[371] *Global Threat Reduction Programme Third Annual Report 2005* (London DTI 2005) p1

[372] The African Plan, like GP, has proved to be one of the G8's most successful endeavours.

[373] Seija Lainela and – *Pekka Sutela European Union, Russia, and TACIS* (Helsinki Bank of Finland 2004) Accessed http://www.suomenpankki.fi/pdf/111621.pdf on 2005-05-19

[374] Broadcast Transcript of Japanese National Broadcasting Company Earthquake Note 172 20 December 2011 Accessed at: http://www.jaif.or.jp/english/news_images/pdf/ENGNEWS01_1324357922P.pdf on 25 May 2015

[375] Estimates are still (2015) preliminary. Regular updates of the position are posted by the IAEA at https://www.iaea.org/newscenter/focus/fukushima/status-update last accessed 25 May 2015.

The Establishment and some Consequences of the Combined Threat Reduction and Associated Programmes

The reality of CTR and GP is broader and deeper than the myth - indicated in this study by the use of 'some' in the title. For CTR, Nunn and Lugar are credited with its inception. They were at the peak of a pyramid of relationships and endeavour which at that moment was holding together. Its strata were differentiated. At its base the quadrumvirates, for it is unlikely there would have been in 1991 such a strong desire for nuclear disarmament or the recognition of the dangers of the Soviet legacy arsenal without the dreams and aspirations of Reagan Gorbachev Bush and their immediate aides.

Below was the level of energetic and focussed personnel who had developed professional and personal links, some recently some longstanding, through studentships, Dartmouth, Pugwash, and the increasing exchanges of a practical nature by scientists, dating from 1986 and the establishment of the first seismic stations to measure nuclear tests. These links were to prove essential in meeting the many technical challenges in realising CTR-plus. Of outstanding importance were those between Nunn Kokoshin Velhikhov and Hamburg.

It is not to diminish *Nunn-Lugar* to remind that other American initiatives were simultaneously in motion. The conference organised by FAS/NRDC at which Neff and Mikhailov first discussed the possibility of the purchase of SU HEU was a week earlier than Nunn and Lugar's meeting seeking to create a caucus for what was to become PL102-228. On 15 December a team representing NRDC and FAS comprising current and former weapon scientists from the three US National Laboratories were in Moscow discussing with Russian defence scientists methods of how to seal Soviet warheads securely, and how to dismantle them whilst not revealing design secrets.

The American and FSU nuclear inventories were many magnitudes larger than the total of the other three nuclear weapon states. The US GDP, by far the world's largest, sourced 'defence' spending at a level substantially higher than any other. Outside the US there were no NGO's with the reach of the FAS (founded in 1945 by staff from the National Laboratories many of whom had worked on the Manhattan project) or NTI (founded in 2001 whose first major project was the raising of $5M for a nuclear safety project). Annual reports to, and debates in, Congress kept US programmes before the public eye in a way not reflected in other countries[376]. This dominance is in some measure reflected in the attention received by the American endeavour at the expense of others. It would be a mistake however to disregard the contributions made by other nations which when aggregated was substantial. 'Collected programs' via the G8 began in 2003 and the EU and associated bodies were major contributors. Individual countries commenced projects as early as 1991and Norway contributed a higher proportion of its GDP than any other country[377]. There were major 'cross-overs'. ISTC, a responsibility of the State Department, was a German initiative. The US contributed to the CSF and the NSA administered by EBRD. The Europeans contributed funds to enable the PDMA to go ahead.

The GP came as a surprise to the Sherpas - and to the world in the end of meeting statement at Kananaskis. Should it have been? The G7 had been energetically concerned with the potential of SU disaster pre-1991 and had invested substantially to mitigate Russian difficulties. One Sherpa, Jacques Attali, had been undertaking up-front discussions with the SU in multiple roles and became the founding director of EBRD, a G7 initiative, to meet the challenges of the collapsing SU in 1991. The EU was making major contributions and countries, G7 and otherwise, were running programmes in 2002. An American

[376] Other governments did periodically report. In addition to the UK Annual Reports see, for example, *Second Report from Foreign Affairs Committee Session 1994-95 UK Policy on Weapons Proliferation and Arms Control in the Post-Cold War Era* (London Stationary Office 1995) and *Foreign Affairs Committee Foreign Policy Aspects of War Against Terrorism* (London Stationary Office 2003)

[377] CSIS SGN Projetc http://www.sgnproject.org/Donor%20Factsheets/Norway.html Accessed 18 April 2005

initiative was expected and appropriate after 9/11. There was no secret of US considerations about further steps to protect nuclear assets given the pre-occupation with terrorism, and talks with allies were ongoing. The Russians at this time were close to the US, shared an anti-terrorist agenda (if not precisely matching that of the West) and were recognized as facing major security difficulties.

In terms of consequences most programmes are tender to multiple interpretations of financial commitment, scope, longevity and achievement. With finance, technical difficulties militate against identification of accurate project costings. With the EU and 23 partner countries eventually involved there are more than 24 sets of issues with inflation, exchange rates and accounting practice. The observations of the GAO that its auditors were unable to calculate actual US spend, and that the difficulties created by varied accounting across the DOE alone made certain comparisons impossible, militates against the making of realistic assessments of government costs before consideration is attempted of the financing of the commercial and quasi-commercial operations which would not have taken place without the government programmes.

In terms of scope the original authority of PL102-228 was:

SEC. 212.

> *(b) Type of Program. - The program under this section shall be limited to co-operation among the United States, the Soviet Union, its republics, and any successor entities to (1) destroy nuclear weapons, chemical weapons, and other weapons, (2) transport, store, disable, and safeguard weapons in connection with their destruction, and (3) establish verifiable safeguards against the proliferation of such weapons. Such cooperation may involve assistance in planning and in resolving technical problems associated with weapons destruction and proliferation. Such cooperation may also involve the funding of critical short-term requirements related to weapons destruction and should, to the extent feasible, draw upon United States technology and United States technicians.*

The declaration of the G8 at Kananaskis, reflecting the contemporary mood, read:

> The attacks of September 11 demonstrated that terrorists are prepared to use any means to cause terror and inflict appalling casualties on innocent people. We commit ourselves to prevent terrorists, or those that harbor them, from acquiring or developing nuclear, chemical, radiological and biological weapons; missiles; and related materials, equipment and technology. We call on all countries to join us in adopting the set of non-proliferation principles we have announced today.
>
> In a major initiative to implement those principles, we have also decided today to launch a new G8 Global Partnership against the Spread of Weapons and Materials of Mass Destruction. Under this initiative, we will support specific cooperation projects, initially in Russia, to address non-proliferation, disarmament, counter-terrorism and nuclear safety issues. Among our priority concerns are the destruction of chemical weapons, the dismantlement of decommissioned nuclear submarines, the disposition of fissile materials and the employment of former weapons scientists. We will commit

> to raise up to $20 billion to support such projects over the next ten years. A range of financing options, including the option of bilateral debt for program exchanges, will be available to countries that contribute to this Global Partnership. We have adopted a set of guidelines that will form the basis for the negotiation of specific agreements for new projects that will apply with immediate effect, to ensure effective and efficient project development, coordination and implementation. We will review over the next year the applicability of the guidelines to existing projects.
>
> Recognizing that this Global Partnership will enhance international security and safety, we invite other countries that are prepared to adopt its common principles and guidelines to enter into discussions with us on participating in and contributing to this initiative.

The wording of the G8 declaration makes clear its debt to CTR, and consequently American achievement.
By 2012 the range of projects being undertaken under the auspices of the GP as reported to the GPWG amounted to 772[378]. From the US and FSU in 1992, the international commitment by 2012 extended to 24 contributors, involving 15 international organisations and 53 state recipients world-wide. Additional to the state recipients there were bodies such as ASEAN and OPCW. There was no protocol for the national reports and consequently a range of thresholds. Japan (63 activities reported) included every training seminar. The UK (48 projects) omitted tasks with smaller budgets that were reported to Parliament. The weight of the US is manifest with 215 projects[379].
If, and how, should account be taken of commercial and quasi-commercial activities which would not have taken place without the programmes? Invoking only the largest as an example, the UPA was initiated with a purchase contract by USEC acting as agent for the US government for $13B[380]. A quick comparison with the oft-quoted $1B a year for CTR sets a high marker for "associated programmes".
Longevity raises a "How long is a piece of string?" question. Formally GP was ten years – of which the CTR was half. It may be argued that the CTR was a twenty-year programme but only in retrospect since between 1991 and 2002 funds were voted on an annual basis and could have been cancelled at any time.[381] However activities organised under the GP were proposed or continued beyond its formal conclusion – notably the UPA (a new contract under discussion in 2012 for implementation in 2015) and the PDMA under which full operation was estimated to start only in 2018 – the time span of negotiations and preparations lasting longer than CTR itself.

Study Conclusion

Literature around CTR-plus is focussed principally on the American initiative now known simply as *Nunn-Lugar* and CTR. This is in part because of the magnitude and coherence of the American programmes and the attention of deeply interested

[378] Author's calculation from final Annex A, 2012
[379] Author's calculation from final Annex A, 2012

[380] The overall arrangements over ten years are complex. A clear description of the arrangements may be found at http://www.world-nuclear.org/info/nuclear-fuel-cycle/uranium-resources/military-warheads-as-a-source-of-nuclear-fuel/ last accessed 25 May 2015
[381] Technically since the US "pledged" funds rather than guaranteed them by Treaty the same position of annual allocations held good between 2002 and 2012

US NGO's. PL102-228 was a starting block. Nunn and Lugar fired the starting gun but there were coterminous activities that did not catch the limelight. Without what has been described as the quadrumvirates there could have been no arena within which the activities could have taken place, certainly within the timescale 1992-1995.

The US embarked on the programmes because of the evident chaos embracing nuclear security in the SU prompted by Nunn operating as catalyst and first class networker within a latticework of US/SU contacts developed through politics, the Dartmouth conferences, Pugwash, the Aspen Institute and scientific portals. His initiative was accepted by the American half of the then quadrumvirate, (GHW) Bush and Baker, who had been nurturing the highest level political contacts, established by 'the first quadrumvirate' Presidents Reagan and Gorbachev, Secretary Schultz and Minister Shevardnadze.

There was activity beyond the US at around the same time - G7 with the agreement to establish the EBRD in 1989, and the work of the EU and TACIS from 1991. These did not receive the same attention as CTR - possibly because the initiatives were diffused, at one stage removed from national legislatures, and because of the absence of European NGO's of the same weight as the American. Their impact occupied adjacent constituencies, and was no less than that of CTR. With the inclusion of Chernobyl and civilian-safety related expenditure the totality of non-US expenditure over the twenty years from 1991 was on a par with the American, and not solely 50% of the GP's.

The programmes were seen as essential and maintained (as were the Russian) during the 1990's Yeltsin presidency throughout which Russian politics and economics failed to achieve equilibrium. Around 2000, whilst the potential for Russian nuclear mishaps remained high, other circumstances changed with the growing stability of the regime following Putin's accession and western concern following 9/11 shifting to the dangers of terrorism. The G8 was far from being pushed into life with the GP at Kananaskis, as is on occasion suggested, for as noted it, and all its members, had been sensitive of and reacting to the Russian nuclear situation before the institution of CTR.

In 2002 the initiation of the GP did spread the CTR gospel. A first view of CTR and GP appeared to offer a study limited and self-contained. The reality is much wider with many programmes initiated through the GP and beyond, by states and non-state institutions. This study, far from providing a projected analysis of two international programmes, has been able only to demonstrate the difficulties in so doing. The total financial cost of the operations will never be known.

Its legacy will be similarly difficult to define and some beneficiaries will remain unaware of consequential endowment distant from original aims –structures for meetings of the world's economic leaders; equipment and practices designed to counter epidemics developed from measures to counter biological warfare; and in 2014 a ship and equipment, paid for and designed to deal with abandoned Russian nuclear waste, returned to assist Japan following the Fukushima disaster.

It may be claimed with some assurance that those whose efforts led to *Nunn-Lugar*, whilst recognising that they might have 'put a foot in the door', were unlikely to have imagined that the basic 'permissive' $400M to be devoted to their aims would have grown to not less than $30B with over 20 donors and consequences to be felt worldwide twenty-five years later or that the endeavour could be seen as having a standing comparable with that of the Marshall Plan.

Wider Conclusions

Drawing on the precursor of the Reagan/Gorbachev initiative the tabular presentation pp246-9 illustrates an extensive penumbra of influence beyond the formal boundaries of CTR-plus. Conclusions wider than the effectiveness of execution of the plans can also be drawn.

However compatible may be State's interests, individuals with the authority and drive to realise those interests are vital. As in the 1980's and '90's their influence may extend beyond their terms of office. Successors will reflect their aims and reprise the arrangements that brought success.

Where one side is weak to the point of collapse long-term impediments to international co-operation can be overcome and liberal internationalism can prosper provided national aims concur.

The role of inter-state bureaucracies in maintaining projects over many years is clear. Continuity can be demonstrated by Bush officials joining the Clinton administration, Minatom officials moving seamlessly from organising manufacture of HEU to selling it, and the Russian Navy from weapons operation to nuclear clear-up. The same 'headline' organisations operated in Washington Moscow and Vienna in 1991 and 2012 although with structures and some purposes changed to meet new challenges. The G7/G8 profile continued apparently unchanged but the agreement of Kananaskis fashioned its structure dramatically to meet the changing needs of the world[382].

This study has proved 'A Work in Progress'. The analytic chapters have identified examples important for consideration different to those chosen and opened the door to further study, and whilst other studies have preceded or been contemporaneous, there remain many areas open for future consideration.

This thesis concludes with an assertion and a question.

The assertion:

the endeavour termed CTR-plus itself represents a labour in progress. Thousands of nuclear weapons remain deployed world-wide and despite the attention given to the dangers of terrorism those from accident remain far greater.

The question:

was the small amount of cash spent by the Carnegie Foundation to support the original Harvard paper and the meetings around it organised by Senator Nunn the best value for money in the 20th century?

[382] Popular accounts imply the leaders' entourage at Kananaskis a 'handful' after the thousands at Genoa. A local estimate was roughly 400 https://www.globalpolicy.org/global-taxes/42810html Accessed 3 June 2016