Nuclear proliferation challenges in East Asia and prospects for cooperation: a view from Europe

Umbach, Frank

NUCLEAR PROLIFERATION CHALLENGES IN EAST ASIA AND PROSPECTS FOR CO-OPERATION—A VIEW FROM EUROPE*

FRANK UMBACH*

INTRODUCTION

At the end of November 1997, U.S. President Bill Clinton issued a still classified new directive for the American nuclear forces that defines the potential use of nuclear weapons in conflict situations. The new directive marks a departure from a nuclear strategy developed in 1981 under former U.S. President Ronald Reagan that called to fight an all-out, protracted nuclear war until victory, irrespective of social and military costs. According to the new guidelines, the future main purpose of U.S. nuclear forces will put the emphasis on deterring the use of nuclear arms or other mass destruction weapons against U.S. forces or allies by threatening a devastating response. These changes in the U.S. nuclear strategy have become necessary because the future nuclear defence planning and targeting requirements have to be reconciled with the denuclearization cuts of START–I and –II. Furthermore, these changes should encourage the ratification of START–II (which calls for reductions of nuclear warheads from 6.000 to 3.000–3.500 on both sides) in the Russian Duma.[1] Nonetheless, the Clinton directive will preserve an retaliation option of using nuclear strikes against military and civilian targets, if U.S. and allied armed forces are attacked particularly with chemical or biological weapons. Therefore, the United States will retain a triad of nuclear forces consisting of bombers, land-based missiles (ICBMs) and submarine-based missiles (SLBMs) but on lower levels according to proposals of future START–III negotiations with

---

* Frank Umbach is a Senior Research Fellow at the Research Institute of the German Society for Foreign Affairs (DGAP) in Berlin. This analysis is based on findings of a research project "Perspectives of Regional Security Co-operation in the Asia-Pacific Region", sponsored by the Volkswagen foundation, at the DGAP.

[1] To ambivalent Russian reactions see Dmitrii Gornostaev, *Nezavisimaya Gazeta*, 9 December 1997, p. 1 and Nikolai Zimin, *Segodnya*, 9 December 1997, pp. 1 and 4.

Russia (after the Russian Parliament ratifies START–II) that will further downsize the nuclear arsenals to 2.500–2.000 warheads.

To some extent, this directive can be seen as a another indicator for a creeping denuclearization and a diminishing role of U.S. nuclear weapons in the context of their military planning for future conflicts. Although the U.S. thus is maintaining a nuclear retaliation option against ABC-weapons, simultaneously it will rely increasingly on the use of conventional deep-strike, long-range high-precision weapon systems, based on most modern technology, as it was already the case in the Gulf-war in 1991. To some extent, these denuclearization trends seem also to be in line with a growing delegitimation of nuclear weapons as calls for the abolition of all nuclear weapons and a nuclear free world by the prestigious international Canberra Commission[2] and well-known retired U.S. officers such as General Lee Butler (the former commander-in-chief of all U.S. strategic nuclear forces) or General Andrew J. Goodpaster (former commander of NATO forces in Europe) have shown.[3] And although the International Court of Justice's ruling on nuclear weapons was quite ambiguous, some activists of a nuclear free world felt be strengthened.[4]

Furthermore, they might also be encouraged by the fact that former forecasts of 20 nuclear powers by 1970 made in the 1960s by U.S. experts have never become true. The number had reached nine by 1990, including four undeclared nuclear powers (Israel, Pakistan, India, and South Africa). In addition, shortly afterwards, South Africa decided to dismantle its six nuclear bombs.[5] Moreover, a horizontal nuclear proliferation after the implosion of the former Soviet Union (FSU) with new emerging nuclear powers on its territory (such as Ukraine, Belarus and Kazakhstan) has been successfully prevented.

In contrast to these positive developments in the field of global non-proliferation and denuclearization efforts, however, a number of other regional and global trends and their security implications put

---

[2] The "Report of the Canberra Commission on the Elimination of Nuclear Weapons", August 1996, can be obtained from the commission's site on the World Wide Web—http://www.dfat.gov.au/dfat/cc/cchome.html.

[3] George Lee Butler, "Time to End the Age of Nukes", *Bulletin of the Atomic Scientists*, March-April 1997, pp. 33–36 and "Statement on Nuclear Weapons (by international Generals and Admirals)", *The Washington Quarterly*, Summer 1997, pp. 12–130.

[4] B. Carnahan, "World Court Delivers Opinion on Legality of Nuclear Weapon Use", *Arms Control Today* (ACT), July 1996, p. 24.

[5] J.W. De Villiers/Roger Jardine/Mitchell Reiss, "Why South Africa Gave Up the Bomb", *Foreign Affairs*, November/December 1993, pp. 99–109.

the goal of a nuclear free world in question, at least in near and mid-term perspective:

The implosion of the nuclear superpower USSR and the resulting proliferation problems have created new potential proliferation threats to both Europe and the Asia-Pacific region. Although any nuclear war between the U.S. and Russia seems nowadays more remote than ever, Russia is facing numerous dismantling problems and costs that aggravate problems of reforming its armed forces and coping successfully with the challenges of the nuclear legacy of the FSU. These challenges include the following two potential threats in the near future: a) increasing risks of the loss of command and control over nuclear weapons, both politically and militarily, that might lead to accidental or inadvertent and unsanctioned or unauthorised use of them; and b) an illicit export of nuclear materials and expertise to potential nuclear threshold countries.

Any proliferation of mass destruction weapons or even an unlimited proliferation of advanced conventional weapon systems and the increasing technology diffusion might fuel the already ongoing arms build-up and arms competition in East Asia.[6] It could lead to an open arms race, increasing risks of misperception, miscalculation and misunderstanding and finally to a violent outbreak of potential conflicts, so undermining the stability and security in the region. Against this background, new potential proliferation threats must be addressed in the dynamic and highly fluid security landscape of the Asia-Pacific region.

Although nuclear-weapon-free zones have been established in the South Pacific—such as the 1985 Treaty of Rarotonga (the South Pacific Nuclear-Weapon-Free Zone or SPNWFZ) and Southeast Asia (the 1995 South East Asia Nuclear-Weapon-Free Zone or SEANWFZ),[7] it remains an open question whether they are effective instruments for successful regional and global non-proliferation policies.

---

[6] To the current regional arms build-up, technology diffusion and emerging modern defence industries in the Asia-Pacific region see F. Umbach, "Strategic Changes in the Asia-Pacific Region: The Dimension of Military Technology Diffusion and Proliferation of Advanced Conventional Weaponry", in: Joachim Krause/Frank Umbach (Eds.), *Perspectives of Regional Security Co-operation in Asia-Pacific: Learning from Europe or Developing Indigenous Models?* Arbeitspapiere zur Internationalen Politik (ed. by the Research Institute of the German Society for Foreign Affairs/DGAP), No. 100 (Bonn: Europa-Union Verlag GmbH, September 1998), pp. 43–69.

[7] See "Treaty on the Southeast Asia Nuclear Weapon-Free Zone", *Strategic Digest*

Ultimately, they are dependent on the support of the nuclear weapon states—the US, Russia, China, France and Great Britain—and their national security interests.[8] These interests are not always and exclusively defined by broader regional or global security concerns but often to more narrow national security interests. Characteristically, the support of the nuclear powers for these two nuclear-weapon-free zones was and is still limited (SPNWFZ) or so far even non-existent (SEANWFZ).[9] Given European experiences, nuclear-weapon-free zones might promote confidence and security building measures (CSBMs), but can hardly be the major or the only non-proliferation instrument.[10] Therefore, the analysis of motivations and the internal as well as external security environment of potential nuclear threshold countries remains an important prerequisite for defining specific and successful non-proliferation strategies.

Moreover, as the result of the dynamic economic growth and population increase in the Asia-Pacific region, the energy demand in the next decades will increase several times (particularly in China). Given the limited existence of energy resources, almost all states in East Asia are looking into the available options, notably the civilian use of nuclear power. But the creation of new nuclear power stations, nuclear fuel fabrication, spent fuel storage and nuclear storage sites will raise considerable non-proliferation concerns because

---

3/1996, pp. 320–328. Although the treaty was drafted on the basis of similar agreements, it has certain unique features such as the inclusion of the "*Exclusive Economic Zones (EEZs)*" and continental shelves that has raised concerns particularly in the United States and China. Thus far, both nuclear weapon states have not signed the protocol of the SEANWFZ-treaty which ensures compliance with the treaty by the five declared nuclear powers—to the background see Amitav Acharya/J.D. Kenneth Boutin, "The Southeast Asia Nuclear Weapon-Free Zone Treaty", *Security Dialogue* 2/1998, pp. 219–230 and Rolf Muetzenich, "Kernwaffenfreiheit in Suedostasien", *Aussenpolitik* 4/1997, pp. 390–400.

[8] See also Jozef Goldblat, "Nuclear-Weapon-Free Zones: A History and Assessment", *The Nonproliferation Review*, Spring-Summer 1997, pp. 18–32.

[9] See also Keith Suter, "U.S. Signs on At Last", *The Bulletin of the Atomic Scientists*, March-April 1996, pp. 12–13.

[10] Although one motivation of ASEAN states was to include EEZs and continental shelves to make sure that China cannot deploy nuclear weapons in or around the contested islands and reefs in the South China Sea, this makes militarily little sense given the capabilities of modern long-range weapon systems (particularly missiles). Such zones can also lull their member states into a mistaken sense of nuclear security. To their positive role in promoting *CSBMs* between its members see Ralph A. Cossa, *International Herald Tribune* (IHT), 23 July 1996, p. 6. To an Indian critic of such zones see Brahma Chellaney, *IHT*, 7 May 1996, p. 8.

the boundaries between the civilian and military use of nuclear energy are often small.[11]

Furthermore, new trends in Russia's and China's military policies indicate either a greater reliance on nuclear weapons both for prestige and compensating mounting deficiencies of its conventional forces (as it is the case in Russia despite the denuclearization of the last years as we will see later) or an accelerating modernisation process (as it is the case in China). The latter might not only increase the accuracy of missiles and other technical parameter, but also expand its current nuclear arsenal two or three times in the next 10–15 years.

Such a future nuclear arms build-up of China might also raise and justify nuclear ambitions of other East Asian countries, notably Japan, Taiwan and South Korea (or a unified Korea after the collapse of North Korea).[12] Japan, for instance, is already confronted by ambitions of two *de facto* and one potential nuclear power (Russia, China and North Korea) in the Asia-Pacific Rim. It might have a direct or indirect impact on its security, particularly if the U.S. would withdraw from the region or if the U.S. nuclear umbrella as a positive security guarantee for Japan would loose its credibility. Moreover, the Indian-Pakistani nuclear arms race and their weaponry programmes have also destabilising effects on Southeast and Northeast Asian states because it threatens the crucial sea links for their trade and energy flows and undermines regional CSBMs.

The expansion of technology that has an dominant influence on lives of most people presents certainly numerous benefits and opportunities, but at the same time it poses also new security challenges. The globalisation of economies and technology available provide new opportunities for terrorists with a power of modern weaponry and transnational links which are unprecedented in human experience. The example of the AUM-Shinrikyo Doomsday Cult, which will be analysed later in this paper, has underscored these grave hazards with new dimensions.

---

[11] These issues are discussed in the excellent paper by Hahnkyu Park, "Comprehensive Security and Regional Nuclear Co-operation in East Asia: The Case of South Korea" in this volume.

[12] On South Korea's and Taiwan's nuclear ambitions in the past see Andrew Mack, "Potential, not Proliferation", *The Bulletin of the Atomic Scientists*, July/August 1997, pp. 48–53 and David Albright/Corey Gay, "Taiwan: Nuclear Nightmare Averted", *ibid.*, January/February 1998, pp. 54–60. A renewed open nuclearization of Taiwan, however, might risk a pre-emptive military strike by the PRC.

The following chapters do not aim primarily to identify the status and numbers of nuclear weapons in East Asia[13] but rather to analyse some of the wider regional and global nuclear proliferation challenges and nuclear modernisation efforts in China which might produce new security dilemmas in East Asia. It concludes with the assumption that in order to prevent those new security dilemmas and to stabilise and not to undermine regional and global stability, a much broader and deeper security co-operation between nuclear powers and non-nuclear weapon states is urgently needed in the forthcoming months and years. Realistically, it should begin with enhancing military transparency, such as publishing White Papers with more detail information of the national defence policies, comparing military budgets, military doctrines and strategies, conventional and nuclear arms procurement plans, and by inviting experts to military exercises. While a wide-ranging and militarily significant nuclear-free zone in Northeast Asia seems only achievable in a long-term process of a nearly nuclear-free world, a register of nuclear arms would contribute to more transparency and confidence-building in the region in the short—and mid-term perspective.

Proliferation Challenges of the Soviet Nuclear Legacy and the Inherent Risks of Russia's Strategic Nuclear Armed Forces

The Implosion of a Nuclear Superpower and its Proliferation Challenges

Although significant steps toward a denuclearization and improving the safeguards mechanisms of the former Soviet nuclear arsenal have been made during the last years, the implementation process of START–II had to be extended from 2003 until the end of 2007. It gives Russia more time to dismantle launch and delivery systems—such as missile silos, bombers and submarines—with multiple war-

[13] Gerald Segal, "Nuclear Forces in Northeast Asia", in: Young Whan Kihl/Peter Hayes (Ed.), *Peace and Security in Northeast Asia. The Nuclear Issue and the Korean Peninsula* (Armonk, NY-London: M.E. Sharpe, 1997), pp. 305–317; Dunbar Lockwood, "The Status of U.S., Russian, and Chinese Nuclear Forces in Northeast Asia", in: *ibid.*, pp. 318–358 and Ralph A. Cossa, "Nuclear Forces in the Far East: Status and Implications", in: *ibid.*, pp. 359–380.

heads. Moreover, Washington, therewith, hopes to win more support in the Russian Duma for the still un-ratified treaty as a precondition for START–III negotiations.[14]

In the fall of 1993, the Russian minister for atomic energy, V. Mikhaylov, revealed for the first time that the Soviet Union had in 1987 approximately 45.000 nuclear warheads in its arsenal[15]—12.000 more than the CIA had accounted in the mid of 1980s. In mid-1993, the most reliable estimate, based on data from the U.S. Central Intelligence Agency (CIA) and the Russian Ministry for Atomic Energy (MINATOM), specified the Russian nuclear legacy still on 32.000 strategic and tactical nuclear warheads. 15.000 of them are active, or deployed, and another 17.000 are in storage or awaiting disassembly and disposal.[16]

Table 1: Reductions and Limits of Strategic Nuclear Warheads according to START–I and –II

	Mid 1991		START–I		START–II	
	U.S.A.	USSR/RF	U.S.A.	USSR/RF	U.S.A.	USSR/RF
ICBMs	2.450	6.612	1.444	3.258	500	795
SLBMs	5.760	2.804	3.456	1.744	1.728	1.744
Bomber	2.665	855	1.066	820	772	461
Total	*10.875*	*10.271*	*5.966*	*5.687*	*3.500*	*3.000*

Source: Frank Umbach, "Die nukleare Rüstungskontrollproblematik und die Rolle der USA im postsowjetischen Raum", in: BIOst (Ed.), *Zwischen Krise und Konsolidierung. Gefaehrdeter Systemwechsel im Osten Europas* (Muenchen-Wien: Carl Hanser Verlag, 1995), pp. 360–371, here p. 360.

In the FSU, strategic nuclear weapons had only been deployed in Russia, Belarus, Ukraine and Kazakhstan. Those weapons were all either land-based ICBMs or weapon systems deployed on heavy bombers. In contrast to the tactical nuclear weapons, their safety against theft and unauthorised use had been perceived by Western experts as rather high.

According to various Western and Soviet official statements, 80–85

[14] Steven Lee Myers, *IHT*, 29 September 1997, p. 6.

[15] *Moscow News* 40/1993, 1 October 1993, p. 5.

[16] 'Nuclear Pursuits", *The Bulletin of the Atomic Scientists*, No. 4 (May) 1993, pp. 48–49; "Estimated Russian (CIS) Nuclear Stockpile (July 1993)", *ibid.*, No. 6 (July-August) 1993, p. 57, and D. Lockwood, "Report on Soviet Arsenal Raises Questions, Eyebrows", *ACT*, No. 9 (Nov.) 1993, p. 23.

per cent of the Soviet nuclear weapons were deployed within the Russian Federation (RSFSR) itself, leaving some 4.000–6.500 warheads beyond the borders of the RSFSR. Confronted with disintegration tendencies in the former Soviet Union at the end of 1980s, the Soviet General Staff ordered already in the spring of 1990 to withdraw the more numerous and more widely dispersed tactical nuclear weapons from the potential conflict zones, particularly from the Transcaucasus republics. The Soviet General Staff obviously feared the possibility of "loosing nukes" despite of its numerous explanations of its safeguarded tactical nuclear weapons against theft or unauthorised use. However, Russia was not prepared for the rapid withdrawal of thousands of nuclear weapons that it experienced.

Furthermore, not only nuclear weapons, but also the "nuclear archipelago" with its research laboratories, weapon design bureau's, testing areas, the command, control, communication and intelligence (C^3I) facilities—like early warning radars—and production plants for nuclear warheads and ballistic missiles as well as the nuclear components, materials, and know-how have become a potential source of concern for non-proliferation strategies. Thus the stockpile of fissionable materials, facilities and skilled bomb-builders pose a latent problem of diversion to political factions, terrorists, or potential proliferants around the world. Most of the facilities were located in the Russian Republic, like the two nuclear weapon design laboratories in "Arzamas-16" and Chelyabinsk-70. Hence all nuclear warheads during the cold war had been exclusively produced within the Russian republic. None of the other Soviet republics had facilities for designing, manufacturing or refurbishing nuclear warheads. However, the same cannot be said about the missile production and other parts of the nuclear complex. The largest missile production facility, for instance, was located at Dnepropetrovsk in Ukraine. Moreover, the underground test sites were located at Novaya Zemlya in arctic Russia and in Semipalatinsk (Kazakhstan). The last one was formally closed by the president of Kazakhstan, Nursultan Nazarbayev, on August 29, 1991.

Of particular importance for the future of the Russian strategic nuclear forces are also the 11 early warning radars. Six of them were located outside of Russia, in Skrunda (Latvia), Baranovichi (Belarus), Mukatchevo and Sevastopol (Ukraine), Saryshagan (Kazakhstan) and Lyaki (Azerbaijan). These early warning radar's are needed in order to maintain strategic stability (and to guarantee Russia's second strike-

capability) because nuclear forces require numerous information as well as command and control systems (C^2). Because of the loss of those early warning radar's and the rapidly ageing C^3I system, Russia's high command is now becoming partially blind—a fact that could produce false alarms and makes adequate decisions both at the bottom and the top of the high command as well as in the political leadership much more difficult.

Loss of Command and Control: Increasing Risks of an Unauthorised and Unsanctioned Launch of Russia's Nuclear Missiles[17]

During the Cold War, an unauthorised use of nuclear weapons seemed largely a theoretical scenario without presenting a real threat in peace times. However, when the Soviet Union collapsed in 1991, questions of command and control and "who has the nuclear button?" of the Soviet nuclear arsenal became utmost significant when the West insistently tried to find out who was in possession of the "nuclear briefcase"—thus during the August-putsch of 1991 and the bloody events in October 1993 or in the early autumn of 1996, when President Boris Yeltsin had been forced temporarily to give up control over his country's nuclear arsenal during a forthcoming heart operation.[18]

Each nuclear command and control system is confronted with the following dilemma: on the one hand, the system has to prevent an unauthorised use of nuclear weapons—called "negative control"; on the other hand, it has to guarantee the execution of an order to use them after authorisation—called "positive control". Both demands interfere with each other. It confronts the military commanders with the dilemma that measures which aim to reduce the risk of undesired use make the execution of a release order for nuclear weapons difficult or even impossible. Or put it in other words: The more reliable the guarantee of a retaliatory strike becomes, the less reliable is the guarantee against a non-sanctioned launch in event of error

[17] On the following discussion see also the previous analysis by Frank Umbach, "Who Controls the Nuclear Button?", *Jane's Intelligence Review* (JIR), August 1992, pp. 353–356, and idem, "Control and Security of Nuclear Weapons in the Former USSR", *Aussenpolitik* 4/1992, pp. 362–372. From the Russian side see in particular the interview with the chief designer (pseudonym *Yuri Nikolaev*), *Komsomol'skaya Pravda*, 28 January 1992, p. 2.

[18] See, for instance, Chrystia Freeland, *Financial Times* (FT), 13 September 1996.

or overreaction to an imaginary threat. Measures that reduce the risk of an unauthorised launch might thus impede the orders to execute an authorised retaliatory strike, and vice versa.

All nuclear powers are confronted by these dilemmas. But the priorities and the specific concepts which the two superpowers placed on measures to resolve them—particularly as to the delegation of authority and devolution of top-down command and control—were often very different. But in the Cold War there was always on both sides a certain tendency to give priority to positive rather than negative control. Consequently, during the *coup d'Etat* of 1991, Gorbachev could not have been the only person at the most senior command level who had custody of the "black briefcase" to release the access codes for the use of the strategic nuclear potential.[19] Furthermore, the monopoly which the General Staff enjoyed in the control of nuclear weapons was primarily designed to guard not against an accidental launch but mainly against a failure not to respond to an attack promptly and on a massive scale.

Since that time, three major negative factors affecting Russia's Strategic Nuclear Forces (SNF) have been identified during the last years: (1) the decline of the human support element in both numbers and reliability, partly also as the result of an excessive psychological strain, (2) the growing probability of technical failure as a result of the ageing of nuclear warheads as well as of delivery systems, and (3) the current state of the ageing command, control, communication and intelligence (C^3I) system of the Strategic Nuclear Forces. Many of those systems received practically no development during the last years, are functioning in a reduced composition, are degrading or have basically be stopped such as the work on improving Moscow's anti-aircraft defence system.[20]

---

[19] Thus also the conclusion by Alexei Arbatov, "Taini yadernoi knopki. Nashi generali mogut nacat' atomnuyu voinu i ne sprosyas' i prezidenta Rossii", *Novoe Vremya* 4/1992, pp. 28–31.

[20] Viktor Surikov, *Pravda-5*, 10–11 September 1996, p. 3 and R. Bykov, *Komsomol'skaya Pravda*, 15 March 1997, pp. 1–2. These facts have also been confirmed by the (former) Russian defence minister Igor Rodionov himself in February 1997. According to his alarming statement Russia's nuclear missile forces are close to collapse because of poor funding. Later, Prime Minister Viktor Chernomyrdin claimed again—in contrast to Rodionov—the firm and effective control of all nuclear weapons in Russia—see Igor Korotchenko, *Nezavisimaya Gazeta*, 21 February 1997, p. 1 and Juriy Golotjuk, *Segodnya*, 22 February 1997, p. 1.

All three factors have its negative implications for Russia's main wartime automated nuclear command-and-control system, called "*Kazbek*". It is the heart of Russia's command and control system (as a complex network of cables, radio signals, satellites and relays) designed to authorise the launching of a nuclear strike after it caused an alert in each of the three nuclear suitcases, called "*Cheget*". This Russian system is based on a "triple key system"[21], involving the Russian President, the Defence Minister and the Chief of the General Staff who all possess their own set of codes. This technical and administrative control of strategic nuclear weapons, however, was and is ultimately dependent on the trust within the party-military relationship or—being more concrete—on the absolute loyalty of the General Staff officers to the political leadership of the FSU and Russia. Meanwhile, this control system has eroded technically, financially and politically. Chronic budgetary shortfalls, worsening living conditions, low pension and wages (if they are paid at all), gaps in the early warning system and the maintenance of a "launch-and-warning"-nuclear strategy (the ability to launch a retaliatory strike before an attacking adversary's warheads hit their targets) have all contributed to increasing risks of erroneous, accidental or unauthorised missile launches because of technical failures, false warnings, misjudgements or political and socio-economic reasons. These factors are particularly destabilising because Russia has a computerised "doomsday" command-and-control complex, called "*Perimetr*". According to the U.S. expert Bruce Blair, this system allows the General Staff with its primary wartime post at Chekov (60 km south of Moscow) to launch ICBMs directly, thereby by-passing subordinate commanders and missile launch crews, to insure quasi-automatic retaliation in the event of a decapitation strike.[22] At the same time,

---

[21] See also Alexander A. Pikayev, "Post-Soviet Russia and Ukraine: Who Can Push the Button?", *The Nonproliferation Review*, Spring-Summer 1994, pp. 31–46, pp. 32ff. and A. Konovalov/A. Sutiagin, "Nuclear Weapons on the Territories of the CIS States: Problems of Safety and Security", in: Joachim Krause (Ed.), *Kernwaffenverbreitung und internationaler Systemwandel. Neue Risiken und Gestaltungsmoeglichkeiten* (Baden-Baden: Nomos-Verlagsgesellschaft, 1994), pp. 135–158.

[22] Steven J. Zaloga, "Russia's 'Doomsday' Machine", *JIR*, February 1996, pp. 54–56; Bruce G. Blair, *The New York Times*, 8 October 1993, p. A35; id., "Global Zero Alert for Nuclear Forces" (Washington, D.C.: Brookings Institution, 1995), pp. 51–55. According to Russian sources, however, the involvement of the missile launch crews is needed—see Valery Yarynych, *The New York Times*, 1 February 1994, p. A17 and the interview with Nikolai Devyanin (the chief designer of the first modification of the president's "suitcase"), "Is the 'Nuclear Briefcase' Really Necessary?", *Moscow*

the system has the technical capability that subordinate command posts to launch their missiles automatically without approval from Russia's political leadership and the General Staff if they are dead or unable to direct a nuclear retaliation strike.

Western efforts towards co-operation on nuclear issues are still hindered by the military's reluctance for "*glasnost*" and an open dialogue about its command and control procedures and the current status of the "*Perimetr*" system which is unknown. But considering the loss of several early warning radars in the former Soviet republics, the radar and satellite system is vulnerable because of gaps in its network. Hence Western reluctance on the computerised "dead hand" system remains and call in question the secure command and control (C^2) over strategic nuclear weapons. Furthermore, U.S. intelligence officials have pointed out in 1996 that the Russian "doomsday machine" has only recently been deployed though the system has been known for at least four years.[23] Hence unthinkable scenarios involving the unauthorised launch of nuclear weapons, particularly in crisis, might not be excluded any longer.[24]

These uncertainties over command and control of Russia's nuclear arsenal and its "death hand" system had been highlighted in January 1995 when a Norwegian missile inadvertently alarmed Russia's SNF which triggered a heightened level of alert throughout its forces. It was the first time that President Boris Yeltsin declared to have used his nuclear briefcase by activating the *Kazbek*-system in a real alert. He speculated that Norway and NATO "might have been trying to test Russia's military readiness."[25] The General Staff, indeed, raised the state of alert and combat readiness of Russia's strategic triad so that the whole command and control system was operating in combat mode. But fortunately, the retaliation attack was not initiated and the crisis ended. Later the Defence Ministry claimed to have pursued the trajectory of the rocket from the beginning to its end,[26] and Yeltsin dismissed his former comments as a misunderstanding.[27]

News, No. 13, 1–7 April 1994, pp. 1 and 7. Nonetheless, I would follow here the assumption of Bruce Blair because of a number of reasons which cannot be discussed here in detail.

[23] James Adams, *Sunday Times*, 29 February 1996.

[24] *The Times*, 28 July 1995.

[25] Quoted in *IHT*, 27 January 1995, p. 2.

[26] Marat Zubko, *Izvestiya*, 27 January 1995, p. 3 and Veronika Kutsyllo, *Kommersant-Daily*, 27 January 1995, p. 1.

[27] *IHT*, 27 January 1995, p. 2.

Given the fact that Norway had informed the Russian side on 21 December 1994 of the rocket's launch for studying the northern lights phenomenon (like 607 other weather rockets before),[28] however, the incident raised serious questions about the stability of Russia's strategic command and control system. A following investigation found out that a prelaunch notification message by the Norwegians was not properly delivered to the Russian early warning forces.[29] Characteristically for these uncertainties, a US report stated at the end of 1996 that Russia's SNF have implemented new procedures to report accidental or unauthorised missile launches.[30] It is, indeed, this combination of domestic power struggles and bureaucratic policies for short-sighted political ends, of inaccurate information and of misunderstanding, misperception or miscalculation that raises concern, particularly in crisis, over Russia's nuclear arsenal in general and a secure information chain in particular from major military installations to the supreme commander in chief of Russia that has still the most formidable nuclear forces both in Europe and in Asia.

Moreover, nuclear weapons have become the last symbol of the former superpower status in Russia. Together with the disastrous state of Russia's conventional armed forces, preparation for nuclear war with the USA appears to remain a high priority for the Russian military establishment and for defining a new military doctrine and nuclear strategy.

In order to strengthen "negative control" and to prevent any further erosion of its command and control system, Russia has basically two options: (1) to lower the status of alert (de-alerting) of its Strategic Nuclear Forces, and/or (2) to change the doctrine of its national nuclear strategy and to reject all hair-trigger and accident prone "launch-on-warning" postures of the Cold War on which Russia traditionally relied on and which still dominates its nuclear control system. Russia has taken only the first choice and has reduced the status of alert of its nuclear arsenal instead of favouring option two or going even further (in co-operation with the United States) to an end-state of zero alert—so-called "virtual arsenals" (disassembled

---

[28] See also "Norway's Ambassador Per Tresselt, Plays Down Rocket Incident", *Moscow News*, No. 5, 3–9 February 1995, p. 5.

[29] David R. Markov, "The Russians and Their Nuclear Nukes", *Air Force Journal*, February 1997, pp. 40–43, esp. p. 43.

[30] *Ibid.*, p. 42.

weapons under multilateral inspection and monitoring).[31] The complete mutual detargeting of all strategic missiles on 30 May 1994 was the result of the bilateral agreement signed by US President Bill Clinton and Boris Yeltsin four months before. But it was rather a political and symbolic step towards the West which has been reiterated by Yeltsin in May 1997 during his Paris visit.[32] Militarily, this information can be retargeted in minutes if not seconds. Thus the agreement produced no significant changes in the operational launch readiness on both sides which are still regularly exercised.

Furthermore, Russia has dropped the pledge on its 1982 "no-first use"-policy of nuclear weapons in the document "Principle Guidance on the Military Doctrine of the Russian Federation" in November 1993.[33] It has underlined the increasing role of Russia's strategic and tactical nuclear weapons in its defence policies.[34] Many Russian security and defence experts advocate placing a greater reliance on nuclear weapons to compensate for the deficiencies of conventional forces. Not only strategic nuclear weapons, but also tactical nuclear weapons play a much more important role presently in Russia's defence posture, and particularly in the Far East towards China. Aleksei Arbatov, for instance, argued in 1997:

> Chinese conventional build up greatly depends on massive imports of weapons and technology from Russia. Thus, besides the nuclear threat, Moscow has effective means of undercutting or at least seriously slowing down the emergence of this hypothetical threat. At a minimum, to deter effectively China's conventional offensive superiority at the theatre, Russia might rely on the option of employing tactical nuclear weapons in the border area to thwart the enemy's offensive operations

---

[31] On those proposals see Bruce Blair, "Global Zero Alert for Nuclear Forces" and id., "Command, Control, and Warning for Virtual Arsenals", in: Michael J. Mazarr (Ed.), *Nuclear Weapons in a Transformed World. The Challenge of Virtual Nuclear Arsenals* (New York: St. Martin's Press, 1997), pp. 55–75, esp. pp. 62ff.

[32] On the confusing statement (as one of many others by Yeltsin) see the reaction in the Russian press by Dmitrii Gornostaev, *Nezavisimaya gazeta*, 29 May 1997, pp. 1–2 and Pavel Felgenhauer, *Segodnya*, 28 May 1997, p. 3.

[33] The document in: *Izvestiya*, 18 November 1993, pp. 1–4. It has modified the 1982 Soviet pledge not to use nuclear weapons against non-nuclear states (as a denuclearized Ukraine)—see also Dunbar Lockwood, "Russia Revises Nuclear Policy, Ends Soviet 'No-First-Use' Pledge", *ACT*, December 1993, p. 19. The Russian Minister of Defence, Army-General Pavel Grachev, declared it already in an article four months earlier, see *Krasnaya Zvezda*, 9 June 1995, pp. 1 and 5.

[34] See, inter alia, Vladimir Belous, "Key Aspects of the Russian Nuclear Strategy", *Security Dialogue* 2/1997, pp. 159–171 and Nikolai Sokov, "Russia's Approach to Nuclear Weapons", *The Washington Quarterly* 3/1996, pp. 107–114.

> while deterring China's nuclear response at the strategic level by superior (assured destruction) strategic retaliatory capabilities. Then Russia's deterrence would be credible: its nuclear capabilities would be sufficient to deny China's alleged military gains at the theatre but not threatening to its national survival and thus would not provoke its strategic nuclear pre-emption.[35]

The new emphasis on the role of nuclear weapons has also been confirmed in Russia's newly declared "National Security Concept,"[36] signed by President Boris Yeltsin on December 17, 1997, and in new military doctrine and strategy proposals. It suggests an overwhelming reliance on nuclear forces in a host of military-political contingencies (including the right to use them as first strike and sometimes even for the pre-emptive use in ethnopolitical conflicts) that these forces cannot realistically and effectively confront.[37] Characteristically for the increasing role of strategic and tactical nuclear weapons—which mostly (at least 6.000 operational warheads plus thousands in storage) have not been destroyed as former President M. Gorbachev had pledged in October 1991—in Russia's military planning is also the fact that the current restructuring of Russia's armed forces is conducted under the slogan "military reform under the nuclear missile umbrella."[38] Instead of improving living conditions and raising the actual fighting capacity of Russia's conventional troops engaged in peacemaking missions and internal conflicts, the well-known Russian military expert and journalist Pavel Felgengauer has criticised the current reforms with the words:

> . . . money is being spent on superfluous nuclear missiles which, in accordance with agreements on non-targeting, are aimed "nowhere". The fairy tale of the reform "under the nuclear umbrella", the new missiles and discussions on parity, will be paid for not only with money, but also with the blood of Russian soldiers in future local conflicts in this country's southern regions.[39]

In this light, Russia places too much emphasis on nuclear scenarios (which are mostly unrealistic and do not solve any of its most impor-

---

[35] Aleksei G. Arbatov, "Virtual Arsenals", in: Michael J. Mazarr (Ed.), *Nuclear Weapons in a Transformed World*, pp. 319–336, here p. 331.

[36] Kontseptsiya natsional'noi bezopasnosti Rossiiskoi Federatsii', *Rossiiskaya Gazeta*, 26 December 1997, pp. 4–5.

[37] See also Aleksei G. Arbatov, "Voennaya reforma: doktrina, voiska, finansy", *Mirovaya ekonomika i mezhdunarodnye otnosheniya* (MEiMO) 4/1997, pp. 5–21, here p. 8.

[38] Pavel Felgengauer, *Segodnya*, 23 October 1997, p. 1.

[39] Pavel Felgengauer *ibid.*

tant security problems at its southern flank) in order to justify its declining world power status without having the means to control them effectively.

Moreover, regardless of the Duma's ratification of START–II in the forthcoming months or years and the ongoing consolidation of its nuclear armed forces (such as the integration of the Strategic Missile Forces, the Missile Space Forces and the Missile Space Defence Force into a single branch or the creation of a unified combat control system to provide centralised and stable control over all elements of the integrated Strategic Missile Forces),[40] a decade from now Russia probably will have less than 2.000 warheads in its strategic nuclear arsenal as the result of the economic situation and its scarce financial resources it has to maintain its nuclear armed forces. Even the core of its strategic nuclear deterrence forces, the Strategic Missile Forces, will shrink dramatically in the years ahead.[41] According to Aleksei G. Arbatov, with the implementation of START–II, Russia will not have more than 1.200–1.500 warheads in 2003 (the timetable for the implementation of START–I has meanwhile be extended to the end of 2007) because it is unable to deploy 700–1.000 additional warheads and SS–25 missiles at a rate of 100–200 per year.[42] At the same time, however, thousands of strategic and tactical nuclear warheads are still waiting in storages for their dismantling. Presently, Russia has neither the financial resources to maintain a nuclear arsenal equivalent to that of the United States nor sufficient funds for dismantling all the nuclear warheads of the Cold War. Even the ratified START–I agreement is only 40 per cent funded by Russia's federal budget.[43]

Moreover, with the ratification of START–I and II and the financial pressure to downsize Russia's strategic nuclear arsenal, a radical restructuring is under way with the result that most of Russia's strategic nuclear warheads in the future will be based on mobile–ICBMs and SLBMs. Although these nuclear weapon systems will strengthen the nuclear deterrence effect (because they are more invulnerable

---

[40] Ilshat Maichurin/N. Poroskov, *Krasnaya Zvezda*, 5 November 1997, p. 1.

[41] See also analyses by the Russian General Staff, reported by Dmitriy Gornostaev/Andrei Korbut, *Nezavisimaya Gazeta*, 4 December 1997, pp. 1–2 and Yevgeni Fedorov, *Kommersant*, 20 January 1998, pp. 23–26.

[42] Aleksei Arbatov, "Military Reform in Russia. Dilemmas, Obstacles, and Prospects", *International Security*, Spring 1998, pp. 83–134, here p. 116f.

[43] Yevgeni Fedorov, *Kommersant*, 20 January 1998, pp. 23–26.

than silo-based ICBMs), simultaneously it will further weaken Russia's command and control safeguard system (because safeguards on mobile—ICBMs and SLBMs on submarines are inferior to those on silo-based ICBMs given communication problems and their vulnerable links).[44]

Dismantlement Challenges and Problems of Denuclearization

Russia is facing a large-scale dismantlement of at least 27.000–28.000 nuclear warheads over the remaining years of 1990 and beyond, regardless of its START–II ratification. It includes warheads, missiles, fissile material and installations like missile silos.[45] Officially, Russia is supposed to dismantle 9.200–9.450 tactical warheads which included 5.000 nuclear artillery shells and mines, and warheads of tactical missiles, 1.250 warheads of antiaircraft missiles, 1.200 warheads for carriers that were standard equipment of the navy, and 1.750–2.000 nuclear air bombs and missiles.[46]

In many respects, the dismantling process of mass destruction weapons and their components is more challenging than constructing them.[47] According to the earliest START–II obligations in the year 2000, more than 4.000 nuclear warheads will have to be scrapped each year. Although the international community and in particular the United States has been helpful by providing financial aid, technical expertise and practical material aid (like transportation containers), these problems will remain on the international agenda for many years to come:

Short-term attention is directed toward storage and transport problems of nuclear weapons as officials of MINATOM and the Russian

---

[44] Bruce Blair, "Command, Control, and Warning for Virtual Arsenals", p. 61.

[45] Oleg A. Bukharin, "Meeting the Challenges of Dismantlement", *Transition*, 17 November 1995, pp. 30–33, here p. 30.

[46] Colonel Sergey A. Modestov, *Nezavisimaya Gazeta-Nezavisimoe Voennoe Obozrenie*, 16 May 1996, p. 6.

[47] A good overview of the scale and costs of dismantling nuclear, chemical and conventional weapon systems as a result of the arms control treaties for Russia and the West is provided by Susanne Kopte/Michael Renner/Peter Wilke, "The Cost of Disarmament: Dismantlement of Weapons and the Disposal of Military Surplus", *The Nonproliferation Review*, Winter 1996, pp. 33–45. To the dismantling problems themselves see Frank von Hippel/Marvin Miller/Harold Feiveson/Anatoli Diakov/Franz Berkhout, "Verschrottung nuklearer Sprengkoepfe", *Spektrum der Wissenschaft*, October 1993, pp. 32–38, and Karl-Heinz Kamp, "Probleme nuklearer Abruestung:

Defence Ministry have confirmed.[48] The process to withdraw strategic nuclear warheads from the other interim nuclear successor states Belarus, Kazakhstan and Ukraine finished at the end of 1996. But many nuclear warheads have been stored in interim storage sites before they can be moved to the central storage facilities. From there, they will be transported to the MINATOM disassembly plants of one of the closed cities where the warheads have been made. But the withdrawals resulted in a shortage of Russia's storage capacity, compounded by the loss of almost 50 percent storage capabilities of the FSU after the implosion of the USSR. Currently, Russia has no more than 5–10 central storage locations,[49] resulting in 17–120 percent over capacity in the existing facilities in 1992 and 1993.[50]

Although Russia claimed to have a theoretical dismantlement capacity of 5.000–6.000 warheads per year, it has never dismantled more than 2.000–3.000 warheads during the last years.[51] After the demise of the FSU, reportedly only 500 experts capable of dismantling nuclear warheads remained at work in 1992.[52] But not only dismantling nuclear warheads remain an economic, financial, environmental and security problem, but also the need to draw off more than 100.000 tonnes of highly toxic liquid missile fuel, which afterwards has to be sent to factories in order to process it in a harmless environmental way.

Although Russia has dismantled some of its strategic nuclear arsenal faster than the United States despite all problems,[53] there are still about 1.200 metric tons of HEU (highly enriched uranium) and 150–200 metric tons of plutonium in various facilities throughout the FSU which demand Russian and Western attention. Currently, a huge nuclear storage site at the Mayak plant in the Urals is being

---

Die Vernichtung von Kernwaffen in der GUS", *Interne Studien und Berichte der Konrad-Adenauer-Stiftung* (KAS), Sankt Augustin, 45/1993.

[48] See, for example, Rady Ilkayev/Boris Barkanov, "Safety of Nuclear Weapons: An International Problem", *International Affairs* (Moscow) 9/1994, pp. 23–27.

[49] O. Bukharin, "Meeting the Challenges of Dismantlement", p. 32. A. Surikov/I. Sutyagin, "The Movement and Storage of Russian Nuclear Weapons", JIR, May 1994, pp. 202–203 concluded that Russia has 8 central storage sites, so-called 'Objects S'.

[50] O.A. Bukharin, "Meeting the Challenges of Dismantlement", p. 32. The most probable level is being around 67 per cent—see A. Surikov/I. Sutyagin *ibid.* p. 203.

[51] See also F. Umbach, "Das nukleare Erbe der militaerischen Supermacht UdSSR—Part I", Berichte des BIOst, No. 38, Cologne 1992, p. 12.

[52] K. Belyanikov, *Komsomol'skaya pravda*, 4 February 1992, p. 3.

[53] "U.S.-Russian Strategic Weapons Dismantlements", *ACT*, May 1995, p. 32.

built with US support which will contain not less than 40 per cent of all Russia's weapons-grade plutonium. Nonetheless, these problems of safe storage, transport and dismantling will remain on the agenda also in the 21st century like the next ones.

The demise of the Soviet Union did not leave only a huge nuclear complex and its infrastructure dispersed between almost all former Soviet republics, but also a dangerous toxic legacy. The environmental and radiation impact of at least 715 military tests of nuclear weapons[54] (and additional ones for civilian purposes) over 41 years has already affected past and present generations of people living near those test sites or infrastructure facilities. The health damages suffered will be felt also in the next generations and confront those states with mounting health and social costs that they cannot afford in the foreseeable future.

By the year 2000, Russia has to decommission some 200 nuclear submarines. 126 of them had already been decommissioned until 1995.[55] Nonetheless, the naval infrastructure to handle the nuclear waste was unable to keep up with the original retirement of nuclear submarines, not to speak about the additional decommission of nuclear submarines as result of the nuclear arms control treaties. In 1993, Russia was using a total of 235 ships equipped with a total of 407 nuclear reactors, which was 60 per cent of the total number on all the world's ships with nuclear reactors. In the process of their operation, up to 20.000 cum of liquid radioactive wastes and 6.000 tons of solid wastes had been generated annually.[56] Today, some 120–150 nuclear-powered submarines are rusting in the Northern Fleet and Far East as "potential Chernobyls".[57] In 1993, 67 of Russia's 109 nuclear submarines were based in Murmansk.[58] The Northern Fleet, Russia's largest, has 279 nuclear reactors (18 per cent of the world's

---

[54] See also David Hoffmann, *IHT*, 28 October 1996, p. 1.

[55] See also Douglas L. Clarke, "Naval Nuclear Waste Poses Immense Risk", *Transition*, 17 November 1995, pp. 34–38, here p. 34 and Joshua Handler, "Russia's Pacific Fleet—Problems with Nuclear Waste", *JIR*, March 1995, pp. 136–140. To the radioactive pollution of the oceans see Alexander Koldobskij, "Zur radioaktiven Verschmutzung der Meere und Ozeane", *Oesterreichische Militaerische Zeitschrift (OeMZ)* 6/1994, pp. 625–632 and Tomas Ries, "The Nordic Region and Post-Soviet Radioactive Pollution", *JIR*, September 1993, pp. 398–400.

[56] Andrei Baiduzhy, *Nezavisimaya gazeta*, 3 April 1993, p. 1.

[57] T.B. Cochran/R.S. Norris/O.A. Bukharin, "Making the Russian Bomb", p. 238 and Doug Clarke, *OMRI Daily Digest*, 29 September 1995.

[58] On the situation of the Northern Fleet and Murmansk see the article by Vladimir Kucherenko, *Rossiyskaya gazeta*, 14 May 1996, pp. 1–2 and Joshua Handler, "The Northern Fleet's Nuclear Submarine Bases", *JIR*, December 1993, pp. 551–556.

total),[59] including nuclear ice-breakers. Regular overhauls of active submarines have been suspended and crews are inadequately trained to maintain and operate the reactors due to failing resources. Current plans to decommission and dismantle 88 nuclear submarines are also hampered by high costs. In addition, at least ninety reactors are reportedly stored under "unsafe conditions". Ten of the submarines have defective reactors, which could sink at any moment, leading to "an ecological disaster", according to Admiral Oleg Yerefeev, commander of the Northern Sea Fleet.[60]

Furthermore, Russia's Northern and Pacific Fleet have accumulated 30.000 fuel cells weighing 535 tons in substandard temporary storage facilities. Reportedly, but unconfirmed, one nuclear submarine, called K–219, which sank in the Atlantic Ocean 600 miles east of Bermuda in October 1986 broke open in 1996 and unknown amounts of radioactive plutonium from its carried 32 nuclear warheads are now spilling into the Ocean.[61]

Environmental concerns arise particularly from the dumped reactors near the military closed island of Novaya Zemlya and in the Pacific. Since 1965, at least 20 reactors, seven of them are still of spent fuel, had been dumped of Russia's Arctic and Pacific coasts in violation of international treaties, lying to the International Maritime Organisation which enforces them. Norwegian experts estimate that 8.000 cubic metres of radioactive liquid waste in storage of the Northern Fleet might contaminate the whole Barents Sea or leak into the ground.[62]

Officially, since October 1993, all dumping of liquid and solid radioactive waste by the Russian navy has ceased. Although Japan, which is—with the bitter experience of Hiroshima and Nagasaki—in particular concerned about sunken reactors and suspected ongoing dumping of liquid nuclear waste in the Sea of Japan,[63] has offered numerous aid, the Russian military seems to continue the dumping

---

[59] Matthew Kaminski, *FT*, 21 August 1996, p. 2.

[60] Penny Morvant, *OMRI Daily Digest*, 19 September 1995.

[61] *The Korean Herald* (TKH), 26 November 1996, p. 1.

[62] See Douglas L. Clarke, "Naval Nuclear Waste Poses Immense Risk", Joshua Handler, "Russia's Pacific Fleet—Problems with Nuclear Waste", Alexander Koldobskij, "Zur radioaktiven Verschmutzung der Meere und Ozeane", Tomas Ries, "The Nordic Region and Post-Soviet Radioactive Pollution", all quoted above.

[63] See also Igor Ryabov, "To be Consumed on the Promises", *New Times*, 45/1993, pp. 26–27; Shinjiro Mori, "The 'Black Cat' Effect", *ibid.*, p. 27 and Sergei Agafonov, *Izvestiya*, 13 May 1993, p. 3.

of nuclear fuel and munitions into the ocean because all their storage facilities are full.[64] Japan's offer includes building a radioactive-waste storage and reprocessing plant in Primorski Krai with a capacity to process 5.000–7.000 metric tons of waste per year,[65] and additional joint inquiries to find solutions.

Dangers of an Illicit Export of Nuclear Material and Expertise

Another proliferation challenge of Russia's nuclear legacy represents is the theft of nuclear material. Given the fact that the nuclear infrastructure was distributed over the entire territory of the FSU, all nuclear successor states have faced difficulties in managing nuclear weapon-related components on their territories. But nowhere else than in Russia has the scope of problems such great dimensions. The proliferation concerns in the West are therefore not only directed toward nuclear weapons but also toward hundreds of tonnes of nuclear material suitable for nuclear weapon manufacture.[66] The arms control processes of START–I and –II and their envisaged dismantling of thousands of nuclear weapons, including their warheads, have aggravated that problem. Russia will be left holding tens of thousands of containers of fissile materials in above-ground storage sites for many years to come. This problem has been compounded by the fact that in the FSU no fissile material control and accounting system existed. No one knows exactly how much nuclear materials they have in their store sites or other nuclear facilities. In most sites they do not even know if any nuclear material is missing. In that context, Western assistance programmes focus on three elements: (1) physical protection (barriers, sensors, and other technologies to

[64] See, for instance, Sergei Agafonov, *Izvestiya*, 15 February 1995, p. 3. On the storage problems of nuclear fuel in the Russian navy see D.L. Clarke, "Naval Nuclear Waste Poses Immense Risk", p. 36f.

[65] A contract has been signed for a floating nuclear waste recycling vessel with a number of Japanese and U.S. companies, funded by the Japanese government as part of its 1993 aid programme to support Russia's nuclear disarmament, in January 1996—see Doug Clarke, *OMRI Daily Digest*, 15 January 1996 and Penny Morvant, ibid., 8 February 1996.

[66] See also Oleg Bukharin, "Nuclear Safeguards and Security in the Former Soviet Union", *Survival*, Winter 1994–95, pp. 53–72, and John P. Holdren, "Reducing the Theft of Nuclear Theft in the Former Soviet Union", *ACT*, March 1996, pp. 14–20.

prevent access to the nuclear material); (2) material control and (3) material accounting. The two materials of primary concern are HEU and plutonium.[67]

The situation in the FSR has been aggravated by (1) the lack of nuclear safeguard expertise, (2) the inefficiency of border controls of the new independent successor states of the FSU, (3) failing or insufficient export control legislation and implementation in most of the FSR, (4) civil turmoil in some of them and (5) the frustrating economic situation which leads to crime and corruption as a matter of life in all FSR.[68] Unless the agreed international safeguards are not implemented, civilian nuclear facilities can lose nuclear material suitable for weapons to the black market. The material can be used by nuclear threshold countries, "rogue states" or even terrorists. While the general discussion during the first years after the demise of the FSU focused on the question of whether the Russian government has control of nuclear weapons, the U.S. intelligence community is presently fearing that Russia might be losing control over the large and widely dispersed stores of plutonium and highly enriched uranium. Its ability to enforce export control measures remains problematic because of resource shortages, weak customs enforcement, institutional decay and widespread corruption and crime in all parts of the society, including in its armed forces.[69] Without Western financial resources and support, "our nuclear specialists and their colleagues will never be able to prevent thefts and leaks from 'reliable sources'", as a Russian conference report concluded in March 1996.[70] Meanwhile, 80 per cent of Russia's nuclear-technical security system is maintained "with American money" as was admitted by another Russian source in September 1997.[71] These problems of safe storage, transport and dismantling will not be resolved in the near future but remain on the international agenda of the 21st century.

---

[67] See also Joachim Krause/Erwin Haeckel, "Auf dem Weg zur nuklearen Anarchie? Die mangelhafte Sicherheit waffenfaehiger Spaltmaterialien in Rußland und der GUS", *Arbeitspapiere zur Internationalen Politik* (ed. by the Research Institute of the German Society for Foreign Affairs/DGAP), No. 99 (Bonn: Europa-Union Verlag, April 1998).

[68] "Proliferation and the former Soviet Union" (Washington D.C.: Congress of the United States/Office of Technology Assessment, 1994), p. 23.

[69] On a Russian source confirming these analyses see *Obshchaya Gazeta*, No. 30, July 1997, p. 2. According to this report almost 70 per cent of the technical means employed to protect nuclear installations are obsolete.

[70] Anton Trofimov, *Segodnya*, 17 March 1996, p. 1 and 7.

[71] Andrei Korbut, *Nezavisimaya Gazeta*, 30 September 1997, p. 1.

Successful non-proliferation strategies do not only have to keep strict control over nuclear weapons, fissile material and other nuclear components, but also to prevent the proliferation of know-how. The collapse of the greatest nuclear power and its infrastructure in the world has also raised concerns that a nuclear "brain drain" to nuclear threshold countries or "rogue states" (like Libya, Iraq, North Korea) could provide them with a desired critical knowledge to build up their own nuclear weapons and include them in their military arsenals.

In November 1991, a Japanese newspaper published for the first time a list of ten secret cities that were previously unknown and appeared on no map of the former Soviet Union (FSU).[72] But it was only the tip of an iceberg, although the numbers of cities and their population are still officially secret. Altogether, more than 87 cities and centres have been exclusively built for nuclear, chemical and biological weapons production (including all of the defence ministry's missile and weapon-design plants).[73] Approximately one million people lived and worked alone in the nuclear "nuclear archipelago". Of those, 100.000 people were employed in the nuclear weapon programmes of whom 10.000–15.000 had access to classified information; 2.000–3.000 had a detailed knowledge of weapon design and held top-secret information. In addition, 3.000–5.000 worked at a high-know level in the production of fissile material.[74] But only 100–200 people had the full knowledge about design, development, manufacture and fielding nuclear weapons enabling them to manage and overview a nuclear weapon programme.[75] These 10.–15.000 people with access to critical information constitute a "state secret" in the Russian view. They worked in Russia's closed cities where it was prohibited to leave the country or even the city without having any special permit. Furthermore, until 1991 they had only very limited information and contact with the "outer world", including contact with their neighbouring regions inside their own country. At that time, the KGB functioned as an efficient watchdog which guaranteed the tightening security of those cities. Moreover, elitism and

---

[72] *Yomiuri Shimbun*, 17 November 1991.

[73] "Russia's Secret Cities", *The Economist*, 25 December 1993.

[74] See the interview with V. Mikhaylov, *Komsomol'skaya pravda*, 31 January 1992, p. 1; id., *Rossiiskaya Gazeta*, 8 May 1992, p. 4.

[75] See the interview with Ambassador Robert L. Gallucci, "Redirecting the Soviet Weapons Establishment", *ACT*, No. 5 (June) 1992, pp. 3–6, here p. 5f.

secrecy have always characterised the people working in the nuclear weapon complex which nowadays has become rather a burden for them when having to accept the new and harsh socio-economic realities.

The collapse of the USSR and the loss of many privileges and social security standards has upset the future of the "nuclear archipelago" as well as the personal life of ten thousands of people living inside this nuclear complex.[76] The rising unemployment among engineers, technicians, and scientists as the result of deep cuts in government spending have reduced the demand for specialists. The former pride of Russia's nuclear elite has thus become a social and political burden.[77] Moreover, estimates predicted that 1.5 million highly qualified specialists from the FSU could leave the country by the end of this century. This would certainly result in a major loss of Russia's scientific potential, and ultimately damage its economic recovery. But thus far, it seems, that the internal brain drain and emigration (leaving the military-industrial complex but remaining in the country) and buying cheap labour represents the major problem for Russia, rather than a brain drain of nuclear experts leaving for abroad.[78]

In the past few years, however, the economic situation of the nuclear complex has further deteriorated. In 1993, nuclear weapon scientists threatened Russia's government with strikes and stopping the process of dismantling nuclear weapons for the first time in their history. Their salary was decreasing, former benefits have been stopped and their payment had been delayed up to two months (which is not a specific problem of that elite but rather commonplace) while the amount of work has drastically increased.[79] In November 1994, a new special status has been established[80] that regulates the leaving

---

[76] The suicide of *Vladimir Nechai*, director of the *All-Russian Research Institute of Technical Physics*, part of Russia's nuclear weapons laboratory *Chelyabinsk-70*, in December 1996, for instance, has drawn considerable attention in Russia and the West—see David Hoffmann, *IHT*, 24–25 December 1996, p. 5.

[77] See the roundtable discussion in, *Rossiiskaya Gazeta*, 15 July 1993.

[78] R. Adam Moody, "Reexamining Brain Drain From the Former Soviet Union", *The Nonproliferation Review*, Spring-Summer 1996, pp. 92–97, here p. 93.

[79] Vladimir Gubarev, *Rossiiskaya Gazeta*, 23 June 1993.

[80] The new status is based on the liberalised "*Law on the Procedures of Exit from the USSR and Entry to the USSR for Citizens of the USSR*" on 30 May 1991. The law entered into force on 1 January 1993. It prevents anyone with access to state secrets from emigration for at least five years (with the possibility of extension)—see R. Adam Moody, "Reexamining Brain Drain From the Former Soviet Union", p. 92.

of the renewed closed cities. But it also highlighted the growing influence of the military-industrial complex[81] and the increasing disappointment of U.S. promises of funds which had not been fulfilled until 1994/95.[82] Nonetheless, the development of the nuclear complex under the new circumstances and deteriorating conditions is not so much an industrial or technical problem as a political one. That fact is highlighted in new disturbing trends in Russia that in a period when the Russian Air Force is allowed to overfly American territory, Russia's President Boris Yeltsin signed several decrees in 1996 and 1997 to close once more some of the opened cities (which formerly belonged to the so-called "closed cities").[83]

Against the brain drain challenge, the United States and Russia agreed in February 1992 to establish an international centre to prevent a migration of Russian nuclear experts to nuclear threshold countries or "rogue states".[84] Funds have been committed to the "International Science and Technology Centre (ISTC)" by the United States, EU, Japan, Sweden, Canada and Switzerland and other support aid such as Nato's Science programme. But it took more than two years before the ISTC could begin its operation in March 1994, because of bureaucratic inertia in the West and suspicion on the Russian side by MINATOM and ministry of defence officials. A similar centre had been established in Kiev in 1994. But the ISTC—programmes have faced a lot of problems. Nonetheless, these centres have initiated a variety of lab-to-lab programmes, employing thousands of former Soviet weapon scientists in useful civilian work. In April 1996, about 236 ISTC project proposals have been initiated in Russia, Kazakhstan, Georgia, Belarus and Armenia which sponsor about 12.500 scientists for up to three years.[85] But thousands more are still working in Russia's nuclear complex under difficult conditions or remain unemployed. Moreover, most of Russia's con-

---

[81] Elena Viktorova, *Segodnya*, 12 November 1994 and Aleksandr Batygin, *Rossiiskaya Gazeta*, 24 November 1994.

[82] *Der Spiegel* 24/1994, pp. 174 and 176.

[83] Paul Goble, "A Past Too Much With Us", *RFE/RL Analysis from Washington*, 6 August 1997.

[84] *IHT*, 18 February 1992, pp. 1–2 and "International Centre to Limit Brain Drain", *ACT*, March 1992, p. 24.

[85] *Nuclear Successor States of the Soviet Union. Nuclear Weapon and Sensitive Export Status Report*, (Washington D.C. and Moscow: The Monterey Institute of International Studies/The Carnegie Endowment for International Peace, Monterey, 1996), No. 4, p. 57.

version programmes have either never been implemented or proved to be successful in establishing substantial new commercial business in the nuclear cities.

Meanwhile, as some Western and Russian experts have pointed out, a new dimension of the brain drain problem has been emerged out of the blue as a result of globalisation and the widespread availability of modern communication technologies. In the age of Internet, it seems often no longer necessary for nuclear experts to leave their country and go abroad to be involved in some clandestine nuclear programmes or to solve specific weapon programmes of nuclear threshold or "rogue states". Many other Western experts, however, remain sceptical about this new dimension, stating that Internet is sufficiently monitored by Western non-proliferation as well as intelligence experts, and that many problems in developing nuclear weapons have to be solved in those secret facilities themselves. Nonetheless, as we will see later in the case of AUM Shinrikyo, the problem of the future brain drain challenge might be discussed in terms of preventing the transmission of knowledge and expertise via Internet and international computer lines rather than in the context experts emigrating abroad.

North Korea's Nuclear Ambitions

North Korea's ambitions to develop nuclear weapons and its sustained ballistic missile programmes are perceived as the most acute threat to regional security and stability in East Asia.[86] Western experts fear that a failure to manage the crisis on the Korean Peninsula could trigger nationalist sentiments in neighbouring states and elsewhere. This could lead, for instance, to a militarisation of Japan's foreign policy and weaken its opposition to nuclear weapons. Hence the ongoing crisis on the Korean Peninsula has not only direct security impacts on both Korean states but also indirect implications for the stability of the entire Asia-Pacific region because it might pressure other Asian states—notably South Korea, Japan and Taiwan—to rethink their current non-nuclear status.

[86] Research Institute for Peace and Security (RIPS, Ed.), *Asian Security 1994–95* (London-Washington: Brassey's, 1994), pp. 2ff.

Following pressure of the former Soviet Union and its offer to build a nuclear power plant, North Korea joined the NPT (Nuclear Proliferation Treaty) on 12 December 1985. But it took seven years before it finally signed the IAEA (International Atomic Energy Agency) agreements on 30 January 1992 with a subsequent ratification on 9 April 1992. Already in December 1991, both Korean states signed a historic agreement ("Joint Declaration of the Denuclearization of the Korean Peninsula") to ban all nuclear weapons on the Korean peninsula. That agreement became possible because U.S. president George Bush had announced a series of unilateral U.S. nuclear initiatives in September 1991. They included the world wide withdrawal and destruction of all ground-launched theatre and sea-based tactical nuclear weapons, including those on the Korean Peninsula.[87] But the agreement of December 1991 has never been implemented, due to disagreements over important modalities such as verification measures and the necessity for "challenge inspections" of any suspicious site on the other's territory, whether declared or not, at short notice.[88] Furthermore, in February 1993 it stopped all IAEA inspections of its nuclear sites and decided unilaterally on 12 March 1993 to withdraw from the NPT.

10 years earlier, by analysing the Arab–Israeli War in 1973, the North Korean leadership became convinced that ballistic missiles will play a fundamental role in future warfare. According to Valeri I. Denisov, deputy director for Asian affairs at the Russian Foreign Ministry, the FSU opposed a North Korean plan to launch a war against South Korea in 1975.[89] Thereupon, North Korea discarded the plan, but initiated indigenous missile programmes with the support of Russian and Chinese experts and technologies.[90] In order to speed up those weaponry programmes, North Korea also purchased a small number of "Scud–B" missiles from Egypt. Despite experiencing significant problems in their missile programmes, North Korea finally conducted its first modified Scud–B missile test in April 1984. According to US and South Korean sources, North Korea possesses presently around 500 "Scud" missiles with ranges up to 500 km in

---

[87] Peter Hayes, "The Future of the U.S.-ROK Alliance", in: Young Whan Kihl/Peter Hayes (Ed.), *Peace and Security in Northeast Asia*, pp. 240–268, here pp. 259–261.

[88] Seo-Hang-Lee, "Denuclearization Efforts on the Korean Peninsula", in: Péricles Gasparini/Daiana Belinda Cipollone, *Nuclear Weapon-Free Zones in the 21st Century* (UNIDIR/United Nations: New York-Geneva 1997), pp. 99–101, here p. 99f.

[89] *TKH*, 23 July 1996, p. 1.

[90] On Russia's assistance see *Novie Izvestiya*, 5 November 1997, p. 2.

addition to 450 Frog artillery rockets. Pyongyang can mass produce those missiles at a rate of one hundred per year.[91]

While North Korea's economy is collapsing, Pyongyang is economically more and more incapable of supporting one of the biggest conventional armies in the world. South Korea, by contrast, can both limit its defence burden and simultaneously modernise its conventional forces by raising the quality that ultimately might balance off the quantitative superiority of its Northern opponent. By 1992, hard-liners in the North Korean regime might have argued that those trends combined with its loss of Soviet/Russian as well as Chinese support and their security umbrellas leaves only one option: to resume (or accelerate) efforts to develop a more effective nuclear deterrent capability as a compensation for the former close alliance with both communist powers.[92] Consequently, in June 1990 and May 1993 North Korea tested successfully its new mobile ballistic missile, the Nodong–1, over the Sea of Japan. The Nodong–1 was based on Scud–B and –C technologies and North Korea's own development programmes. It is a completely redesigned system that covers with its range of 1.000–1.300 km not only the entire Korean Peninsula but also Japanese cities such as Niigata and Osaka. The full-scale production begun in 1991. Although this enlarged Soviet Scud-missile has only a poor accuracy, it is also more difficult to intercept. In October 1996, the United States had to press North Korea not to test fire a Nodong–I ballistic missile into seas just off the Japanese coast.[93] At the end of 1997, U.S. and Japanese intelligence sources reported that the missile has either already been deployed or is at least in an advanced stage of development, including preparing for test flights. Thereupon, the U.S. Air Force has deployed special RC–135s reconnaissance aircraft (code named the "Cobra-Bell") in Japan for daily flights that cost over 100.000 US$ a day. Given the fact that the U.S. Air Force has reportedly only three of those spy planes, it is widely believed that the Pentagon only deploys them when it has solid signs of an imminent launch of ballistic missiles.[94]

---

[91] Wyn Bowen/Stanley Shepard, "Living under the Red Missile Threat", *JIR*, December 1996, pp. 560–564, here p. 561.

[92] Mel Gurtov, "South Korea's Foreign Policy and Future Security: Implications of the Nuclear Stand-off", *Pacific Affairs*, 1 (Spring) 1996, pp. 8–31, here p. 12.

[93] *TKH*, 17 and 19 October 1996, p. 1.

[94] *Asian Defence Journal* (ADJ) 11/1997, p. 68 and *Jane's Intelligence Review & Jane's Sentinel Pointer*, December 1997, p. 10.

Furthermore, North Korea is also reportedly working on the capability to equip the Nodong–1 as well as the longer-range ballistic missiles Nodong–2, Taepo-Dong–1 (range 2.000 km) and Taepo-Dong–2 (range at least 3.500 km) with nuclear, chemical and biological warheads.[95] Against this background, North Korea's Taepo-Dong–1 missile test on 31 August 1998 over Japan shocked the world and has threatened regional and global non-proliferation policies.[96] When the multi-staged Taepo-Dong–1 missile was launched on 31 August 1998 100 km south of the port city of Ch'ongjin and flew across the Sea of Japan in a new game of dangerous brinkmanship, North Korea's explanation that it had launched a satellite, not a missile over Japan caused confusion and surprise.[97] Regardless of whether the missile carried a satellite or not, it demonstrated that Japan is within range of North Korea's ballistic missiles, and that North Korea has made considerable progress in mastering technical obstacles of multi-staged long-range ballistic missiles whose range and capability caused surprise even in U.S. intelligence circles. Until that time, North Korea's ballistic missiles were not expected to reach the 4,000 km to 6,000 km range until 2000–2004.[98] It signalled to both the U.S. and Japan that it has now the capability to strike at US military facilities at least in Japan and on Okinawa. It is even possible that US bases in Guam and Hawaii will eventually come within North Korea's missile range in a few years. Furthermore, the test was interpreted as another North Korean attempt to influence the continuing nuclear and missile talks with the U.S. in New York.[99]

At the same time, North Korea had probably enough extracted plutonium for at least one or two nuclear bombs.[100] In contrast to

---

[95] Leonhard S. Spector/Mark G. McDonough/Evan S. Medeiros, *Tracking Nuclear Proliferation* (Washington D.C.: Carnegie Endowment for International Peace, 1995), pp. 103ff.

[96] Frank Umbach, "World Gets Wise to P'yongyang's Nuclear Blackmail—Part One", *JIR*, September 1999, pp. 33–36 and idem, "Proliferation Challenges in the Asia-Pacific Region and the Implications for the U.S.-Japanese Security Alliance", in: The Japan Institute of International Affairs (JIIA), "Security of Asia-Pacific. Mid-Term Report", Tokyo, March 1999, pp. 92–107, here pp. 99ff.

[97] See also *Newsreview* (South Korea), 12 September 1998, p. 4f.

[98] Greg Seidle, "North Korea's Failed Satellite Bid Verified", *JDW*, 23 September 1998, p. 5.

[99] *THK*, 3 September 1998, p. 2; Joseph Bermudez, "North Koreans Test Two-Stage IRBM over Japan", *Jane's Defense Weekly* (*JDW*), 9 September 1998, p. 26 and Shim Jae Hoon, "Fire, Backfire", *Far Eastern Economic Review* (FEER), 10 September 1998, p. 22.

[100] Joseph S. Bermudez, Jr./Bhupendra Jasani, "North Korea's Nuclear Arsenal", *JIR*, Special Report No. 9, p. 10.

the Nodong–1 programme, only very little is known about the other ballistic missiles and their tests such as Taepo-Dong–1 and –2.[101] But North Korea is trying to sell its missiles to Pakistan, Iran and Libya which then could be targeted to Israel or U.S. bases and allied capitols in the Mediterranean region. Reportedly, North Korea is also developing cruise missiles as tests in the Sea of Japan in the summer of 1994 have shown.

Table 2: North Korea's Theatre Ballistic Missiles

	Range (km)	Payload (kg)	Number	CEP (m)	Fuel	Additional Comments
Scud–B"	300	985	100+	1.000	Liquid	NBC-capable
'Scud–C"	500	700	100+	1.000–2.600	Liquid	NBC-capable
Nodong–1	1.000	1.000	–	2.000–4.000	Liquid	Unknown operational status; NBC-capable
Taepo-Dong–1	1.500–2.000	1.000	–	–	Liquid	Under development; tested in Aug. '98
Taepo-Dong–2	3.500–4.000	–	–	–	–	Under development

Sources: Wyn Bowen/Stanley Shepard, "Living under the Red Missile Threat", *Jane's Intelligence Review*, December 1996, pp. 560–564, here p. 564; Joseph S. Bermudez, "Taepo-dong Launch Brings DPRM Missiles into the Spotlight", in: *ibid.*, October 1998, pp. 30–32 and other sources.

Facing increasing economic difficulties since the 1980s, Iranian financial and technical support also played an important role to sustain North Korea's ballistic missile programmes. That has given Iran wide access to those missile programmes in order to accelerate their own programmes as well as the possibility to purchase Pyongyang's ballistic missiles.[102] The North Korean–Iranian connection became a major issue for Japanese–Iranian relations because Teheran received considerable economic aid from Japan. Although both North Korea and Iran quickly denied a mutual weaponry assistance, the co-operation between Iran and North Korea seems to continue according to various sources. Moreover, Pakistan's missile development has revealed

[101] See also Joseph S. Bermudez, "Taepo-dong Launch Brings DPRK Missiles Back into the Spotlight", in: *JIR*, October 1998, pp. 30–32.

[102] Greg Gerardi/Joseph Bermudez, Jr., "An Analysis of North Korean Ballistic Missile Testing", *JIR*, April 1995, pp. 184–190.

a clandestine interregional proliferation network to evade international controls and sanctions, which is a good example for the increasing globalisation of security policies. Moreover, the Ghauri-missile (with a range of 1,500 km) was developed on the basis of North Korea's No-dong-missiles and, reportedly, sold even completely to Pakistan in 1997. The liquid-fuelled Ghauri *missile* is basically an enhanced version of the North Korean No-dong *1* (also called Rodong 1) missile which has a similar maximum range and itself is a Scud-derivative developed in Russia in the 1960s.[103] In this light, North Korea and China contributed directly to South Asia's accelerating nuclear arms race. At the same time, North Korea has also benefited also from technology transfers and probably from the test data of Pakistan's nuclear and missile tests.[104] As U.S. officials have confirmed meanwhile, the USA was completely unaware of the Pakistani-North Korean proliferation network.[105]

Moreover, to enhance its operational capability to ABC-warfare, North Korea has created chemical warfare platoons at the regiment level. With its eight factories to produce chemical weapons and other facilities for producing biological weapons,[106] North Korea is able to conduct simultaneous chemical and biological attacks on both the front and rear of South Korea with various delivery systems such as artillery, multirocket launchers and Scud-missiles as well as aircraft.[107]

With these military capabilities and given the highly tense and uncertain socio-economic and political situation in North Korea, the Korean Peninsula remains the most dangerous potential flash point in the region. In April 1996, North Korean representatives have reportedly threatened Japan and South Korea by warning that if both countries will not provide North Korea with food aid and light-water reactors, both could fall victim to four nuclear missiles.[108] Whether that was a hollow threat or not (South Korea claimed it was unlikely that North Korea has developed four missiles with a nuclear warhead) or not, its missile programmes remain a very effective political weapon.

---

[103] Tim Weiner, *IHT*, 5 April 1998, p. 5.

[104] See also Joseph S. Bermudez, "A Silent Partner", *JDW*, 20 May 1998, p. 16f.

[105] Frank Umbach, "World Gets Wise to P'yongyang's Nuclear Blackmail—Part One".

[106] Lee Sung-yul, *TKH*, 1 January 1997, p. 2.

[107] *TKH*, 15 August 1996, p. 9 and "North Korea. A Potential Time Bomb", *JIR*, Special Report No. 2, 1994, pp. 8ff.

[108] Wyn Bowen/Stanley Shepard, "Living under the Red Missile Threat", p. 562.

With the transition of power to Kim Il Sung's son, Kim Jong Il, in the summer of 1994, nuclear weapons have—more than ever before—bolstered the weak legitimacy of the new regime to ensure both its survival of the new political regime as well as of the communist system at a time of national crisis. Nonetheless, in October 1994 the United States and North Korea reached in Geneva the 1994 Agreed Framework agreement.[109] The agreement envisages that North Korea would stop all of its activities at the existing nuclear reactors and processing plants and would not produce new nuclear facilities. Pyongyang also agreed to place its 8.000 fuel rods in special cans for long-term storage and to permit regular inspections as the NPT demands. In exchange, the United States had to remove any obstacles for political and economic contacts. Most significantly, Washington promised to supply with international financing two modern light-water reactors (LWRs) until the year 2003 and 500.000 tons of free oil annually for five or six years in return for its freezing and dismantling of existing reactors and storage of spent fuel outside North Korea. The LWRs have to be build by South Korea which was willing to finance the major share of the multi-billion project.[110] Other provisions of the agreement stipulate that the two sides have to move toward full normalisation of relations and to promote confidence-building measures.[111]

For implementing the agreements and executing its commitments, an international consortium, called the Korean Peninsula Energy Development Organisation (KEDO), has been established on 9 March 1995 by South Korea, Japan and the United States.[112] KEDO is also charged with the safe storage and eventual removal of 8.000

---

[109] On the negotiations see Leonhard S. Spector/Mark G. McDonough/Evan S. Medeiros, *Tracking Nuclear Proliferation*, p. 104f., Lee Soong Hee, "The North Korean Nuclear Issue Between Washington and Seoul: Differences in Perceptions and Policy Priorities", *The Journal of East Asian Affairs*, 2/1997, pp. 327–347 and the critical analysis by Leon V. Sigal, "The North Korean Nuclear Crisis: Understanding the Failure of the 'Crime-and-Punishment' Strategy", in: *ACT*, May 1997, S. 3–13. The Geneva Agreed Framework is reprinted in: Young Whan Kihl/Peter Hayes (Ed.), *Peace and Security in Northeast Asia*, pp. 437–441.

[110] On South Korean's foreign policy toward its northern brethren in the context of the nuclear agreement see Mel Gurtov, "South Korea's Foreign Policy and Future Security".

[111] "North Korea Agrees to Dismantle Nuclear programme", *Pointer-JIR*, November 1994, p. 3.

[112] The charter of the KEDO is reprinted in: Young Whan Kihl/Peter Hayes (Ed.), *Peace and Security in Northeast Asia*, pp. 443–450.

spent fuel rods located in a cooling pond at the Yongbyon nuclear facility in North Korea. The major share of the estimated 5.17 billion US$ costs of the LWRs will be provided by South Korea and Japan. Minor shares come from the United States, the EU and other countries.[113] Given the current financial crisis in East Asia and South Korea and the unwillingness of the U.S. Congress to spend funds on this and other arms control projects, not all financial problems of the KEDO-project have been solved so far which might undermine the international credibility in the view of Pyongyang. In this light the EU could also support KEDO much more than it has done when it recognises the importance of KEDO in the light of the regional and global proliferation challenges on the Korean Peninsula and functioning as the first operative international organisation in Northeast Asia—a precedent that might also serve as a wider regional security model, thereby involving North Korea in the region.

Meanwhile, North Korea's nuclear and missile blackmail strategies, including its refusal to give international inspectors full access to its nuclear sites,[114] its ongoing missile and technology exports to Pakistan and Iran (which has contributed to their missile programmes as the Ghauri-missile test on 6 April 1998 and the Iranian Shahab-3 missile test on 21 July 1998 have demonstrated), its own unexpected missile launch of the Taepo-Dong–1 on 31 August 1998[115] and revelations of a vast underground facility under construction (with more than 15,000 North Koreans workers) which U.S. intelligence sources have identified to be the site of a reactor or reprocessing plant[116] have now threatened the entire October 1994 Geneva Agreed Framework and thereby the KEDO process. It has led to calls for a major re-evaluation of the US policy towards North Korea.[117] Even those U.S. experts who still favour a genuine commitment to, rather than abandoning the *Agreed Framework*, are arguing for a "new deal" by incorporating "new issues of concern by supplementing it with new

---

[113] On details see Reinhard Drifte, "The EU's Stake in KEDO", European Institute for Asian Studies (EIAS), Briefing Paper No. 96/1 June 1996 and Young Whan Kihl, "U.S.-DPRK Nuclear Accord and KEDO", *Asian Perspective* 2/1997, S. 99–117.

[114] Philip Shenon, *IHT*, 16 July 1998, p. 4 and David E. Sanger, *IHT*, 18 August 1998, pp. 1 and 4.

[115] Don Kirk, *IHT*, 1 September 1998, pp. 1 and 4.

[116] Dana Priest, *IHT*, 27 August 1998, p. 4 and Shawn W. Crispin/Shim Jae Hoon, "Broken Promises", *FEER*, 22 October 1998, p. 16f.

[117] See, for instance, Peter T.R. Brookes, "High Time to Re-evaluate North Korea Policy", *PacNet Newsletter*, No. 38, 2 October 1998.

and more comprehensive commitments" into the existing agreement because it may no longer be possible to save it.[118]

Furthermore, the fundamental issues of the Korean crisis—unification, sovereignty and security—ultimately remain unresolved. The Agreed Framework of 1994 only stopped the production of plutonium at the Yongbyon Atomic Energy Research Centre, but not the development, production and testing of missiles. Thereby, the current and future denuclearization and the maintenance of peace on the Korean Peninsula remains uncertain.[119] Pyongyang still seeks to conceal, and possibly to destroy, important information on its nuclear weapons-grade plutonium stocks.[120] Most experts believe that North Korea has still enough plutonium for two crude nuclear devices. Furthermore, as a consequence of preparing missile tests by North Korea, South Korea has become interested in developing a longer-range missile by itself. According to a 1979 bilateral agreement with the United States, however, South Korea is tied to limit its missile range to 180 km, independent from the Missile Technology Control Regime (MTCR) that allows up to 298 km with warheads of 500 kg or more. Both sides have clashed repeatedly on the issue because the U.S. side was concerned that it would weaken its leverage over Pyongyang. But in return it has supported South Korea's willingness to join the MTCR.[121]

North Korea's armed forces are facing tremendous difficulties as the result of the socio-economic crisis. But its military capabilities seems still formidable and have also been strengthened during the last years. According to South Korean sources, Pyongyang has also increased its stockpiles of food and oil for its armed forces and has introduced new weapons systems in its ground, air and navy forces.[122] Moreover, South Korea has currently no adequate defence capabilities to counter North Korea's missile threat. It possesses only six Patriot missile batteries which are deployed only in the south to defend rear-area US bases. The current economic and financial crisis has slowed the modernisation of its armed forces although it will

---

[118] Wade Huntley/Timothy L. Savage, "Agreed Framework at the Crossroads", *NAPSNet Special Report*, 11 March 1999.

[119] See also Henry Sokoloski, "The Korean Nuclear Deal: How Might It Challenge the United States?", *Comparative Strategy, 1995*, pp. 443–451.

[120] *TKH*, 9 November 1996, p. 1.

[121] Kim Kyung-ho, *TKH*, 9 December 1996, p. 2 and *ibid.*, 4 December 1996, p. 1.

[122] Lee Sung-yul, *TKH*, 1 January 1997, p. 2.

not have an impact on the military balance on the Korean Peninsula given the economic problems of North Korea and the continued presence of the U.S. armed forces on the South Korean soil.[123]

A mixture of motivations behind North Korea's "chaos" and "nuclear blackmail" strategies and tactics might also have played a role for its plan to store Taiwanese nuclear waste in an abandoned coal mine just one hour (40 miles) of the Demilitarised Zone. That plan has raised tensions in the bilateral relationship between Seoul and Taipei as well as serious security and environment concerns in South Korea because it could contaminate underground water on both sides of the border.[124] Reportedly, the nuclear deal for its 60.000 barrels of radioactive waste—with a provision to increase its volume to 200.000 barrels—should have cost Taiwan so far only 69 million US$.[125] Although North Korea has probably currently not more than one or two nuclear warheads, a sober analysis of 1996 warned: "While North Korea is unlikely to use nuclear weapons except under the most extraordinary situations, there are a number of scenarios that could conceivably lead to nuclear threats or, if mishandled by any side, to the unintentional use of nuclear weapons."[126] Given the fact that North Korea has neither fully disclosed its nuclear weapons programme nor revealed its intentions and motivations it is still possible that it has built more nuclear and missile facilities underground and dispersed them across the country. Hence its nuclear programme might be significantly broader than it is presently assumed. Given the current political and economic situation in North Korea, it seems rather unlikely that Pyongyang will give up all of its nuclear ambitions (as one of its last trump cards) for the time being. Even more important for the future—as the talks on rice aid and the flood relief have shown since 1995—remains the problem that the North Korean leadership fears nothing else more than any opening up of its society to the international community[127] which is one of the most important

---

[123] See also Frank Umbach, "Financial Crisis Slows But Fails to Halt East Asian Arms Race—Part One", in: *JIR*, August 1998, pp. 23–27, here p. 24f.; Part Two, in: ibid., September 1998, pp. 34–37.

[124] Charles S. Lee/Julian Baum, "Radioactive Ruckus", *FEER*, 6 February 1997, p. 16.

[125] *TKH*, 27 January 1997, p. 1. Another source speculated the paid price to North Korea up to 227.6 million US$—see ibid., 19 January 1997, p. 1.

[126] Joseph S. Bermudez, Jr./Bhupendra Jasani, "North Korea's Nuclear Arsenal", p. 22.

[127] See also Bates Gill, "The Divided Nations of China and Korea: Discord and

prerequisites for all "soft-landing"-strategies and more far-reaching confidence-building measures.

Perspectives of China's Nuclear Forces

> . . . But one thing is certain: PLA strategists have been struggling to figure out how to link conventional and nuclear weapons with the operational requirements of potential high-tech local wars over resources and territory around China's periphery. They are interested in how to integrate high technology weapons with "long-distance striking power" so as to deter and, if necessary, deny an adversary victory in any conceivable conventional and nuclear military conflict. PLA strategists have not been content with an undifferentiated, primitive, countervail second-strike deterrent status quo. Indeed, they appear to have their doubts about the credibility of this kind of deterrent, doubts that have probably been strengthened by the prospects of U.S. TMD [Theatre Missile Defence] development. Regrettably, in an era where much international effort is being put into delegitimizing the utility of nuclear weapons, Chinese military strategists have apparently been moving in the opposite direction,

concluded the U.S. expert Alastair Iain Johnston at the end of 1995.[128]

In the 1980s, Chinese military technology was heavily dependent on Western support and co-operation which were always limited. The Western reactions to the bloodshed on the Tiananmen Square and their imposed sanctions confronted China with considerable problems for modernising its conventional and nuclear forces. Since that time, China had been forced to find an alternative co-operation partner. That motivation is one of the major reasons why the bilateral relations to Russia have been improved significantly since the beginning of the 1990s. Both states have initiated a strong relationship that focuses on Russian exports of advanced dual purposed weapon systems and technology to China in order to compensate the loss of the former technological co-operation with the United States and other Western countries. The completed major transactions include the export of modern multirole air fighters, different kinds of

---

Dialogue", SIPRI (Ed.), *Yearbook 1996: Armaments, Disarmament and International Security* (Oxford: Oxford University Press, 1996), pp. 133–144.

[128] Alastair Iain Johnston, "China's New 'Old Thinking'. The Concept of Limited Deterrence", *International Security*, No. 3 (Winter) 1995/96, pp. 5–42, here p. 42.

missiles and modern submarines as well as missile destroyers. In the future, China seems even be interested to acquire Tu–22 "Backfire" medium-range bombers[129] that could be used in nuclear operations. Reportedly, some 100 joint Chinese-Russian research and development projects are under way and more than 2.000 Russian technical experts are assumed to work in China in order to upgrade and modernise China's nuclear armed forces. Moreover, a Russian article of August 1997 reported that both sides agreed even to work out an automatic command and control system (C^2) for China's strategic nuclear forces.[130] But such a system is not necessarily expedient for a nuclear power with less than 300 strategic nuclear warheads. Is this another indicator for China's ambitions not only to modernise its nuclear forces but also to increase its numbers of missiles and warheads?

Since the beginning of its nuclear weapon programmes in the mid-1950s and the first nuclear weapon explosion on 16 October 1964, China has always given priority for developing and modernising its nuclear arsenal. Two years later, it launched its first nuclear missile on 25 October 1966, and detonated its first hydrogen Bomb on 14 June 1967. Today, the number of nuclear weapons is still one of the most closely guarded secrets in China's security policy. In the Chinese view, transparency is not in the interest of militarily "weak" or medium-sized nuclear states (in comparison to nuclear superpowers). According to most of the Western sources, China has currently not more than 300 deployed nuclear warheads—which is ten times less than the strategic nuclear arsenals of the United States and Russia after the ratification of START–II[131]—on some 70–100 intermediate-range ballistic missiles (IRBMs) and about 120 medium-range bombers (Tu–16 "Badger").[132] Although China, too, has built up a nuclear triad, most of the nuclear warheads are deployed on

---

[129] Bin Yu, "Sino-Russian Military Relations", *Asian Survey*, 3 (March) 1993, pp. 303–316.

[130] Nikolai Kuchin, "A Nuclear Deal of the Century?", *New Times*, August 1997, pp. 42–43.

[131] Dunbar Lockwood, "The Status of U.S., Russian and Chinese Nuclear Forces in Northeast Asia", *ACT*, November 1994, pp. 21–24, here p. 23f.

[132] SIPRI (Ed.), *Yearbook 1996: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1996), p. 619; Leonhard S. Spector/Mark G. McDonough/Evan S. Medeiros, *Tracking Nuclear Proliferation*, pp. 49ff.; The Defence Agency of Japan (Ed.), *Defence of Japan. White Paper* (Tokyo: Defence Agency/Japan Times, Ltd., July

IRBMs and ICBMs. Most of China's ballistic missiles have a range of not more than 3.000 km, 20 have a range of 4.800 km and probably not more than seven ICBMs are believed to have a range of roughly 13.000 km and thereby the capability to reach U.S. territory beyond the west coast. In addition, estimations suggest another stored 150 ground-launched tactical warheads.[133]

Table 3: China's Strategic Nuclear Ballistic Missiles (ICBMs/SLBMs:[134] < 5.500 km)

Type/ Name	Range (km)	Payload (kg)	Number	CEP (m)	Fuel	Additional Comments
DF–5A (1981)	13.000+	3.200	18–26	–	Liquid	liquid-silo based ICBM; modification with an 8 MIRV-warheads feasible
DF–31 (late 1990s)	8.000	700	0	–	Solid	Road-Mobile-based ICBM with MIRV-warheads
DF–41 (c.2005–10)	12.000	800	0	–	Solid	Mobile-based ICBM with MIRV-warheads; will replace DF–5
Julang–2 (late 1990s)	8.000	700	0	–	Solid	Solid-fuel SLBM

Sources: Wyn Bowen/Stanley Shepard, "Living under the Red Missile Threat", Jane's Intelligence Review, December 1996, pp. 560–564, here p. 563; and "British, French, and Chinese Nuclear Forces", *The Bulletin of the Atomic Scientists*, November/December 1996, pp. 64–67, here p. 67; Richard D. Fisher, "China Increases Its Missile Forces While Opposing U.S. Missile Defence", Backgrounder, The Heritage Foundation, No. 1268, 7 April 1999 and Richard D. Fisher/Baker Spring, "China's Nuclear and Missile Espionage Heightens the Need for Missile Defence", *ibid.*, No. 1303, 2 July 1999.

1995), p. 52 and "Chinese Nuclear and Conventional Forces 1993", *ACT*, December 1993, p. 29. IISS (Ed.), *The Military Balance 1996/97* (London/IISS: Oxford University Press, October 1996) numbers Chinese IRBMs on 70+ systems. However, some estimates are much higher—see "Size of China's Ballistic Missile Force", Centre for Defence and International Studies, via Internet: http://www.cdiss.org/chinabms.htm.

[133] Robert S. Norris/Andrew S. Burrows/Richard W. Fieldhouse, *Nuclear Weapons Databook*, Volume V: *British, French and Chinese Nuclear Weapons* (Boulder, CO: Westview Press, 1994), p. 358 and Table 1.7, p. 11.

[134] Ranges according IISS; Chinese definitions: short-range (< 1.000 km); medium-range (1.000–3.000 km); long-range (3.000–8000 km); intercontinental-range (< 8.000 km).

Given the facts that Chinese armed forces (PLA) are confronted with a technology lag of 20 years behind the West,[135] China's missiles are believed to be far less accurate and thereby are still lacking the capability to deliver multiple warheads to separate targets (MIRV). The first and second-generation of research and development stages to deployment of Chinese nuclear weapons took around 11 years. The next stage to deploy the third generation of Chinese nuclear weapons might take even longer, but in the end will certainly narrow the technology gap with the West.

The question is only to which extent. But ultimately neither the transition phase nor the final stage of China's ambitious modernisation programmes for its conventional and nuclear armed forces are reassuring for Beijing's neighbours.

Table 4: Chinese Theatre Ballistic Missiles (SRBMs/IRBMs/SLBMs: > 5.500 km)

Type/ Name	Range (km)	Payload (kg)	Number	CEP (m)	Fuel	Additional Comments
DF–11/ M–11	280–300	800–950	–	600	Solid	Road-Mobile; HE or nuclear warhead
DF–15/ M–9	600	500	–	300	Solid	Road-mobile; separating HE or nuclear warhead
DF–21	1.800	600	30–50	–	Solid	Road-mobile; 2-stage; HE or nuclear warhead; derived from JL–1
DF–25	1.800	2.000	–	–	Solid	Under development
DF–3A	2.800	2.150	50–150	1.000	Liquid	Transportable; 1-stage; HE or nuclear warhead
DF–4	4.750	2.200	20	–	Liquid	Liquid/caves/rollout
JL–1	1.700	600	12–24	–	Solid	2-stage SLBM; nuclear warhead; deployed on one or two Xia SSBNs

Sources: Wyn Bowen/Stanley Shepard, "Living under the Red Missile Threat", *Jane's Intelligence Review*, December 1996, pp. 560–564, here p. 563, and "British, French, and Chinese Nuclear Forces", *The Bulletin of the Atomic Scientists*, November/December 1996, pp. 64–67, here p. 67.

[135] See also RIPS (Ed.), *Asian Survey Security 1995–96* (London-Washington: Brassey's, 1996), p. 23.

Table 5: Chinese Nuclear Bombers

Type/Name	Range (km)	Payload (kg)	Number	CEP (m)	Additional Comments
Hong–6 (B–6)	3.100	4.500	120	1965	"Badger" type
Qian–5 (A–5)	400	1.500 (?)	30	1970	"Mig–19" redesign

Source: "British, French, and Chinese Nuclear Forces", *The Bulletin of the Atomic Scientists*, November/December 1996, pp. 64–67, here p. 67.

China's nuclear strategy is currently still based de facto on a "counter city" second-strike capability.[136] But its future nuclear strategy might rather be based on a "flexible response" and "limited deterrence" posture similar to Nato's in the 1980s according to convincing Western analysis. According to Chinese advocates of a "flexible response" and "limited deterrence" strategy, the Clausewitz dictum that warfare is the continuation of politics exaggerates the uncontrollability of nuclear war and is leading to undermine the credibility of China's deterrence policy.[137] Internal discussions of nuclear strategy have indicated China's doctrine shifts since 1985 from an early, large scale and all-encompassing "people's war", based on an attrition strategy, to local and limited wars under high-tech conditions around China's periphery. According to U.S. experts like Alastair Iain Johnston, those doctrine shifts have also led to an evolving concept of limited nuclear deterrence,[138] resting on a limited war-fighting capability and denying the adversary any victory in a nuclear war.[139] Such a limited

[136] D. Lockwood, "The Status of U.S., Russian and Chinese Nuclear Forces in Northeast Asia", p. 23.

[137] Alastair Iain Johnston, "China's New 'Old Thinking', p. 13f., and id., "Prospects for Chinese Nuclear Force Modernisation: Limited Deterrence versus Multilateral Arms Control", *The China Journal*, June 1996, pp. 548–576.

[138] Chinese strategists explicitly distinguish "*limited nuclear deterrence*" from "*minimum deterrence*": In the first term, nuclear weapons play a much greater (counterforce-) warfighting role in the deterrence of both conventional and nuclear wars, particularly in the context of escalation control and intra-war deterrence—see Alastair Iain Johnston, "China's New 'Old Thinking", pp. 12 and 19f.

[139] On the Chinese military doctrine shifts since 1985 see Paul H.B. Godwin, "From Continent to Periphery: PLA Doctrine, Strategy and Capabilities Towards 2000", *The China Quarterly*, June 1996, pp. 464–487; Nan Li, "The PLA's Evolving Warfighting Doctrine, Strategy and Tactics, 1985–95: A Chinese Perspective", *ibid.*, pp. 443–463, Yao Yunzhu, "The Evolution of Military Doctrine of the Chinese PLA from 1985 to 1995", *The Korean Journal of Defence Analysis*, 2/1995, pp. 57–80 and David Shambaugh, "The Insecurity of Security: The PLA's Evolving Doctrine and Threat Perceptions Towards 2000", *The Journal of Northeast Asian Studies*, No. 1 (Spring) 1994, pp. 3–25.

deterrence doctrine requires the development of a greater number of tactical, theatre, and strategic nuclear weapons with improved accuracy to target nuclear forces in addition to cities. In the view of Chinese experts, however, China's modernisation programme of its nuclear weaponry has rather "limited aims" whilst Western experts exaggerate the importance and the influence of the "limited deterrence" school in the PLA for the decision-making processes of the nuclear modernisation programmes.[140]

China's ambitious modernisation programmes of its nuclear forces, including that of its IRBMs "to provide strategic dominance over East Asia" (Richard Fisher),[141] are another proof of the shifts because they seem mainly proactively doctrine-driven (a departure from the PLA's past rather reactive practice). They demand changes in the People's Liberation Army's (PLA's) force structure, strategy and concepts of operation. Given Western estimations of China's current fissile material stock, it can expand its nuclear forces after acquiring the MIRV[142] technology two or three times of its present size (from 300 to 600–900 warheads).[143] Despite facing tremendous problems in modernising its armed forces which is hampered by insufficient funds—although even the official military budget has increased by approximately 33–40 per cent in real terms over the past five years[144]—and the low level of its military technology base, numerous development programmes of its nuclear forces are under way. In contrast to the United States and Russia, the modernisation and expansion of China's nuclear and conventional armed forces had not been constrained by any international arms control regime until 1996. At the same time, uncertainty about these Chinese modernisation programmes and Beijing's long-term strategic intentions behind those military programmes under way arise primarily from the lack of transparency in its military sphere.

---

[140] Hongxun Hua, "China's Strategic Missile Programmes: Limited Aims, not 'Limited Deterrence'", *The Nonproliferation Review*, Winter 1998, pp. 60–68.

[141] Quoted following the article "China Upgrades Medium-Range Missiles Targeting East Asia", *ADJ* 8/1997, p. 63.

[142] **MIRV** = **M**ultiple **I**ndependently Targetable **R**e-entry **V**ehicle.

[143] Alastair Iain Johnston, "China's New 'Old Thinking", p. 36. To China's MIRV development programmes see James Lamson/Wyn Bowen, "One Arrow, Three Stars: China's MIRV programme—Part I", *JIR*, May 1997, pp. 216–218 and Part II, *ibid.*, June 1997, pp. 266–269.

[144] See also "China's Military Expenditure", IISS (Ed.), *Military Balance 1995–1996* (London/IISS: Oxford University Press, 1996), pp. 270–275 and Shaoguang Wang,

The focus on improving the qualitative level of China's nuclear forces with the help of recruited former Soviet weapon scientists and engineers is directed toward a miniaturising of warheads, better targeting accuracy, penetration and anti-electronic interference capability, modernising its C^2-networks, developing a MIRV capability as well as increasing the survivability and the camouflage of its nuclear forces such as storing them underground and deploying them on mobile, land-based launchers or submarines.[145] The PLA navy is currently working on a new advanced nuclear submarine which will carry 12 SLBMs and will be deployed in the next decade. As part of the programme, this new type of a nuclear submarine will be equipped with a new SLBM, called *Jiulong–2* (*CCS-NX–4*), with a range of 8.000 km. It will allow Chinese submarines for the first time to target parts of the U.S. from areas located near the Chinese coast.[146] Western experts anticipate that China will deploy 4–6 submarines, each armed with 12 SLBMS. That would add alone 48–72 warheads to China's nuclear arsenal, with even more, if China can succeed with its MIRV development (expanding the number of warheads on the SLBMs at least two or three times).[147] A new mobile, solid-fuel ICBM, named Dongfeng–31 (DF–31), had been tested by China at the end of May 1995, a few days after the indefinite extension of the NPT and in August 1999. It also has a range of 8.000 km and can carry a payload of 200–300 Kt. The new ICBM is expected to be operable prior to the year 2000.[148] Another solid-fuel mobile ICBM (DF–41) under development will have a range of

---

"Estimating China's Defence Expenditure: Some Evidence from Chinese Sources", *The China Quarterly*, September 1996, pp. 889–911.

[145] See also Yang Huan, "China Strategic Nuclear Weapons", in: Michael Pillsbury (Ed.), *Chinese Views of Future Warfare* (Washington D.C.: National Defence University Press, 1997), pp. 131–135, here p. 134f.; Dunbar Lockwood, "The Status of U.S., Russian, and Chinese Nuclear Forces in Northeast Asia", pp. 332ff.; Holly Porteous, "China's View of Strategic Weapons", *JIR*, March 1996, pp. 134–136; in context see also Vipin Gupta, "Assessment of the Chinese Nuclear Test Site Near Lop Nor", *ibid.*, August 1993, pp. 378–381 and Yan Kong, "China's Nuclear Bureaucracy", ibid., July 1993, pp. 320–326.

[146] See also Nigel Holloway, "Touchy Issue. China Gets Defensive on Missile Reductions", *FEER*, 23 October 1997, p. 29f.

[147] Alastair Iain Johnston, "Prospects for Chinese Nuclear Force Modernisation", p. 562f.

[148] RIPS (Ed.), *Asian Survey Security 1995–96* (London-Washington: Brassey's, 1996), p. 29f. and Paul H.B. Godwin, "Uncertainty, Insecurity and China's Military Power", *Current History*, September 1997, pp. 252–257, here p. 257.

12.000 km and is anticipated to become operational before 2005–2010.[149] Furthermore, China is also developing ground—and air-launched, land-attack cruise missiles, partly from versions of its turbojet powered C–802 anti-ship missile. Reportedly, this cruise missile with a range of at least 120 km, carrying a payload of 165 kg, will incorporate a highly accurate Global Positioning System (GPS) guidance system and a terrain contour-matching radar to improve the accuracy required to perform precision-strikes against high-value civilian and military targets such as command and control centres or government buildings in Taipei.[150] This and other future cruise missiles with their low altitudes will present a major detection challenge for future Theatre Missile Defence (TMD) radar and effective counter measures. A report to the U.S. Congress warned in 1997: "A missile fleet of this size could overwhelm any theatre missile defence capability planned for this vital region and fundamentally alter regional calculations of the balance of power."[151]

However, China presently still lacks an adequate limited nuclear war fighting posture with a satellite based early-warning (EW) capability and sufficient counterforce as well as countervalue tactical, theatre and strategic nuclear forces to deter the escalation of conventional or nuclear war. But it is also clear that China is going to close this "window of opportunity"—the gap between its operational requirements of the limited deterrence strategy and its nuclear doctrine assumptions—for its perceived potential adversaries. It is the result of the logical conclusion of China's strategists that Beijing's deterrent is uncertain or even frail and with that not credible enough. It leads already to a greater Chinese interest in launch-on-warning or launch-under-early attack postures and hence pre-emptive nuclear strategies[152] that ultimately will undermine crisis stability. Then the civilian and military leadership might face similar problems of command and control of nuclear weapons in crisis and war times like Russia nowadays.

---

[149] John Wilson Lewis/Hua Di, "China's Balllistic Missile programmes. Technologies, Strategies, Goals", *International Security*, Fall 1992, pp. 5–40, p. 11.

[150] Wyn Bowen/Stanley Shepard, "Living under the Red Missile Threat", p. 561 and John Downing, "China Develops Cruise Missiles", *Asia-Pacific Defence Reporter (A-PDR)*, August-September 1997, p. 6.

[151] Quoted following the article by Barbara Starr, "China Could 'Overwhelm' Regional Missile Shield", *Jane's Defence Weekly* (JDW), 23 April 1997, p. 16.

[152] Alastair Iain Johnston, "China's New 'Old Thinking'", p. 21f.

In the view of China, an effective TMD-option of the United States and its allies Japan, South Korea and Taiwan against China's nuclear ballistic missiles would not only question its nuclear deterrence against those potential aggressors but also dramatically increase the U.S. ability to launch a disarming first strike against China. Consequently, China is—like Russia—essentially interested in the endorsement of the principles behind the ABM-treaty.[153] Although Beijing's objections against TMD-systems in its three neighbouring countries are to some extent understandable, most of China's arguments are not very convincing and persuasive if they are analysed more in detail.[154] Moreover, it had recently deployed between 150 to 200 of M-class—up from 30–50 missiles three years ago—ballistic missiles in southern China towards the Taiwan Strait and might plan to raise the number to around 650 in the next years, as a Pentagon report for submission to the US Congress and Taiwanese sources have indicated.[155]

With those nuclear weapon programmes under development and the ultimate goal of the Chinese political-military elite to narrow the technological gap to the United States and Russia and to create a less vulnerable, more flexible, and more reliable strategic retaliatory force, Beijing pushed through four nuclear tests (such as on 15 May and 17 August 1995 as well as its last 44th and 45th tests on 8 June and on 29 July 1996) from 1995 to 1996. China ignored thereby any international or regional repercussions before finally it pledged a moratorium as a pre-condition of the Comprehensive Test Ban Treaty (CTBT).[156]

---

[153] See also Alastair Iain Johnston, "Prospects for Chinese Nuclear Force Modernisation: Limited Deterrence versus Multilateral Arms Control", p. 573f.

[154] Frank Umbach, "World Gets Wise to P'yongyang's Nuclear Blackmail—Part Two", *JIR*, October 1999, pp. 35–39, here p. 37f.

[155] Tony Walker/Stephen Fidler, *FT*, 10 February 1999, pp. 1 and 4; James Kynge, *ibid.*, 11 February 1999, p. 12 and *ADJ* 3/1999, p. 56.

[156] Tony Walker/Frances Williams, *FT*, 30 July 1996, p. 1 and *TKH*, 30 July 1996, p. 1.

Table 6: China's Nuclear Arsenal *vis-à-vis* the Other Four Original Nuclear Weapon States

Strategic Nuclear Weapons of the Original "Nuclear Five" (1999)			
Country	*Suspected strategic nuclear weapons*	*Suspected non-strategic nuclear weapons*	*Suspected total nuclear weapons*
China	284	150	434
France	482	0	482
Russia	7,200	6,000–13,000	13,200–20,000
UK	100	100	200
USA	8,500	7,000	15,500

Source: Ehsan Ahrari, "China Eyes NATO's Nuclear Doctrine", in: Jane's Intelligence Review (JIR), April 1999, p. 38f., here p. 39.

While the assumption that China will be able to close the gap between the nuclear doctrine and its operational requirements as well as capabilities over the next decade remains uncertain, China's nuclear strength will nonetheless increase as the consequence of the international denuclearization between the nuclear superpowers United States and Russia. By implementing START–II, both arsenals will be downsized to 3.–3.500 warheads. Consequently, the combined nuclear arsenal of both superpowers to Chinese strategic nuclear forces would fall from 70:1 to 7:1, or 3.5:1 compared with one of the nuclear superpowers (see the table above).[157] Forthcoming START–III negotiations between the U.S. and Russian side will further reduce their arsenals to expected 2.000–2.500 nuclear warheads on each side or even more (in the case of Russia) until the end of 2007. A Chinese nuclear arsenal of some 600–900 warheads in the future would then automatically not only raise China's global political prestige but also the scope of its regional nuclear and conventional military options in the Asia-Pacific region (including towards the United States). Moreover, one has to take into account that China has in contrast to the United States no security commitments requiring a credible extended deterrence posture that justifies high numbers of warheads. However, it might help to explain another trend of China's discussions of military doctrine—the increasing linkage between the

[157] Alastair Iain Johnston, "Prospects for Chinese Nuclear Force Modernisation: Limited Deterrence versus Multilateral Arms Control", p. 563.

PLA's conventional and nuclear options.[158] With a secure northern border towards Russia, China's military strategy has now shifted its attention from the more general peripheral defence of the country to concrete maritime defence in order to guarantee militarily its officially claimed economic zones and territorial sovereignty in the South China Sea and increased military options toward Taiwan.[159] Against this background, China's increasing nuclear retaliatory capability might have primarily the function to prevent great power interference in local and limited conventional wars under high-tech conditions with small and medium powers such as those in the South China Sea. A credible nuclear deterrence option that guarantees nuclear escalation and its control similar to Nato's flexible response strategy of the 1980s requires thus both the qualitative modernisation and quantitative increase of China's nuclear arsenal *vis-à-vis* the United States and Russia.

Although the most dramatic improvements of China's armed forces are indeed taking place in its strategic and theatre nuclear force modernisation, its future capabilities might be constrained by China's adherence to the CTBT, a fissile material cut-off, the possibility to deploy Ballistic Missile Defence (BMD) or Theatre Missile Defence (TMD) systems in Japan, South Korea, Taiwan and possible START–IV negotiations between all five nuclear powers.[160] Critical technological limitations such as computer capabilities for satellite-linked C^3I or increasing the number, accuracy and survivability of delivery means might also constrain an unlimited modernisation programme of its nuclear forces. However, as analysis of China's last military exercises and missile tests[161] as well as revelations of exporting 46 powerful U.S. supercomputers to the Chinese Academy of Sciences[162] (which could be used for the testing of nuclear warheads) have shown, those technical constraints might not be the major

---

[158] See also Nan Li, "The PLA's Evolving Warfighting Doctrine, Strategy, and Tactics, 1985–95", p. 460.

[159] Paul H.B. Godwin, "From Continent to Periphery", p. 474.

[160] Alastair Iain Johnston, "Prospects for Chinese Nuclear Force Modernisation: Limited Deterrence versus Multilateral Arms Control", pp. 564ff.

[161] Greg Gerardi/Richard Fisher Jr., "China's Missile Tests Show More Muscle", *JIR*, March 1997, pp. 125–129 and M.V. Rappai, "Chinese Military Exercises. A Study", *Strategic Analysis*, November 1996, pp. 1119–1131.

[162] G. Milhollin, *IHT*, 1–2 March 1997, p. 8., *ibid.*, 13 June 1997, p. 5 and J. Gerth/M.R. Gordon, *ibid.*, 28 October 1997, pp. 1 and 10.

barrier against the modernisation programmes for China's nuclear armed forces. Relaxed U.S. export control for sensitive dual-use technologies could indeed help China to build stealthier and longer range cruise and ballistic missiles with a much greater accuracy[163] as the recent Cox-report has also confirmed.[164]

At the same time, these Chinese nuclear weapon programmes, however, are not the only proliferation concerns of China's neighbours in North- and Southeast Asia as well as of the United States. China's weaponry and military technology export policy, too, dictated by the need to earn hard currency and to raise its political-military influence in the region, have caused uncertainty and instability in the region and particularly in its bilateral relation with the U.S.[165] It also included the export of technology and delivery means such as dual-use nuclear technology, missile technology as well as dual-use chemicals and chemical-production technologies to nuclear threshold countries such as Pakistan, Iran, Iraq and other potential nuclear proliferation states.

It underscores the main question whether China is willing and able to function as an important player of the international community in order to stabilise and not to undermine regional and global security. China is hitherto not a member of the MTCR in which 28 countries agreed not to export missiles capable of carrying a 500–kg warhead more than 300 km. Although the U.S. and China reached a *quid-pro-quo* compromise in October 1993, it called simultaneously for continued MTCR discussions and interpretations.[166]

Another fact is even more important. While Beijing has also promised and underscored its willingness to implement a nation-wide effective export control system to prevent sales of sensitive proliferation-related technologies and end-products, no specific plan for action

---

[163] See also Nigel Holloway, "Cruise Control", *FEER*, 14 August 1997, pp. 14–16.

[164] Stephen Fidler, *FT*, 26 May 1999, p. 4.

[165] See also Banning N. Garrett/Bonnie S. Glaser, "Chinese Perspectives on Nuclear Arms Control", *International Security*, No. 3 (Winter) 1995/96, pp. 43–78 and Mitchel B. Wallerstein, "China and Proliferation: A Path Not Taken?", *Survival*, No. 3 (Autumn) 1996, pp. 58–66.

[166] China pointed out that the M–11 was specifically designed with an 800 kg payload and a range of 20 km short of the MTCR restriction of 300 km. U.S. experts in contrast noted that a lower payload will enhance the range of the Chinese declared one and thus fall under the MCTR. The compromise stipulated that China will not export missiles with a range of 300 km and with a payload of at least 500 kg—see Paul H.B. Godwin/John J. Schulz, "China and Arms Control: Transition in East Asia", *ACT*, November 1994, pp. 7–11, here p. 11.

had been implemented until early 1997 in contrast to Taiwan. Then, however, China has taken new assurances, commitments and concrete steps which meet international standards: In May 1997, China's State Council issued a new directive to all government agencies and non-governmental entities on the control of nuclear-related exports to prevent covered exchanges of technical personnel and information; one month later, it published an interim list of nuclear-related dual-use technologies identical to the Nuclear Suppliers Group's dual-use list; in September 1997, the State Council established new nuclear export control regulations identical to the list used by the Nuclear Supplier Group; finally, in October 1997, China became a member of the NPT Exporters Committee (Zangger Committee). This was the first time that China has joined a multilateral non-proliferation export control regime. These various steps constitute a positive shift in China's nuclear non-proliferation policies and practices.[167] However, they might conflict with other foreign and national security interests of China. During Jiang Zemin's South-East-Asian visits to India, Pakistan and Nepal at the end of 1996, he confirmed, for instance, to maintain its co-operation with Pakistan concerning the "civilian use of nuclear energy".[168] It seems also to continue transferring missile components and technology to countries like Pakistan and Iran.[169] It might also highlight a fundamental shift from China's traditional weapons and military related export policy to technology transfers, scientific assistance, production technologies, subcomponents, and dual use transfers which are much more difficult to monitor than exports of complete weapon systems or plants. This shift, however, is not a special Chinese version of a weaponry export policy but rather a global non-proliferation trend and challenge. Whether the new U.S.-China agreement of December 1997 that shall exclude any weapons and technology transfers for Iran's missile and nuclear weapon programmes will really change Beijing's long-term weaponry and dual-use export policies remains to be seen and will be dependent

---

[167] On the evolution of China's arms control policies see Wu Yun, "China's Policies Towards Arms Control and Disarmament: From Passive Responding to Active Leading", *The Pacific Review* 4/1996, pp. 577–606; Hung-yi Jan, "The PRC's Policies Toward Nonproliferation Regimes", *Issues and Studies*, 11/1997, pp. 112–132.

[168] *Neue Zuericher Zeitung* (NZZ), 29 November 1996, p. 5 and *ibid.*, 5 December 1996, p. 5.

[169] Douglas, Waller, "The Secret Missile Deal", *Time*, 30 June 1997 and Thomas W. Lippman, *The Washington Post*, 23 May 1997, pp. A1 and A33.

on both internal and external developments during the transitional stage.[170] Thus far, China is neither a "team player" nor a "rogue elephant".[171]

In order to promote transparency, security and stability in East Asia, the Chinese willingness to co-operate is an essential prerequisite for new arms control negotiations and the success of treaties and regimes such as a global fissile material production cut-off convention.[172] Similar as in the case of the CTBT, an Indian signature is dependent on China and a Pakistani ratification on India's. Thus far, Chinese strategists seem not very concerned about future regional proliferation around its borders.[173] Therefore, China stands at the cross-roads in its non-proliferation policy that might become a litmus test of its future role in regional and global affairs with direct implications of foreign policies towards Beijing. A continued Chinese nuclear and missile technology co-operation with Pakistan, for instance, might further backfire and finally be counterproductive for Beijing's own security some day in the not-too-distant future as the five Indian nuclear tests in May 1999 and New Delhi's justification as a counterbalance to China's nuclear arsenal (and not Pakistan's) have already demonstrated.

A New Proliferation Threat: The Example of the *AUM Shinrikyo* Doomsday Cult—A Watershed in Terrorism?

> In a world poised between the Cold War and the new millennium, the tale of Aum is a mirror of our worst fears. Heavily armed militias, terrorist cells, zealous cults and crime syndicates all find their voice in the remarkable ascent of this bizarre sect. For years, expert have warned us: the growing sophistication of these groups, combined

[170] On the agreement see *The Strait Times*, 12 September 1997, p. 28 and Joseph Fitchett, *IHT*, 11 December 1997, pp. 1 and 4.

[171] On the metaphor James V. Feinerman, "Chinese Participation in the International legal Order: Rogue Elephant or Team Player?", *The China Quarterly*, March 1995, pp. 186–210.

[172] Lisbeth Gronlund/David Wright/Yong Liu, "China and a Fissile Material Production Cut-off", *Survival*, 4 (Winter) 1995–96, pp. 147–67. To a Chinese view see Xia Liping, "Maintaining Stability in the Presence of Nuclear Proliferation in the Asia-Pacific Region", *Comparative Strategy, 1995*, pp. 277–286.

[173] Taeho Kim, "China and Virtual Nuclear Arsenals", in: Michael J. Mazarr (Ed.), "Nuclear Weapons in a Transformed World", pp. 207–217, here p. 214.

> with the spread of modern technology, will bring about anew era in terrorism and mass murder. The coming of *Aum Supreme Truth* shows how close these nightmares have come to reality.

(So the authors David E. Kaplan and Andrew Marshall in their remarkable investigation of Aum Shinrikyo)[174]

The Sarin nerve gas attack in the heart of *Tokyo* on 20 March 1995, killing 12 people and injuring about 5.500 others, was the first use of non-conventional weapons by a pseudo-religious sect using terrorist means. At the same time, destructive intentions of fanatical individuals and groups have also manifested themselves in the United States as the terrorist attacks in Oklahoma (killing 168 people) and the World Trade Centre in New York City have shown. But for Japan which has one of the lowest crime rates in the world[175] and that has never experienced terrorist challenges like the United States or European countries (such as Italy, France or Germany) it was a deep and lasting shock. The image of a safe nation on a safe island had been shattered. It revealed that Japan is no longer an island secure against such security challenges. In that respect, the Sarin nerve gas attack was a watershed in terrorism for both Japan and the rest of the world.[176]

The widespread feeling of insecurity within the Japanese society and government continued in the following months, even after the raids of the Aum facilities and the arrest of Asahara. Rumours of new Aum attacks after the arrest of Asahara and key members of his followers seemed to be confirmed on 19 April 1995 when more than 500 people were sickened by mysterious fumes in underground train passages and train cars as well as two days later in a shopping complex near the JR Yokohama Station. Although nobody suffered serious ill effects and had to be treated in hospitals like after the Sarin attack, the nervousness of the Japanese society had been deepened because the police was again unable to prove whether the new incidents had been initiated by Aum followers or were merely copycat crimes. On 23 April 1995, Hideo Murai, the Science and

---

[174] David E. Kaplan/Andrew Marshall, *The Cult at the End of the World. The Incredible Story of Aum* (London: Arrow Books Limited, 1996), p. 3.

[175] Japan has also the world's highest rate of criminal conviction. But it stems at least in part from its practice of making no arrests until they have all the evidence needed for a conviction.

[176] "Terror in the Heart of Japan. The Aum Shinrikyo Doomsday Cult". *The Japan Times Special Report*, July 1995.

Technology Minister of Aum, was murdered by a follower in front of hundreds of police and press cameramen at the entrance of Aum's headquarter. On 5 May 1995—in the middle of the Golden Week holidays—a new gas attack was intended to kill innocent people. But the lethal chemicals could be discovered in time, preventing thus the possible death of estimated 10.000–20.000 people. On 16 May 1995, when Asahara was finally arrested, a letter bomb mailed to the Governor of Metropolitan Tokyo exploded in the hands of his secretary who lost the fingers of his left hand. Against that background and coming back from a trip to China, Prime Minister Tomiichi Murayama's helpless question "what is going on?" to his aides, underscored the widespread feeling of insecurity within the Japanese government and society.[177]

In the past, most of the terrorists were politically motivated and therefore their aims were rather limited with specific targets. They were often sponsored by governments of "rogue states" which also imposed certain constraints their action. But the Aum terrorism seems to follow no presumed rationality and had not imposed any constraints on their actions. In this light, Japan was not only facing a so far unknown "normal terrorism" but at the same time a new form of it, involving religion which turned to be more devastating than ever seen before in the world. The Aum leader and his followers had seen themselves surrounded by non-believers which are for them simply enemies. Any rational behaviour and communication between the attackers and the attacked state and society were therefore from the very beginning limited and hence the influence on preventing further attacks of Aum followers rather small.

Even more important was the fact that the Aum cult had successfully infiltrated various departments of the Japanese government and industry including elements of law enforcement, the military and the defence industry. Moreover, the cult acquired conventional armaments and attempted to acquire non-conventional weapons and technologies from the United States and the FSU. It planned attacks not only on the Japanese but also on the U.S. government. Neither their intentions nor the technology acquirements were fully discovered by the Japanese and U.S. law enforcement and intelligence services until the Tokyo gas attack on 20 March 1995.

---

[177] *The Japan Times*, 7 May 1995, pp. 1–2, here p. 1.

The Japanese investigators found evidence that not only Sarin had been produced, but also Tabun, Soman and VX.[178] Furthermore, they also embarked upon intense research and development programmes for the production of biological weapons, using agents such as Botulism and Anthrax, Q-fever and even ebola. Reportedly, they had actually attempted to use bacterial warfare.[179] Thereby, the cult followers developed and produced those chemical and biological elements "on a scale not previously identified with a sub-national terrorist group".[180] It was possible for them to create such sophisticated research and production facilities without attracting the attention of either Japanese or foreign governments and intelligence circles. They planned to produce 70 tons of Sarin within 40 days after the production facility had been completed. Aum also purchased a Russian Mi–17 helicopter for 78 million Yen and smuggled it secretly into Japan. In addition, they wanted also to buy Russian tanks (including T–72s) for prices, ranging from 200.000–1 million US$. Investigated documents showed proposed arrangements for secret deliveries.[181] They also organised military training tours in Russian military facilities after the permission of top-ranking military officers which involved training from members of Spetsnaz elite units.[182] Furthermore, they bought KGB commando manuals for training of Aum's followers. Originally, it was even planned to spray Sarin via helicopter over Tokyo. Aum members had also constructed a vehicle used to spray Sarin in Matsumoto.[183] As the investigation has shown meanwhile the cult carried out at least nine biological attacks until 1995.

Most of the information concerning the production of lethal chemical substances, which Aum's Science and Development Agency was looking for, was received from brief searches in Internet. It provides innumerable ways to obtain such sensitive information as U.S. experts

---

[178] See also *The Japan Times*, 10 December 1995, p. 2.

[179] Staff Statement U.S. Senate Permanent Subcommittee on Investigations. *Hearings on Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo*, Washington, October 31, 1995, pp. 25ff.

[180] *Ibid.*, p. 21.

[181] Eric Croddy, "Urban Terrorism—Chemical Warfare in Japan", *JIR*, November 1995, pp. 520–523, here p. 522.

[182] Officially it had been denied by the Russian side that training of pilots took place. But Russian officials admitted that there are many private companies with helicopters at their disposal—see "Staff Statement U.S. Senate Permanent Subcommittee on Investigations. Hearings on Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo", p. 39.

[183] *Mainichi Daily News*, 21 October 1995, p. 1.

have found out after the Sarin attack.[184] Aum earmarked the U.S. as a major shopping centre not only for its programmes of developing mass destruction weapons but also for its vast business empire to finance the launch of Armageddon in November 1995 by gassing the Diet building (Japan's parliament). Aum was obviously engaged in a concerted effort to obtain scientific data and sophisticated research equipment "used in some of the most advanced biological laboratories".[185] The computerised chemical plant of Aum was, too, extremely sophisticated according to Japanese investigations.

Very intriguing was also Aum's presence in Australia in an area which is known for its uranium deposit. The cult purchased a 500.000 acre sheep farm. They conducted mostly unknown experiments, but obviously for planning to mine uranium for the development of nuclear weapons[186] and for experiments with Sarin on sheep at its Australian property.[187] Thus a final report of the U.S. Senate subcommittee on investigations of the Aum Shinrikyo gas attack concluded in October 1995:

> The ease with which the cult accessed the vast international supermarket of weapons and weapons technology is extremely troubling. It is especially troubling in light of the current state of the economies and governments of the former Soviet Union. How much this cult acquired and how much more they could have obtained is still a mystery. How much the next group may be able to acquire is the question that also remains unanswered.[188]

The Aum Shinrikyo cult was developing not only chemical weapons such as Sarin, but also biological ones, studying laser arms, trying to mine uranium and making uranium enrichment for nuclear weapons

---

[184] Staff Statement U.S. Senate Permanent Subcommittee on Investigations. *Hearings on Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo*, p. 22f.

[185] *Ibid.*

[186] See also *The Japan Times*, 2 July 1995, p. 2. The author also thanks *A. John McFarlane* from the Australian Defence Force Academy for providing information on Aum's activities in Australia. On results of an Australian investigation see Jeff Penrose, "Western Australian Link to Japanese Doomsday Cult", *Platypus Magazine* (the Journal of the Australian Federal Police), December 1995, pp. 5–10.

[187] Staff Statement U.S. Senate Permanent Subcommittee on Investigations. *Hearings on Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo*, pp. 41ff.

[188] Staff Statement U.S. Senate Permanent Subcommittee on Investigations. *Hearings on Global Proliferation of Weapons of Mass Destruction: A Case Study on the Aum Shinrikyo*, p. 55.

in Australia, assembling guns and rifles, making drugs and narcotics like LSD, and using truth serum on its own followers. Thereby, they operated world-wide: in Japan, the United States, Russia, Australia, Germany and other countries.

The initial gas attack on Tokyo created a widespread chaos and apprehension but it caused relatively few fatalities among the population. The accidental release of anthrax in Sverdlovsk (Russia) in 1979, for instance, is estimated to have killed between 400 and 1.200 people.[189] In the Tokyo gas attack case, analysts have attributed the rather small number of innocent victims to a variety of factors such as: the deliberate dilution of Sarin; to provide protection for the attackers and facilitate subsequent spread; the small quantity of Sarin used; the rapid response of emergency personnel, although it had heavily been criticised as insufficient in the Japanese press, and the unusually powerful air exchange systems of most of Tokyo's subway stations.[190]

In this light, the question arises whether and to which extent the international community has drawn lessons from the terrible experience in order to prevent similar tragedies in the future and to strengthen countermeasures against those new forms of terrorist threats and its non-proliferation policies.[191] Meanwhile, Japan and other countries have started to examine the lessons and consequences after the Tokyo gas attack. The Japanese police admitted, for instance, errors, miscalculation, misjudgement and indecision during its investigation of the Sarin gas attack. New reports have also revealed how unprepared and unequipped the police and other special services were after the gas attack.[192]

Given the fact that not only Japan but also the United States, Russia and Europe were and are still largely unprepared to counter those new forms of international terrorism, it is of utmost importance to combine national countermeasures and to promote any form of information exchange. Ultimately, the Sarin nerve gas attack compels international co-operation on common anti-terrorist measures and non-proliferation efforts.

---

[189] *Ibid.*, p. 2.

[190] *Ibid.*, p. 2f.

[191] See also Bruce Hoffman, "Terrorism and WMD: Some Preliminary Hypotheses", *The Nonproliferation Review*, Spring-Summer 1997, pp. 45–53 and John F. Sopko, "The Changing Proliferation Threat", *Foreign Policy*, Winter 1996–97, pp. 3–20.

[192] See also *FT*, 21 August 1996, p. 5.

Although one can assume that most terrorist groups will also in the future not cause mass killings, using rather non-conventional weaponry and prefer the use of chemical and biological weapons, nuclear terrorism should not be totally dismissed any longer.[193] Only few groups will certainly have the means and skills to acquire nuclear material. But unfortunately, as the German strategic analyst Uwe Nerlich has pointed out, "most potent terrorist groups are likely to be both most capable of a determined pursuit of objectives and most capable of acquiring and handling weapons-grade nuclear material."[194]

It is also important to stress the fact that the quality of fissile material is only important for bomb making. But most other forms of nuclear terrorism would be just as effective using industrial-grade fissile material as weapon-grade material or a nuclear-enriched conventional explosion (by a crude, non-fissionable atomic bomb, also called "dirty bomb"). The Chechen case in Moscow in November 1995, when terrorists had hidden four cases of radioactive caesium (310 times the normal amount of radioactivity) in the well-known Ismailovo Park[195] confirmed the use of a conventional device with a highly radioactive coating rather than a operational nuclear bomb. It created chaos and helplessness in Moscow's security circles. In this light, "thinking about the unthinkable" might be the only reliable, but certainly also most unpopular policy guideline of changing the current unpreparedness of highly vulnerable Western industrial societies. Thus far, in the West only the U.S. Energy Department maintains a nuclear emergency search team trained to disable terrorist nuclear devices—a programme, however, which is underfinanced and understaffed according to U.S. experts.[196] Although Aum Shinrikyo is still under investigation and banned in Japan and Russia, it has survived. It is still active and recruiting successfully new members.[197] While organised crime organisations and other non-state actors are

---

[193] Also Japan is still threatened by terrorist challenges because the Japanese Red Army (JRA) is still able to conduct further terrorist acts despite recent successes of arresting JRA members—see Bruce Hoffmann, "Creatures of the Cold War: the JRA", *JIR*, February 1997, pp. 80–82.

[194] Uwe Nerlich, "The Political and Strategic Analysis of Nuclear Non-State Actors and Sponsoring States: What to Look for?", *SWP-AP 2908*, Ebenhausen, June 1995, p. 16.

[195] Gavin Cameron, "Nuclear Terrorism", *JIR*, September 1996, pp. 422–425, here p. 425.

[196] Jessica Stern, *IHT*, 20–21 July 1996, p. 6.

[197] Kevin Sullivan, *IHT*, 30 September 1997, p. 2.

forming powerful multinational alliances (such as the Russian and Colombian criminal organisations), the greater availability of expertise and resources could overcome former technological barriers as the example of Aum Shinrikyo has demonstrated. The threat of bioterrorism in particular is rising[198] which demands more national and international attention and countermeasures.

A Nuclear Weaponisation?—Japan's Current Non-Nuclear Weapon Status and Its Future

In the context of analysing Japan's non-proliferation policies and its civilian nuclear energy programmes, a significant gap exists between Japan's own image as a pacifistic society and a country pursuing only peaceful policies, and the lasting distrust of other Asian nations in Japanese politics. In no other field the gap of views between Japan and other Asian nations is so profound as in the nuclear one. While since 1968 Japan has repeatedly declared to adhere to the three non-nuclear principles—namely not manufacturing, possessing, or allowing nuclear weapons on Japanese soil[199]—, experts outside Japan are often sceptical or even suspicious of Japan's civilian nuclear and rocket programmes. Despite Japan's ratification of the NPT in 1976, sceptical experts of other Asian countries and in the United States have pointed out that Japan is the only non-nuclear weapon state operating uranium enrichment and reprocessing plants simultaneously. All of them are technically capable of producing fissile material for nuclear weapons. In their views, it is particularly the magnitude of the civilian Japanese nuclear projects and specific programmes such as Fast Breeder Reactors (FBR) or Mixed Fuel Rods (MOX) that raise widespread proliferation concerns.[200] With its 51 nuclear reactors (28 of them located along the Japan Sea coastline), Japan

---

[198] W. Seth Carus, "The Threat of Bioterrorism", *INSS/NDU-Strategic Forum*, No. 127, September 1997.

[199] Prime Minister *Eisaku Sato* advocated the policy of "three non-nuclear principles" in December 1967 which were adopted by the Diet (the Japanese parliament) in January 1968. Each subsequent government has repeatedly reaffirmed its support for these principles as part of Japan's national security policy.

[200] See in particular Selig S. Harrison (Ed.), *Japan's Nuclear Future: The Plutonium Debate and East Asian Security* (Washington, D.C.: Carnegie Endowment for International Peace/Brookings Institution, 1996) and Eiichi Katahara, "Japan's Plutonium Policy: Consequences for Nonproliferation", *The Nonproliferation Review*, Fall 1997, pp. 53–61.

is generating currently almost 30 per cent of its electricity from the civilian use of nuclear power and is, therewith, the third largest nuclear energy producer in the world (after the United States and France). Moreover, whilst Japan's plutonium stockpile amounted to 13.1 tons at the end of 1994, it might rise to 89 tons of fissile plutonium (about 125 tons of total plutonium) over the next two decades (the combined superpower arsenal accounts currently to 220 tons) that have to be separated in Japan or abroad under commercial contracts.[201]

Giving up Japan's plutonium programme, however, is not a sufficient guarantee of Japan's non-nuclear weapon status because it will always have the technological know how and experience to build them if necessary. Hence Japan will also retain the capability to acquire nuclear weapons through the continued existence of its civilian nuclear programmes such as other non-nuclear weapon states.[202] Furthermore, Japan's plutonium programme has also created double standards in the U.S. non-proliferation policy because Tokyo had *de facto* the approval of Washington for its programme, while the United States simultaneously insisted that North Korea must abandon its plutonium reprocessing facilities.

On the other hand, the mistrust in Japan's foreign and proliferation policies has even increased since the end of the Cold War when U.S. administrations moved their attention from arms control agreements with Moscow to regional and global non-proliferation efforts. The economic dynamics in East Asia, the rapid modern weapon technology acquisition and diffusion as well as an emerging Chinese hegemon on the horizon have not only contributed to the widespread feeling of insecurity in the region but also to the mistrust in Japan's future non-nuclear weapon status. In the light of Japan's changing security environment with China and North Korea as nuclear powers in its proximity, Tokyo might be forced to rethink its current status as a non-nuclear weapon state in the near future.[203]

---

[201] Motoya Kitamura, "Japan's Plutonium programme: A Proliferation Threat?", *The Nonproliferation Review*, Winter 1996, pp. 1–16, here p. 8 and Kumao Kaneko, "Japan Needs No Umbrella", *The Bulletin of the Atomic Scientists*, March-April 1996, pp. 46–51, here p. 47.

[202] Motoya Kitamura, "Japan's Plutonium programme", p. 10.

[203] See, for instance, in context of the regional security in Northeast Asia Gerald Segal, "The Nuclear Forces in Northeast Asia", p. 313f. and Ralph A. Cossa, "Nuclear Forces in the Far East", p. 369f.

Moreover, Japan's declared three non-nuclear principles do not have a legal basis in the constitution. Only the Atomic Energy Basic Law of 1955 prohibits Japan from manufacturing or possessing nuclear weapons.[204]

But those sceptical analyses are based on the assumption that Japan's security policy is solely or primarily dictated by external threat factors. A closer analysis of the history of Japan's security policy, however, suggests that it is rather determined by domestic factors such as the demilitarisation after World War II. Anti-militaristic attitudes have resulted in influential pacifistic and anti-nuclear social movements. Their persistent strength embodies a dual rejection of militarism, both at home and abroad.[205] Nonetheless, in the view of many Asian countries, Japan has failed to come to terms with its imperial past. Furthermore, it questions the Japanese version of a "cheque-book diplomacy"—buying trust and influence of its Asian neighbours by offering extensive development aid-funds—that has obviously produced only limited positive results in this regard. In the view of its Asia-Pacific neighbours, without an unambiguous interpretation of its history, the Japanese government and Diet policy will not be able to stimulate lasting trust and confidence in its foreign policies.

Japanese politicians and security experts explain Tokyo's intention to commercialise an indigenous plutonium fuel cycle with Japan's current dependence on oil imports and the lessons of World War II. Consequently, Japan is trying to reduce its oil and gas imports from abroad. The persistence of Japan's plutonium programme is also explained by domestic actors such as bureaucratic and industrial interests. Thus Japan's nuclear organisations are closely intertwined with each other that guarantees their self-serving and conservative bureaucratic interests.[206] Additionally to those historical and domestic

---

[204] Article 2 of the *Atomic Energy Basic Law* states that research, development, and use of nuclear energy is limited to peaceful purposes. The civilian use of nuclear energy should be controlled democratically, guarantee transparency for the public and involve international co-operation.

[205] See in particular the excellent study by Glenn D. Hook, *Militarisation and Demilitarisation in Contemporary Japan* (London-New York: Routledge, 1996) and Peter Katzenstein/Nobuo Okawara, "Japan's National Security", *International Security*, 4 (Spring) 1994, pp. 84–119.

[206] It involves three key government agencies—the Science and Technology Agency (STA), the Ministry for Foreign Affairs and MITI—, two national research organisations—the Power Reactor and Nuclear Fuel Development Corporation (PNC)

explanations, Japan's non-proliferation experts argue that Japan is neither capable to produce hundreds of kilograms of weapons-grade plutonium nor are sufficient numbers of Japanese nuclear scientists and engineers willing to participate in a nuclear weapons programme.[207] Instead of that, Tokyo has opened all of its civilian nuclear power station activities to IAEA verification. Additionally, since 1994 it has disclosed specific figures of its plutonium stocks to increase international transparency measures of its nuclear fuel recycling programme.

Those who speculate nonetheless about a future Japanese nuclear arsenal are in the view of Japan's experts often not well-informed about the basic technical means of nuclear armament.[208] In their view, Japan would have to overcome considerable technical and political obstacles of immediately going nuclear. For example, it would need at least seven to eight years to acquire the technology and to build as well as to deploy nuclear armed submarines.[209] Moreover, given the close nuclear relationship and programmes between the United States and Japan, Washington still enjoys a considerable leverage over Tokyo as result of its on-going technological and material support.[210] It is historically explained by the fact that the US support of Japan's civilian nuclear power programmes after World War II had been seen as a pre-condition to prevent Tokyo from starting a nuclear weaponisation.[211] Nowadays, the following five additionally political reasons speak rather against a future Japanese interest to acquire a nuclear option:[212]

(1) it damages Japan's security environment and prosperity because it is heavily dependent on energy imports from abroad (1990: 85.4% of its total energy and 99.7% of its oil consumption). For its economic survival, Japan has to rely on safe maritime transportation to import oil and gas and to export its goods which might be threatened by its own nuclear weaponisation;

---

and the Japan Atomic Energy Research Institute (JAERI), the nuclear suppliers industry, and electric utilities—see M. Kitamura, "Japan's Plutonium programme", p. 5.

[207] See also K. Kaneko, "Japan Needs No Umbrella", p. 48.

[208] R. Imai, "Post-Cold War Nuclear Non-Proliferation and Japan", *Japan Review of International Affairs*, Fall 1994, pp. 314–332, p. 322 and Matake Kamiya, "Will Japan Go Nuclear? Myth and Reality", pp. 5–19, p. 12f.

[209] Matake Kamiya, "Japan and the Bomb", *Look Japan*, June 1996, pp. 11–13, p. 13.

[210] M. Kitamura, "Japan's Plutonium programme", p. 5.

[211] *Ibid.*, p. 6f.

[212] Matake Kamiya, "Will Japan Go Nuclear? Myth and Reality", pp. 9ff. and id., "Japan and the Bomb".

(2) it undermines rather than promotes Japan's military security, particularly when China, South Korea, and Taiwan would implement countermeasures;

(3) it threatens the U.S.-Japanese alliance which is based on a non-nuclear status of Japan;

(4) it damages Japan's environment because Japanese nuclear weapons have to be tested. While the Partial Nuclear Test Ban Treaty of 1963 prohibits atmospheric and underwater explosions, Japan has no suitable underground testing sites;[213] and

(5) it limits rather than increases Japan's political influence on the regional and global level.[214]

However, Japanese security experts would not totally deny a nuclear weaponisation if Japan's security environment would rapidly and fundamentally change. The following two circumstances are considered as determining factors for a basic re-assessment of Japan's current non-nuclear weapon status: (1) nuclear acquisition programmes by South Korea, Taiwan and other potential nuclear threshold states in its vicinity and, simultaneously, (2) a failing function and/or lacking credibility of the U.S. nuclear umbrella for Japan. Only if nuclear rivals of Japan would force it to make unreasonable, intolerable concessions, could a nuclear option thus win broader public and political support in Japan.[215] But even then, only a strong political government with a considerable political backing in the Diet could theoretically "re-educate" Japan's pacifistic society and its aversion connected with nuclear energy. A strong government is also a precondition to mute likely international criticism for withdrawing from the NPT-regime and risking a fundamental break with its traditional foreign policy still based on the Japanese-American security alliance. Given the turmoil of the political party system of Japan and the rather weak governments during the last years, such a strong political government in Japan seems rather unlikely for the time being.

In the mid—and long-term perspective, however, and regarding the uncertainties of the future U.S.-Japanese security alliance which

---

[213] "On the implications see again F. Umbach, "World Gets Wise to P'yongyang's Nuclear Blackmail—Part Two".

[214] Matake Kamiya, "Will Japan Go Nuclear? Myth and Reality", pp. 9–12.

[215] The author was a Visiting Research Fellow at the Japan Institute of International Affairs (JIIA) between April 1995 and March 1996. During that time, he held numerous discussions with Japanese experts on this subject.

is still the key factor of stability in East Asia, a discussion about acquiring a nuclear option cannot totally be excluded.[216] If Japan's security environment in its neighbourhood should indeed drastically change and further reductions of the U.S.-Japanese forces in Japan take place, the credibility of the U.S. nuclear umbrella will further decline. In addition, for deterring small "rogue states" (like North Korea) or terrorists attempting to acquire nuclear weapons, the use of sophisticated conventional armament by the U.S. armed forces—as demonstrated successfully in the Gulf-War—seems to be the far more adequate response to that security challenge than to resort automatically to nuclear weapons.[217] But those military-technical and political-strategic considerations have already undermined the credibility of the U.S. nuclear umbrella for Japan and other East Asian states despite all declarations.[218] Against this background and even more than for Europe, a credible extended deterrence of the U.S. nuclear umbrella is still vital for East Asia's stability.

The Ballistic Missile Threat to Japan and Its Impact on Japan's Future Defence and Non-Proliferation Policies

> In the post-Cold War era, the risks are greatly reduced that Russian military incursions into Japanese territory might be undertaken to gain a strategic advantage over the United States. But at the same time, precisely because Japan has lost its strategic significance as a key participant in the strategy of Soviet containment, it is now exposed to more direct dangers.

(So the Japanese expert *Atsumasa Yamamoto* in an analysis published in 1995)[219]

Until the end of the Cold War, Japan's foreign and security policy was based on the three well-known non-nuclear principles. But they were promulgated as part of the government's less well-known

---

[216] See also F. Umbach, "The Future of the U.S.-Japanese Security Alliance", in: Manfred Mols/Joern Dosch (Eds.), *International Relations in the Asia-Pacific. New Patterns of Interest, Power and Cooperation* (LIT-Verlag; forthcoming in 2000).

[217] See also K. Kaneko, "Japan Needs No Umbrella", p. 48f.

[218] To U.S. assurances and bilateral efforts in the context of the U.S. security alliance and the new guidelines see Yasuhide Yamanouchi, "Nuclear Energy and Japan's Security Policy", p. 209f.

[219] A. Yamamoto, "Ballistic Missile Security Risks Facing Japan", *Asia-Pacific Review*, Autumn/Winter 1995, pp. 29–51, p. 38.

four nuclear principles. These four nuclear principles reveal the ambiguity of realistic and idealistic objectives of Japan's security policy. Besides the (1) adherence of the three non-nuclear principles, (2) promotion of nuclear disarmament and (3) giving highest priority to the peaceful civilian use of nuclear power, it also included (4) its dependence on the U.S. nuclear deterrence umbrella in accordance with the U.S.-Japan security alliance.[220]

This dependence on the U.S. nuclear umbrella conflicts openly with Japan's non-nuclear principles. Nonetheless, Japan's security experts still favour traditional arms control instruments of its non-proliferation policies such as promoting the NPT and CTBT, creating Nuclear Weapon-Free Zones (NWFZ) and demanding a "no-first-use" policy as well as granting "negative security assurances" by the five nuclear powers to non-nuclear weapons states. Whether Japan's traditional three non-nuclear principles of Japan's diplomacy are also for the future a sufficient policy instrument for successful non-proliferation strategies, however, is increasingly debated in Japan itself. Considering East Asia's future energy needs as result of their economic growth and population increase in the region, almost all countries are looking into the available options, notably the civilian use of nuclear power. Consequently, there is an urgent need to coordinate their nuclear fuel cycle programmes and outlining plans for joint fuel fabrication, spent fuel storage, and reprocessing plants for the entire region[221] as proposals for an ASIATOM or PACATOM indicate. All these civilian nuclear energy programmes, particularly the creation of additional nuclear storage sites, will raise considerable non-proliferation concerns in a region often characterised as highly insecure.

---

[220] *The Japan Times*, 31 January 1968.

[221] See also Ryukichi Imai, "Spent Fuel Storage Requirements As Seen from Japan", in: *Nuclear Arms Control and Nonproliferation. Looking into the Future*, IIPS Policy Paper 146E, Tokyo, December 1995, pp. 13–28.

Table 7: Theatre Ballistic Missiles Capable of Reaching Japan

Country	Name	Range (km)	Notes
Russia	Scud–B/C	300–500	(*)
China	Dongfeng–21/CSS–5	1.800	(*)
	Dongfeng–3/CSS–2	2.800	Being retired?
	Dongfeng–4/CSS–3	4.750	(*)
	Dongfeng–21X	3.000	Advanced, longer-range version of the DF–21, in development
	Dongfeng–25	1.800	In development
	Julang–1/CSS–N-3	1.700	SLBM; deployed on one or two Xia SSBNs
North Korea	Scud C	500–650	(*)
	No-Dong–1	1.000	At least 20+ deployed
	No-Dong–2	1.500+	in development
	Taepo-Dong–1	2.000	Tested in August 1998
	Taepo-Dong–2	4.000+	in development

* Deployment details not known.
Frank Umbach, "World Gets Wise to Pyongyang's Nuclear Blackmail—Part Two", *Jane's Intelligence Review (JIR)*, October 1999, pp. 35–39, here p. 36.

The 1991 Persian Gulf War ("Operation Desert Storm") has shown that those TBMs like the Iraqi Scud-missiles had still a greater psychological impact than destructive power. Given the introduction of more sophisticated conventional, chemical, biological or nuclear warheads in the next years and decades, however, the power of destruction of those TBMs will rapidly increase. These ballistic missiles might be particularly destabilising due to their inherent elements of surprise (short launch and warning time) as well as of limited possibilities of an early detecting and of effective countermeasures. Unless a country threatened by those TBMs has no adequate early-warning systems for detection and an effective anti-ballistic missile defence to neutralise those missiles, it might see no other chance in a severe crisis than to opt for pre-emptive military options to destroy them before they are launched. But those pre-emptive military options would significantly undermine crisis stability and increase the escalation of conflicts in the region. Given Japan's perceived threat of ballistic missiles in its vicinity, Tokyo decided to participate in a joint Theatre Missile Defence (TMD) project, suggested by the United States, in response to North Korea's successful 1993 launching of the Nodong I medium-range missile. Tokyo's fears have been confirmed

during the Taiwan missile crisis in March 1996 when one Chinese missile accidentally fell into the ocean near Japanese territory.

The joint TMD-option of Japan with the United States, however, is currently still in the research stage. The United States has offered Tokyo several deployment options since 1994, estimating that the costs—4–17 billion US$—would absorb a considerable portion of Japan's defence budget. All options are designated to deploy advanced TMD-systems in 2004–5 to counter both the Chinese and North Korean missile threat. A final decision by the Japanese government, however, is seriously hampered by legal, political, strategic and economic considerations. Legal objections result from Japanese law and the prohibition of transferring weapon systems or associated technologies to third countries (like South Korea and Taiwan) or to deploy space-based components that constitutes a "militarisation of space". Other objections have questioned the missile threat to Japan or have qualified the TMD options as overtly hostile in the Chinese threat perception that might lead to an open arms race between China and Japan. Indeed, the discussion of TMD systems deployed in Japan, South Korea and Taiwan is driving the modernisation of China's nuclear arsenal and particularly of developing a MIRV capability.

Instead of a TMD-option, Japanese security experts have proposed a further internationalisation of the global non-proliferation efforts. Those strategies include (1) the creation of a satellite-based international verification system to overcome the superpower dominated sources of information, (2) a multilateral fuel-cycle centre, with facilities to store and processing plutonium discharged from light-water reactors in East Asia (including those of China, Taiwan, and the Korean Peninsula), and (3) an extended and deeper security dialogue with other states or effective security institutions on a regional and global level.[222] While these strategies are indeed a useful instrument for promoting regional and global non-proliferation efforts and CSBMs, it remains uncertain whether they are able to secure Japan against an highly uncertain situation on the Korean peninsula and China's expanding strategic nuclear forces. Even in the case that the U.S. and its major allies in Northeast Asia would stop their plans for

[222] See also Ryukichi Imai, "Post-Cold War Nuclear Non-Proliferation and Japan", p. 330f. and Toshiyuki Toyoda, *The Japan Times*, 20 June 1995, p. 16.

TMD development and deployment, Beijing's strategic nuclear force modernisation would nonetheless continue because of other military-strategic reasons and probably internal bureaucratic factors as Chinese experts admit privately.[223]

Until North Korea's missile test and attempt to launch a satellite in August 1998, Japan was largely divided on the TMD-question. Finally, the sceptical considerations have been confirmed by North Korea's missile test which prompted Tokyo to agree to commit funds for research and development of a theatre missile defence system, together with the U.S. Thus North Korea's test-firing of its missile had fundamental security implications for Japan, East Asia and the future of the U.S. alliances in the region.[224]

Conclusions and Perspectives

After the end of the Cold War, East Asia faces a number of new security challenges that have important implications on its future foreign, security, defence and non-proliferation policies. In particular destabilising are nuclear ambitions and ballistic as well as cruise missile acquisitions.

Until the beginning of 1999, improved bilateral relations between Washington and Moscow, deep cuts in their nuclear arsenals, new global non-proliferation efforts, increasing world-wide calls for the abolition of nuclear weapons, and increased attention as well as high-tech conventional military options toward regional conflicts, by contrast, all seemed to have reduced the deterrent value of nuclear weapons on the global scale and particularly in the United States which might also have negative implications for the credibility of extended deterrence in Northeast Asia. Regrettably, Russian and Chinese discussions of military doctrine and strategy during the last years, however, are moving in the opposite direction of efforts by the international community towards delegitimizing or even abolishing the utility of nuclear weapons because their conventional armed forces are no longer or still not able to compete with the over-

[223] So the result of discussions the author had during the last three years with Chinese experts. See also James A. Lamson/Wyn Q. Bowen, "One Arrow, Three Stars—Part I", p. 218.

[224] On the implications see F. Umbach, "The Crisis on the Korean Peninsula and the Security Implications for Japan and Northeast Asia—Part Two".

whelming technological superiority of the U.S. conventional armed forces. Therefore, a world-wide abolition of nuclear weapons seems rather unrealistic and impractical for the time being.

Furthermore, another new security challenge has emerged out of the blue. Compared to West European countries, both the United States and Japan seemed for a long time rather distant from the source of international terrorism and smuggling illegal nuclear or other special mass destruction material. There are several reasons why not only Japan, but also other East Asian and Western countries as well as Russia should be concerned about Aum Shinrikyo's Sarin nerve gas attack in 1995 as a precedent of a new form of terrorism and fundamental security challenge: (1) the willingness of the cult leader Asahara and his followers to use mass destruction weapons; (2) the truly global nature of the terrorist cult; (3) the amount of intellectual followers including lawyers, officers, scientists and engineers; (4) highly sophisticated research and production facilities for mass destruction weapons; (5) the failing control of Internet providing sensitive information to the development of mass destruction weapons and (6) the manifold unpreparedness of Japan and other high-industrialised countries to the new form of terrorism and security challenge. In this light, the timely development of common strategies and appropriate mechanisms and means by the West, Russia, Japan and other East Asian countries for countering and preventing the use of non-conventional weaponry by terrorist groups is a *conditio qua non* for future regional and global stability.

In order to prevent those new security dilemmas and to stabilise and not to undermine regional and global stability, a much broader and deeper security co-operation between nuclear powers and non-nuclear weapon states is urgently needed. Realistically, it should begin with enhancing and deepening the process for more military transparency. It should include the publication of more detailed White Papers concerning the national defence policies, comparing detailed military budgets, military doctrines and strategies, conventional and nuclear arms procurement plans, and by inviting experts to military exercises as part of confidence-building measures. While a wide-ranging and militarily significant nuclear-free zone in Northeast Asia seems only achievable in a long-term process of a nearly nuclear-free world, a register of nuclear arms in the region would also contribute to more transparency and confidence-building in the region in the short—and mid-term perspective.

Ultimately, the stability in the region will also depend in the foreseeable future on a strong and sustained engagement policy by the United States which encloses substantial political, economic and military means. In this light, the linchpin for stability in the Asia-Pacific region as well as for Japan's security and the maintenance of its non-nuclear weapon status remains the U.S.-Japan security alliance. In this light, maintaining and deepening of the U.S.-Japanese security alliance—as it was agreed in the spring of 1996—and with that the credibility of the U.S. nuclear umbrella is still the fundamental prerequisite and pre-condition not only for Japan's security and its future non-nuclear weapon status, but also for its Asian neighbours and their trust against a resurgence of a perceived Japanese military expansionism or a hostile bilateral relationship between Japan and China. But the Japanese society and government must realise and accept—as one of its security experts has concluded—that it "cannot afford to have the United States and other countries assume all responsibilities, because what is really at stake is Japan's own security. Japan cannot refuse to share the risk."[225]

Therefore, Japan and its bureaucratic elite have to take over new security obligations and responsibilities as well as to initiate a broader as well as more open security debate with its public in order to bolster new directions of its foreign and security policies. Given the lasting mistrust of its Asian neighbours, Japan can only assume new regional responsibilities in a close alliance with the United States that also reassures the other East Asian states. Although the bilateral Japan-U.S. partnership was, is and will not necessarily be always without some tensions, the security alliance between both states remains the essential political, defence and economic pillar for the entire Asian-Pacific region on which all the other bilateral and multilateral relationships will depend in the foreseeable future.[226] Given China's rather suspicious perception of the now enlarged U.S.-Japanese security alliance, diplomatically the most difficult task for both states remains to change the Chinese view of this alliance as another instrument to contain China. This is, indeed a Hercules-task, but there is

[225] Atsumasa Yamamoto, "Ballistic Missile Security Risks Facing Japan", p. 45.

[226] See also F. Umbach, "The Future of the U.S.-Japanese Security Alliance", in: Manfred Mols/Joern Dosch (Eds.), *International Relations in the Asia-Pacific. New Patterns of Interest, Power and Co-operation* (LIT-Verlag; forthcoming in 1999).

realistically no other way ahead for Japan, the United States as well as for the EU if one considers the entire strategic environment of the Asia-Pacific region: Engagement where ever it is possible and containment when it is needed should be the primary guide of our strategic policies *vis-à-vis* China.