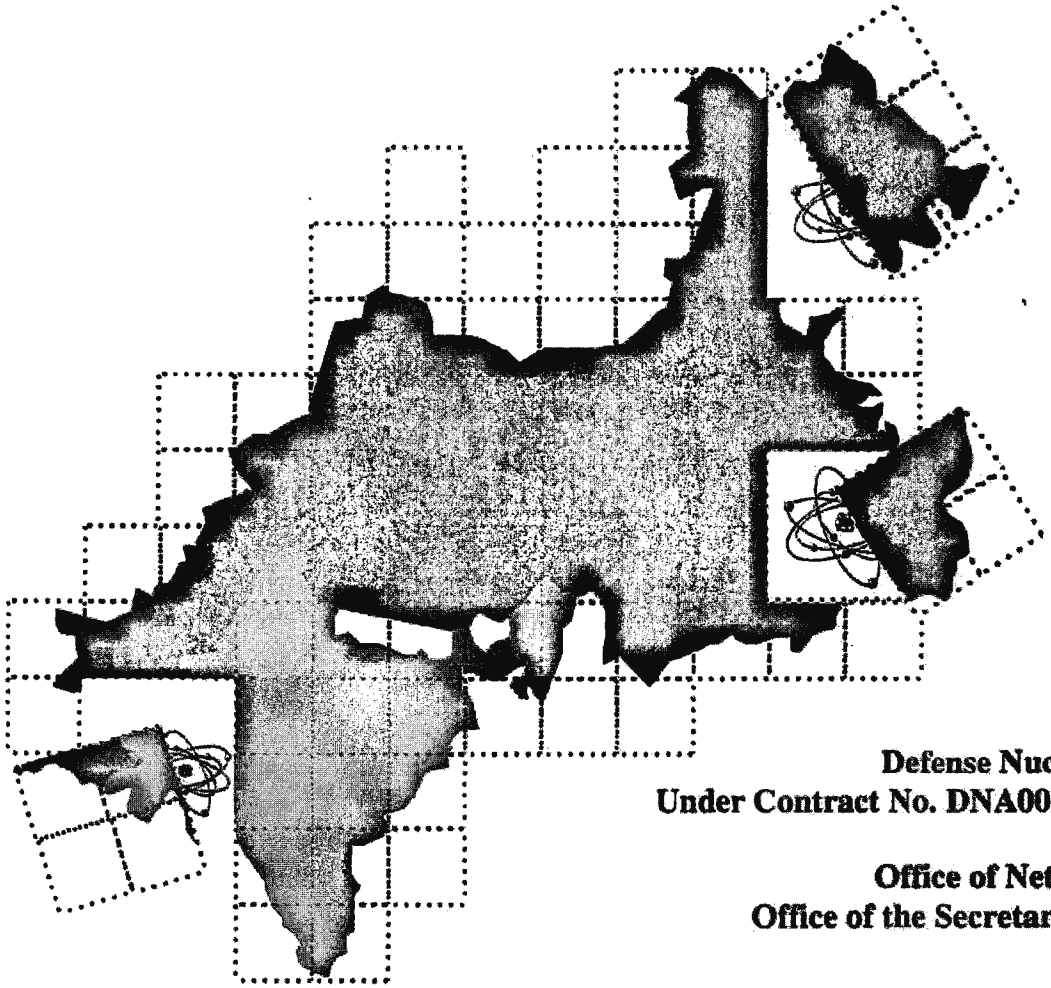
Final Report for Task Order No. 2 Master Agreement on Nuclear Assessments

The Proliferation of Weapons of Mass Destruction
Implications for U.S. Wargaming



Submitted to

Defense Nuclear Agency
Under Contract No. DNA001-93-G-0073
and
Office of Net Assessment
Office of the Secretary of Defense

submitted by

National Security Planning Associates
Washington, DC • Cambridge, MA

and

Analytic Services, Inc.
Arlington, VA

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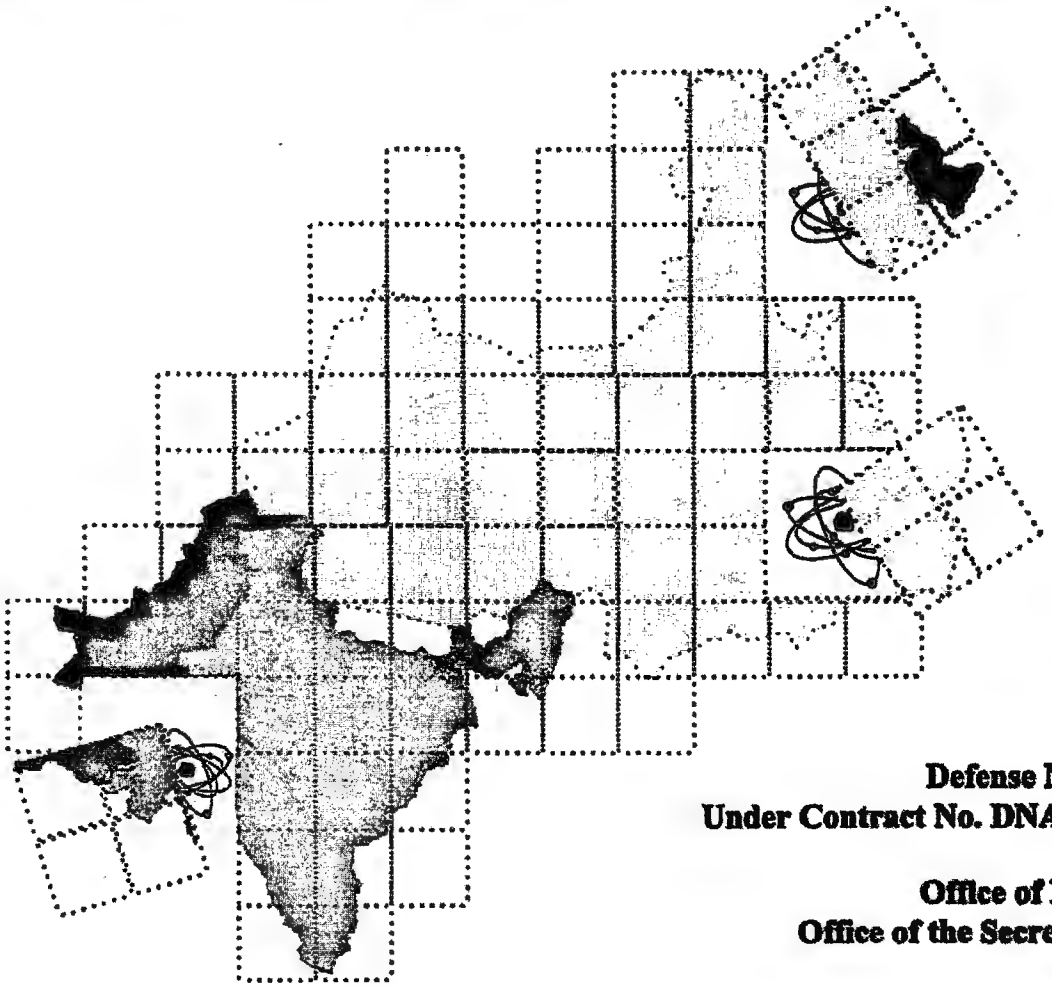

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The attached report is submitted by National Security Planning Associates, Inc. (NSPA) and Analytic Services, Inc. (ANSER) to the U.S. Defense Nuclear Agency (DNA) and the Office of Net Assessment, in compliance with Task Order Package Number Two to contract DNA001-93-G-0073, the Master Agreement on Nuclear Assessments. The views expressed herein are those of the authors only and do not necessarily reflect those of the Defense Nuclear Agency, the Department of Defense, or the United States Government.

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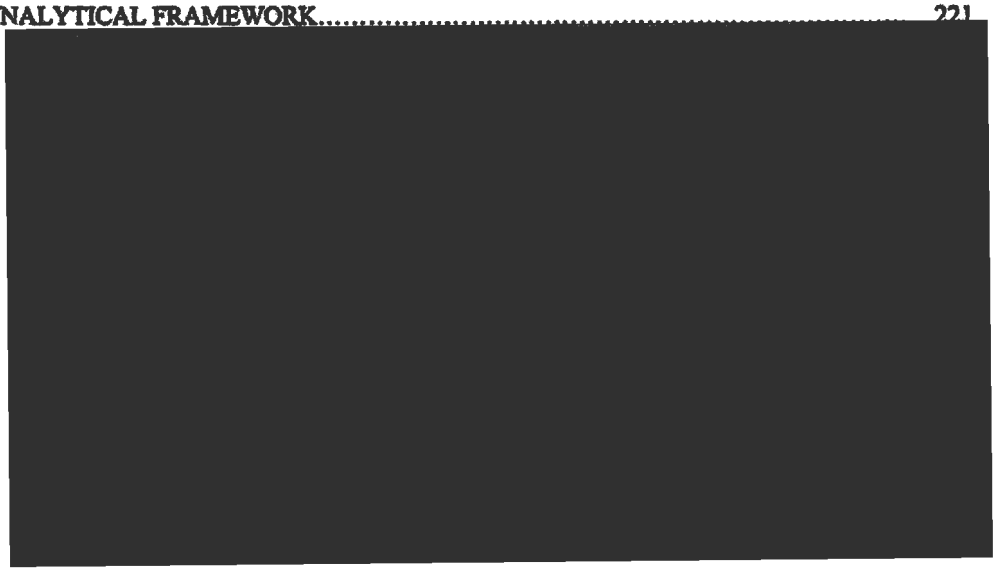


Chapter 1:
Weapons of Mass Destruction (WMD) Role and Doctrine: *Case Studies*

Introduction

The demise of the bipolar system has left U.S. defense planners facing security challenges considerably different from those of the Cold War. Latent conflicts, such as in Bosnia, have erupted, and rogue nations may no longer feel constrained by a relationship to the Soviet Union to limit their regional power ambitions, as Iraq demonstrated in 1990. Proliferation of both advanced conventional and unconventional weapons has further complicated security planning issues, and is most closely associated with regions having propensities for conflict and terrorism, such as the Middle East and Asia. As such, counterproliferation policy needs to be tied to efforts addressing the sources of these conflicts.

In the long term, dealing with WMD proliferation requires strengthening global norms of behavior – that is to say, ensuring both wider and stricter adherence to non-proliferation regimes, increasing the effectiveness of cooperative international mechanisms which restrict the flow of potentially dangerous technologies, and so forth. In the short term, however, it is necessary to address WMD proliferation in the context of regional security in a number of sensitive and unstable areas. Since the WMD issue is, at least for the present, chiefly a matter of regional (rather than global) security considerations, it requires a more detailed analysis of complex political-military issues unique to the regions concerned. For this reason, a central element of this study is a number of specific case studies drawn from Asia and its periphery.

Nations may seek WMD programs for reasons that are tactical, strategic, or indeed of no apparent military utility – simply for the prestige that a WMD capability offers. It is also significant that some nations, such as Iraq, have sought to develop capabilities in more than one category of WMD; that is to say, chemical and biological capabilities are sought in addition to, or in tandem with, the nuclear weapons. Additionally, some Third World states may view WMD as a cost-effective alternative to more expensive advanced conventional weapons. Regardless of the reasons for which they are sought, possession of WMD increases a nation's leverage both regionally and globally. This much is certain. Yet the question of how great the resulting leverage may be, or the uses to which it may be put, remains clouded in uncertainty.

Despite the fact that it is often regarded as a monolithic threat, in fact the implications of WMD proliferation is extensively shaped by the characteristics of the various WMD technologies pursued by proliferators:

Chemical Weapons(CW). Chemical weapons have often been called the "poor man's atomic bomb." It is questionable, however, whether chemical weapons can offset or deter another state's nuclear arsenal. CW may be useful against an unprotected and untrained enemy, as the Iran-Iraq War demonstrated, and they may alter the behavior and tactics of a CW-prepared opponent. Unlike possession of nuclear weapons, however, a CW capability is no ultimate guarantor of a nation's security.

Biological Weapons (BW). Biological weapons may have some significant strategic impact, although weaponization for battlefield use has proven difficult. Biological agents are relatively inexpensive to produce, and they can be manufactured easily in a clandestine manner. As such, they

may be more attractive to terrorist or sub-national groups. Their unpredictable and indiscriminate nature probably makes them more attractive to terrorists than to battlefield commanders.

Nuclear Weapons(NW). In terms of potential regional conflicts, nuclear weapons raise three concerns:

1. If a proliferant's survival is at stake, nuclear weapons may be employed as a last resort.
2. Under some conditions of intense rivalry, nuclear weapons may be used even if a nation's survival is not at risk — as, for example, the possibility that the India-Pakistan crisis of 1990 might have resulted in a nuclear exchange.
3. Terrorist or sub-national groups may obtain an ex-Soviet weapon over which central control has been effectively lost — a "loose nukes" scenario.

Of significance is the fact that employment of nuclear weapons does not necessarily mean detonation of a device. In the oft-quoted remark of a former Indian Army general, a major lesson of the Gulf War for the Third World is not to go to war with the United States unless one has nuclear weapons. The prospect that potential regional aggressors may take this advice greatly complicates the development of effective U.S. means of deterrence in regional crises.

Case Study: **The People's Republic of China (PRC)**

China describes itself as a responsible nuclear weapons state with an arsenal of under 500 warheads and neither CW nor BW. Yet Beijing's true intentions regarding WMD remain a troubling enigma. In particular, China's People's Liberation Army (PLA) has reportedly conducted several large exercises simulating the use of tactical nuclear weapons (TNW), as well as tests of low-yield weapons (including a neutron bomb in 1988). Chinese interest in nuclear mines has also been evident for almost two decades.

Beijing is now developing a second-generation, solid-propellant ICBM and is building its second nuclear submarine. (b)(5)

Moreover, both China's shorter and longer range missiles suffer from poor accuracy.

Many experts doubt Chinese denials of CW or BW possession due to China's strong CW defense effort and rumors of testing, use, or transfer of CW agents or munitions. China's neighbors cannot discount the likelihood of Chinese CBW possession, but such concerns are based mostly on rumors and suspicions. Beijing's repeated denials of CBW possession nonetheless impose serious constraints on the production, stockpiling, and deployment of any Chinese CBW.

Two concepts underlie all current Chinese military doctrine: modernization and support for national economic development. The dramatic growth in Chinese defense spending since 1989 has only begun the process of shortening the twenty- to thirty-year lag the PLA suffers in comparison to Japan, Taiwan, and even Russia in terms of technology, training, C^3, and intelligence. But the combination of budget growth, furious economic expansion, and the sudden availability of cheap ex-Soviet weaponry may dramatically narrow the gap, especially in missiles, ships, and aircraft capable of delivering WMD.

Operationally, China's new military doctrine of "peripheral defense and forward projection" indicates an abandonment of the Maoist concept that conventional war must quickly and inevitably lead to nuclear conflict. The restructured PLA will emphasize rapid reaction "fist units" to deal with

border contingencies and naval projection capabilities; an unspoken mission of these forces will be preserving internal stability.

Beijing remains committed to policies of nuclear minimalism and no-first-use and has never been observed to engage in nuclear blackmail. Beneath this political/ideological plane, however, Chinese nuclear doctrine remains murky. PRC officials have at times argued that China's area and population would serve as an advantage in a nuclear exchange, and Chinese development of TNW implies a readiness to abandon no-first-use. Indeed, viewed from Beijing, China's experience in its relations and disputes with the USSR/Russia, India, Japan, and the U.S. since 1964 have demonstrated the value of possession of nuclear weapons.

At the same time, Beijing is clearly enamored of its emerging reputation as a constructive member of the international community, a reputation which would surely suffer severe damage should Beijing engage in WMD use. Consistent with the concern of the Chinese leadership for the PRC's international reputation is China's 1992 accession to the NPT, its call for a worldwide prohibition on WMD, and its support for a comprehensive test ban (although, notably, China has not joined the ongoing test moratorium of the other four acknowledged nuclear weapon states).

The lingering key role of Deng Xiaoping could be a major complicating factor in arriving at a decision on WMD use. China lacks a figure of sufficient authority under Deng to decide on WMD use; if all the various contenders do not agree, an appeal will almost certainly be made to the senile Deng. The rapidity with which new leadership emerges after Deng's death will have a heavy impact on WMD decision making, as well as on the broader question of Chinese domestic stability. Many observers fear a chaotic or divided China as a consequence of the vast changes wrought by economic growth and the potential power vacuum after Deng's death. The loyalty of the military and the rank-and-file soldier, however, is not in serious doubt; if the Party and Central Military Commission can settle on decisions, the PLA is prepared to make enormous sacrifices to preserve the Party and the country.

China's provision of nuclear technology, equipment, and material to Pakistan is well known, and a future Indo-Pakistani crisis could place Beijing in a difficult position. China and India also have various long-standing bilateral border disputes, but none of them appear likely to cause a crisis in the foreseeable future. Beyond the link to Pakistan, China has also reportedly provided Iran with nuclear assistance as well as chemical and poisonous agents; Syria with missile technology; and Libya with nuclear research. In addition, China has sold Saudi Arabia long-range missiles suitable, in Riyadh's case, only for nuclear weapons, and it has previously aided Pyongyang with its missile and nuclear weapons programs. China would thus have an impact on WMD scenarios involving any of these states.

China's sensitivity to public external pressure, its self-image as a poor, oppressed victim of the rich and powerful West, and its pride that China is a great society whose people can endure enormous hardship and still prevail, are all significant factors in Chinese diplomatic and military calculations

(b)(5)

A decision to employ WMD could result from ambiguous orders to the PLA stemming from the desire of players in the leadership to avoid personal confrontation, or from personal connections (or *guanxi*) between top-level officials and Beijing and commanders with WMD responsibility — connections which frequently outweigh the influence of laws and official lines of authority in China.

(b)(5)

This latter possibility has grown with the independence of the Soviet Central Asian republics and continuing efforts by Iran, Turkey, and Pakistan to gain influence there based on religious and/or cultural ties.

(b)(5)

Case Study: **The Democratic People's Republic of North Korea (DPRK)**

The actual status of the DPRK's nuclear weapon development program is a matter of considerable debate. Estimates of North Korea's current plutonium holdings range from 98 grams to 40 or 50 kilograms; eight kilograms are sufficient to make a nuclear bomb. Moreover, Pyongyang's May 1994 refueling of the 5MW reactor at Yongbyon could harvest up to 33 kilograms of plutonium for North Korea. Two more North Korean nuclear reactors — 50MW and 200MW respectively, and both capable of producing plutonium — are due to be completed within two years.

The ongoing North Korean missile program makes the potential nuclear threat, especially to Japan, even more disturbing. In May 1993, the DPRK test-fired the 1,000-1,300 km range *Rodong-1* over the sea of Japan. A 1,000 km range would include Osaka and U.S. military bases in Okinawa, while a 1,300 km range would include all major Japanese cities. North Korea is also developing a 1,300-1,600 km range missile, the *Rodong-2*, and two two-stage missiles with the potential to reach U.S. bases in Guam.

Pyongyang began producing CW in bulk in the 1980s. Estimates of its current CW stockpile reach 1,000 tons, and it is thought that the country has the capacity to produce 4,600 tons of CW annually. The DPRK can place chemical warheads on mortars, artillery, FROG and *Scud* missiles, air-delivered ordnance, and possibly the *Rodong* missile. North Korea also possesses biological weapons, reportedly testing them on its island territories — and even on human subjects.

President Kim Il-Sung (82) and his son Kim Jong-Il (52) are attempting the first hereditary transfer of power in a Communist country in history. But the legacy of forty years of unmitigated personal reverence for Kim Il-Sung makes establishing legitimacy and authority for a successor an all-consuming endeavor for the Pyongyang government and the Korean Workers' Party (KWP). While the consensus is that Kim Jong-Il will prevail and that order will be maintained, the younger Kim's legitimacy and authority will remain uncertain and dependent, in particular, on the military. This influence will extend to decisions over WMD development and would apply to WMD use.

The future of North Korea will also depend on the future direction of DPRK economic reform policies. The DPRK is officially committed to *juche*, its ideology of "self-reliance;" but the result after four decades has been economic contraction (currently over 10% per year) and reportedly desperate shortages of food and fuel, while the South enjoys vigorous economic growth (ten times

the GNP per capita of the North) and can pay for a better-trained and technologically superior army. Spending on defense consumes only 4% of South Korea's growing GNP, compared to 20-25% of GNP dedicated to the military by the North. But the domestic political risks of an opening to the South suggest that Chinese-style reforms are the likely course for Pyongyang. Moreover, Chinese-style reform policies can readily be pursued, and even bear fruit, despite isolation from the West over the nuclear issue.

There are numerous hypotheses on how the succession process, the internal power of the military in Pyongyang, economic reform policies, and North Korean insecurity and/or aggressiveness can explain the DPRK's nuclear weapons program and predict how the DPRK would use WMD. As a nuclear proliferator with a history and policy of coercive behavior in a region where the vital interests of many great powers intersect, the stakes over North Korea for wargamers and decision makers are tremendously high.

The North Korea issue cuts across political party lines in Japan. The Hosokawa coalition depended in large part on the pro-Pyongyang Socialist Party, and the current Prime Minister, Tsutomu Hata, took a noticeably soft line towards the DPRK during his tenure as Foreign Minister. Even Japan's conservative LDP has influential leaders sympathetic to Pyongyang, or at least interested in the potential markets represented by North Korea's woeful underdevelopment. The threat to Japan posed by the *Rodong* missile in conjunction with North Korea's nuclear weapons program is matched only by Tokyo's fear of terrorism by the 150,000-260,000 DPRK expatriates working in Japan, and of public revelations of illegal funding of political parties by wealthy DPRK interests.

Some analysts predict the rapid development of nuclear weapons by Japan in the event of North Korean nuclear proliferation. Others emphasize the strength of the pacifist constitution and public opposition to nuclear weapons in Japan. Still others have argued that, in view of the high level of its industrial, economic, and technological development, Japan could build a bomb so quickly that stockpiling nuclear weapons in the traditional manner is essentially unnecessary. The character of the Japanese nuclear power program supports a policy of keeping all options open.

The establishment of diplomatic relations between China and South Korea in 1992 has been followed by rapid growth in bilateral trade and, subsequently, several tense incidents in PRC-DPRK relations — giving the impression that Beijing's influence in Pyongyang may be declining. Certainly Chinese assistance to North Korea's nuclear and missile programs has been significantly curtailed, if not stopped entirely; [redacted] (Russia, not incidentally, remains a warehouse of nuclear and missile expertise upon which North Korea continues attempting to draw.) But contraction of the North Korean economy has only increased dependence on Chinese aid and trade, even in such basic items as in food and fuel.

Chinese officials state that China, like the U.S., does not want to see nuclear weapons on the Korean peninsula. But China has several other higher interests at stake which the United States does not share — most importantly, its interest in the survival of the DPRK. Despite the difficulties arising from Beijing–Seoul rapprochement, North Korea remains a long-standing ally of China, and personal relations between leaders in Pyongyang and Beijing remain close. North Korea is a land buffer between the PRC and Japan and an increasingly powerful ROK. A North Korea that adopted Chinese-style reform policies would boost the China's claim to have developed a "third way" between liberal democracy and Stalinism; not surprisingly, therefore, China actively supports Pyongyang's development of "special economic zones" around North Korea's port cities. These

ports also provide cheap and easy access to the sea for northeastern China, enabling that region to share in the Chinese economic boom of the 1990s.

South Korea, conscious of the vulnerability of Seoul to DPRK attack and fearful of a North Korean implosion either before or during a succession crisis, has conducted extremely cautious diplomacy on the North Korean nuclear issue even as the threat from Pyongyang grows. Many South Koreans express subtle sympathy towards the North. At the same time, however, Seoul has begun a military build-up with American weapons, and may yet decide to develop its own nuclear weapons — a proposition it last considered in the 1970s. In North Korea's eyes, however, the South Korean threat is as much a military matter as it is a challenge to Kim Il-Sung's vision for Korea.

Although there has been no meaningful wavering in the U.S. security commitment to South Korea, U.S. threats to prevent North Korea from developing nuclear weapons lack credible means to do so short of all-out war. Only Defense Secretary Perry has raised the possibility of launching a preventive war against the North. The U.S. regularly threatens to have economic sanctions imposed on Pyongyang, but neither Seoul, Tokyo, nor Beijing has shown enthusiasm for such action. Even if the UN Security Council were to vote to impose sanctions, enforcement by China and Japan is highly uncertain — and without the participation of these nations, any such regime would be highly ineffective. (b)(5)

[redacted]

Case Study: **Weapons of Mass Destruction in the India-Pakistan Context**

Tensions between India and Pakistan remain high over Kashmir, the Siachen Glacier, and Punjab despite India's undeniable military dominance in South Asia. Each country has sufficient nuclear weapons technology to build a nuclear weapon in a matter of hours or days, but neither has elected to deploy nuclear weapons on a regular basis. Both countries are currently developing or acquiring ballistic missile technology to augment their WMD capability, but for the moment both continue to rely on fixed-wing aircraft to carry and deliver WMD.

India's great-power ambitions are rooted in its self-image as one of the world's oldest and greatest civilizations. Indian aspirations extend westward to the Middle East, northward to Central Asia, eastward to China, and southward into the Indian Ocean. India's indigenously developed 2,500 km range *Agni* missile, based partly on India's vigorous space launch vehicle (SLV) program, is a symbol of these ambitions; militarily, however, the *Agni*'s inaccuracy limits its efficacy to a WMD delivery role. The preponderance of evidence indicates that India has no CW or BW stockpile and only a modest CW defensive capability. Significantly, neither India nor Pakistan have made CW allegations against the other.

India originally built its nuclear weapons capability as a deterrent against China (and to a lesser extent against the U.S.), and for autonomy from the USSR. Nuclear weapons serve as part of India's efforts to demonstrate self-reliance and national strength vis-à-vis China. Pakistan did not factor into India's nuclear calculus until the 1970s. Indian nuclear research began at independence, and it has been sustained by a synergism of hawkish bureaucrats, scientists, strategists, and politicians working within the parameters of India's secular constitution. (b)(5)

[redacted]

India continues to focus on China as its major strategic adversary and threat. Strife in Tibet, Chinese arms sales (including missile and nuclear technology) to Pakistan, Chinese refusal to recognize the incorporation of Sikkim into India, and border disputes in southwest Xinjiang, western Tibet, Arunachal Pradesh, and Kashmir, remain points of tension. Since the collapse of the USSR, India has also been concerned over China's ability to redirect its military capabilities towards the South China Sea, South Asia, and the Indian Ocean. China's vigorous naval modernization program has been marked by port calls in Sri Lanka, Bangladesh, Pakistan, and Burma, and increased activity around the Andaman Islands and the Strait of Malacca.

New Delhi remains convinced that Islamabad seeks to dismember India through the arming and training of Kashmiri militants, and views Kashmir as the acid test of whether India can survive as a unified, secular state. To fail in Kashmir, India's leaders reason, would tempt the balkanization of the entire country. India's fears in this regard are heightened by the competing efforts of Pakistan, Turkey, and Iran to forge new networks of relationships with the Central Asian states. India's secondary regional security concerns include maintaining peace within, and military influence over, Sri Lanka; an influx of refugees from Burma, and Beijing's growing military and economic relations with the Rangoon junta; and controlling the migration of Muslim refugees from Bangladesh, lest it bring about a backlash of Hindu nationalism.

In contrast, Pakistan's security concerns focus almost exclusively on India. Islamabad is obsessed by its defeat in 1971 and continued Indian control over Kashmir. Lacking oil resources, Pakistan sought nuclear weapons in part to establish itself as a leader in the Muslim world. Meanwhile, Pakistan's very *raison d'être* is increasingly undermined by the fact that India's Muslim population has grown to the point where it now outnumbers Pakistan's.

Pakistan initiated its nuclear weapons program in 1972 following the creation of an independent Bangladesh, and it has depended far more than India on external sources, both legal and illegal, for its weapons development. Islamabad is currently estimated to be equipped to deploy between six and fifteen nuclear devices, and it claims to have laboratory nuclear test facilities. No strong evidence exists of either a CW or BW program by Islamabad. Pakistan's two-stage *Hatf*-2 missile, due to be ready in 1995 or 1996, lacks a precision strike capability or sufficient range to hit New Delhi; but Pakistan is also developing the 600-780 km range *Hatf*-3, which would provide such a capability. Meanwhile, Pakistan will continue to depend on the U.S. F-16 fighter aircraft as its only WMD-capable delivery vehicle, possibly augmented by the French *Mirage* or Russian Su-27 *Flanker*. Islamabad also continues to search for foreign missile technology, and it has recently begun exploring SLV options with the assistance of China.

Nuclear decision-making in Pakistan has traditionally rested in the hands of a few actors, and in some instances military officials and their government supporters have kept information about the nuclear weapons program from top-ranking political officials. Under civilian administrations, the military has often used the ceremonial presidency to protect the nuclear weapons program and remove it from civilian-political (i.e. prime ministerial) control. Pakistani officials have been more open in recent years about their nuclear weapons capability, but the policies of public ambiguity and no deployment remain.

Tensions over Kashmir have crystallized into several crises since the last Indo-Pakistani war, most recently in 1987 (following India's *Brass Tacks* military exercise), in 1989 (on account of guerrilla unrest in Kashmir), and again in 1990. Pakistan allegedly went to a nuclear alert in this last crisis and

sent a highly visible convoy of trucks from the Kahuta nuclear facility to the F-16 airbase nearby. The lack of subsequent crises over Kashmir may be attributed to Islamabad's desire to see the Pressler Amendment lifted. In April 1993, for example, Pakistani troops blocked a march of Kashmiri militants trying to enter Indian Kashmir from Pakistan, and several confidence-building measures have been agreed between Islamabad and New Delhi. Pakistan's secondary regional security concerns include cooperation with Iran to stifle unrest in Baluchistan; possible nuclear and/or missile cooperation with Tehran; the continuing burden of 1.6 million Afghan refugees; and the possible disintegration of Afghanistan.

In conclusion, both India and Pakistan lack sophisticated nuclear doctrines, command-and-control systems, and adequate consideration of worst-case scenarios involving WMD, partly due to their policies of nuclear ambiguity and no nuclear weapons deployment. (b)(5)

[redacted]

Chapter 2
The Role of Nuclear Weapons in Regional Crises

Because nuclear weapons can be employed by proliferating states at many levels well below actual detonation, the proliferation of weapons of mass destruction in the vicinity of numerous crisis venues has emerged as a driving factor in anticipating, and planning for, U.S. regional deterrence requirements. For the United States, the knowledge that a country hostile to U.S. interests is acquiring a nuclear weapons capability could in and of itself precipitate a crisis (as, for example, in the case of North Korea).

Grey Team wargames can illustrate various technical and political characteristics of proliferators, their motivations, expected benefits, risks undertaken, and how their capabilities may be employed. But the task of accurately representing the role of nuclear weapons in a regional crisis is complicated by the range of actions a nuclear weapon holder or potential holder can take, lack of information available to decision makers about the intentions and capabilities of the weapons holder, variations and uncertainty in the amount of time available to decision makers, the range of overt and covert employment means, diversity of weapons, and potential targets.

In nuclear Grey Team wargames, uncertainties for any team's decision-makers in a crisis are multiplied by the number of players participating in the game. Red teams may depict a non-nuclear state or a faction within a nuclear state, and the definition of Red may depend upon something as simple as a threat of nuclear use, as opposed to actual possession. Despite these and other complications, Grey Team wargames can serve as a useful vehicle for investigating issues associated with nuclear proliferation. They can help identify other points of view that may be relevant to crisis management and conflict resolution. In the areas of policy development and crisis response, knowledge of proliferator motivations can lead to more successful policy initiatives. Finally, these wargames can more accurately represent the variety of scenarios and situations that will greatly stress all decision-makers.

It must be emphasized that Grey Team scenarios are fluid. In certain games, or phases of games, there may not be a Red Team, or multiple Grey Teams may be in dispute over territory. Purple may attack Grey, while in another game Grey becomes Red, but still does not threaten Blue interests enough for Blue to become directly involved. Inclusion of non-state actors, or factions of Grey or Red, must also be considered.

The fact of possessing nuclear weapons changes a nation's defense posture and status in the world. A nation's ability to deliver nuclear weapons across its borders at will is, of course, more menacing and destabilizing. In discussing a proliferator's development of nuclear weapons, the Israeli, South African and Pakistani examples (and possibly even that of North Korea) are portentous: nuclear testing is not required to have confidence in a workable, reliable nuclear weapon, although there may be apprehension over yield.

Some delivery options available to proliferant nations include:

- *Aerial bombs*. This option is perhaps the most feasible and desirable for the proliferator, due to the fact that numerous types of military and civilian aircraft may be used as delivery vehicles.
- *Ballistic missiles*. All the primary Asian countries forming the basis of this study (i.e., Pakistan, India, China, North and South Korea) indigenously produce ballistic missiles.
- *Space launch vehicles (SLVs)*. SLVs offer another potential means for the delivery of nuclear weapons once they are converted to ballistic missiles. The major difference between the two is in the types of payload, trajectory, and guidance and control.
- *Cruise missiles*. Due to their performance in the Persian Gulf War and subsequent US attacks against Iraqi intelligence facilities on 17 January 1993, cruise missiles are becoming increasingly attractive delivery vehicles.
- *Artillery shells, nuclear land and sea mines, and torpedoes.*

The prospect of Third World nations acquiring nuclear weapons is increasingly likely, making the accurate portrayal of such activities more important to game players. While producing or acquiring a sufficient amount of fissile material remains the key obstacle in the nuclear weapons acquisition process of potential proliferators, there is no longer any doubt that success can be achieved through a dedicated (and, if necessary, illicit) effort to acquire or develop the required components and materials.

As noted, employment of a nuclear weapon need not be equated with the detonation of a device. Instead, the development of a sizable nuclear infrastructure that can be "surged," thus creating a more advanced program (possibly with a concomitant arsenal), can also be considered employment. Changes in the operations of a proliferator's nuclear infrastructure could also be considered employment; similarly, a government could reveal that it has the capacity to build nuclear weapons within a matter of hours, weeks or months. Initiation of the nuclear weapons process through acquisition and development may indicate that political-military authorities have begun to think about when and how these weapons might be used.

There are many indicators of the extent of a national nuclear weapons development program. Revelation of previously secret budget line items or an unusually large military budget could potentially indicate acquisition and development. Scientific and technical indicators can signify nuclear acquisition and development too, especially if the country in question has the ability to obtain raw materials, intermediate supplies, and nuclear production products. Indications of the use of acquisition and development as a political tool could include release of information on the construction of research facilities in remote areas, underground, or in the sides of mountains, with

unusual security and their own power sources. Another indicator may be large numbers of emigrant workers from Third World nations.

During a "rise" phase in a nuclear weapons development program, all components that have been in place are assembled into deliverable nuclear weapons within a relatively short time frame. An infrastructure rise could be employed either to demonstrate resolve and force an opponent to back down, or to gain advantage in peacetime or crisis-management situations. Indications that "rise" phase operations are underway include hurried completion of elements of the nuclear program, faster development and/or import of sensitive technologies, accelerated work on elements of the nuclear fuel cycle, intensified training of scientists and other specialists, or intensified cooperation and exchanges in nuclear matters. The central issue is how to respond when signs of the rise phase become evident, either in peacetime, during a crisis, or under wartime conditions.

Additionally, the issue of hidden nuclear weapons promises to be an intractable intelligence and military problem for Blue and Purple forces. (b)(5) Either decisive victory by, or humiliating defeat of, the Blue Team will have substantial "demonstration effects" on future crises, either enhancing or reducing the credibility – and subsequently, the behavior — of possible aggressors.

The threat of nuclear use might also force changes in Blue-Purple political-military objectives. The Korean example is illustrative. Would the initiation of hostilities by the North ultimately require the destruction of its military and a regime change? Or, would a "holding action" — i.e., a return to the 38th parallel and the status quo ante — be sufficient? Would any of these options be feasible under the threat of nuclear use and the certain uncertainty of hidden weapons? Would Blue be able to sustain deployments and action in theater with an anxious U.S. populace?

In sum, there are numerous indicators of nuclear acquisition and development that, for the most part, have not changed since the end of the Cold War. But in the present, far more fluid security environment, motivations for proliferation are stronger than before — and, as *Desert Storm* demonstrated, credible intelligence on nuclear capabilities is difficult to attain. Moreover, great strain is placed on intelligence capabilities as they attempt to locate, track, and destroy enemy nuclear weapons. (b)(5) Grey Team wargames can offer a number of realistic and challenging scenarios depicting numerous categories of WMD employment.

There are a number of potential non-state actors that could be participants in a WMD crisis, ranging from subnational or terrorist groups gaining control of nuclear weapons to criminal elements seizing or developing their own WMD. There have been several cases of terrorist groups expressing an interest in acquiring WMD. Of concern is the fact that the required materials and technical capability are more available now than ever before.

There are essentially three ways a terrorist organization could acquire a nuclear weapon: theft, purchase, or development. Theft of a nuclear device is an attractive option; a group would not have to acquire the many components and the technical expertise required to build a weapon, and seizing a

weapon would probably be less costly than purchasing one on the black market. No doubt the reliability of a stolen weapon would also be much higher than that of a "homemade" device.

Development of a nuclear device by a subnational group has been considered feasible by analysts for many years. Key variables in assessing this threat include funding, technological expertise, and access to critical materials. A potential low tech alternative to crude fission weapons entails using conventional munitions to detonate a quantity of nuclear material. This type of "dirty bomb" would disperse radioactive material over a wide area, causing severe decontamination problems.

The decision to employ WMD will be driven by two primary factors — the motivations and operational capabilities of the group in question. These factors will also influence how the weapon is employed, including such issues as means of delivery and target selection.

While Grey Team wargames cannot solve all of the problems associated with nuclear employment in regional conflicts, they can help in an effort to synthesize the wealth of information available on the subject. Additionally, as new information is gained, wargamers can project credible scenarios set in the present to five, ten, or even fifteen years in the future.

Chapter 3
Responding to the Biological Weapons Threat

The biological weapons threat, although not new, is growing both in terms of the number of nations pursuing such weapons and the sophistication of the weapons themselves. Biological weapons are both cheaper and easier to produce than other WMD, and as such they are increasingly attractive to rogue nations. Failure of the United States to address this threat could inhibit our ability to respond to crises effectively, or to reassure allies who may be subject to a biological warfare threat.

Biological agents are defined as microorganisms or toxins that cause either the deterioration of material or disease in animals or plants. Unlike the destructive mechanisms of other weapons, biological agents can reproduce once delivered. Indeed, biological weapons have been compared to enhanced radiation (neutron) weapons because, like the latter, they are only effective against living things.

Biological agents can be divided into four categories:
1. Naturally occurring, unmodified infectious agents, usually bacterial agents or viruses.
2. Toxins made from living things, such as snake venom.
3. Molecularly modified (genetically engineered) infectious agents.
4. Bioregulators, which modify natural body functions such as fear, fatigue, depression, or sleep.

Biological Weapons Proliferation. According to an unclassified study done by the Office of Technology Assessment (OTA), there are two regions where the BW threat is most serious: East Asia and the Middle East. (The former Soviet Union and South Asia have also been mentioned as potential trouble spots.) The fact that these regions have such a propensity for conflict is no coincidence; BW may be seen by powers in these regions as a cost-effective way to acquire weapons of mass destruction.

A BW capability may be obtained in a relatively clandestine manner due to the availability of BW components on the commercial market — and because only small quantities of biological agents are

needed for testing purposes. The ease with which biological agents can be weaponized for certain (soft target) situations is also readily apparent; it is as easy to dispense BW as it is to spray pesticides.

Biological Weapons Production. Production of basic biological agents is relatively simple from a technical and scientific standpoint if the intended use is for sabotage, terrorism, or large-scale area attacks. However, applying such weapons to tactical battlefield use is more difficult due to the need for extensive and expensive testing and development.

All supplies and equipment necessary for BW production are available openly on the commercial market. Recent developments, such as computer-controlled fermenting and freeze-drying technologies, have alleviated traditional barriers to mass-producing biological agents in short periods of time. However, safety technologies remain one of the most significant hurdles to the production of BW agents, according to William Webster, then Director of Central Intelligence. Additionally, the ability to maintain an agent's virulent qualities from the production through the storage, delivery and dissemination stages is a major challenge to those in search of BW capabilities.

Weaponization. Distinctions can be drawn between developing a biological agent and acquiring a biological weapons capability. Among the most serious difficulties in developing a BW capability is transforming a particular agent into a militarily effective tool, in part because there are no lessons upon which to draw; biological weapons have never been used in a war.

Simple dispensation systems, such as crop dusting-type methods, are effective only against relatively soft targets, such as undefended cities. Against more well-defended battlefield targets, dispersion systems must both evade defenses and quickly convert a solid or liquid payload to particles or droplets of optimum size (one to five microns) in a controlled and predictable manner without destroying the agent itself. Using an airburst method, for example, brings about the risk of killing the agents, or rendering them too small to be effective. According to one study, 95% of the biological agents in encased in warheads used by most Third World nations would be rendered useless at the detonation phase of dispersion. Precision fuzing and guidance, therefore, are essential to effective BW delivery.

The Impact of Genetic Engineering. According to an Institute for Defense Analysis (IDA) study, there are three basic impacts genetic engineering and biotechnology will have with regard to biological weapons:

1. Biotechnology can assist in developing methods for interfering with the body's natural biological processes.
2. Biotechnology can enable previously impractical organic molecules to be modified for use as biological agents.
3. Biotechnology enables more efficient mass-production techniques for both agents as well as antidotes.

Perhaps the most significant contribution genetic engineering can make is not in creating more virulent or toxic agents, but in refining and enhancing current production techniques, enabling faster, cheaper, and safer production.

Using Biological Weapons. Considering the fact that BW agents act more slowly than other weapons of mass destruction, they do not have the battlefield utility of nuclear or chemical weapons, especially considering the increasingly rapid pace of conventional warfare. This does not mean,

however, that biological agents are of no military utility; there are numerous examples of situations in which BW may be useful:

- Fixed fronts in wars of attrition;
- Reserves or massing formations;
- Airfields;
- Logistics nodes;
- C^2 centers;
- Beachheads where the intervening forces cannot or have not broken out;
- Large naval vessels.

Additionally, the issue of biological agents in the hands of terrorist groups is of tremendous concern, especially as nations who sponsor terrorism are obtaining increased BW capabilities.

Possible BW Contingencies. Although the BW threat is widespread, the following contingencies detail the regional crises which this study addresses. It is not intended to be an all-inclusive, comprehensive account.

- A direct attack on U.S. forces.
- Attack or threat of attack against U.S. allies.
- Attack or threat of attack against civilian populations in densely populated areas of U.S. allies in the region.
- Attack or threat of attack against U.S. territory.

Responding to the Growing BW Threat. Since renouncing the use of biological weapons by signing the Biological Weapons Convention (BWC) in 1969, the U.S. policy regarding BW has been one of both deterrence and arms control.

- **Deterrence/Defense.** If it is the goal of the United States to deter the use of biological agents, the ability to defend effectively against such agents is vital. Experiences during the Gulf War demonstrated that while the U.S. and allied forces CBW defenses improved steadily, at the outset of the crisis defensive capabilities were quite low. Efforts at addressing shortcomings, such as obtaining ample detection equipment and vaccines, have been quite open, in order to alert those considering the acquisition of BW of the futility of employing such agents against U.S. forces. However, defending civilian populations from BW attack is much more difficult – and in the absence of large scale civil defense programs, almost impossible.

  Active BW defense, such as military operations against possible proliferators, complements the passive defenses mentioned above. However, intelligence capabilities need to be more robust, beyond mere target identification. Attacks on BW facilities must be preceded by assessing how a particular target can be hit; for example, weighing whether sabotage by Special Operations Forces may be of more utility than a precision air attack.

- **Arms Control.** Signed in 1969 despite concerns of about its verification procedures, the Biological Weapons Convention (BWC) embodies the other component of U.S. biological weapons policy, arms control. The United States has long considered BW of dubious military utility, in part due to the fact that they have limited battlefield use. However, nations such as Iraq and the former Soviet Union have apparently decided to embark on significant BW programs, the BWC notwithstanding. Their efforts were made public only after highly unusual events, such as in the aftermath of *Desert Storm* and with the end of the Cold War, clearly demonstrating the difficulties associated with arms control efforts.

Chapter 4
Information Technology and Grey Team Wargames

Innovative use of information technologies — such as computer networks, communications media, knowledge systems, and artificial players — can enhance the effectiveness of wargames and other simulations. The guiding principle for utilizing such technologies is to make the product appear similar to those decision-makers actually use.

Computer networks permit geographically separated players to send and receive information. The network may also transmit "news reports" and intelligence estimates from a central source to individual players, or to groups that share intelligence resources. The DOD's Distributed Interactive Simulations (DIS), for example, can link agents, both human and artificial players, and objects, whose actions and effects are pre-determined (e.g, a mortar which, once fired, does nothing consciously), via a computer network — to create what is known as a virtual world. Like all wargames, DIS broadcasts actions and events to all agents, but agents must work to infer the intentions, alliances, resources, and capabilities of others. Agents can communicate freely yet privately with any other agents they choose. Computer networks, albeit less sophisticated than DIS — such as the Internet or desk-top computers supplemented by phones, faxes, and modems — can be adapted for seminar-style wargames.

Compact disk — read only memory (CD-ROM) technology permits realistic news messages to be recorded on one disk. These reports may consist of past news items which provide background for the game or be designed to adapt to the decisions of the players. CD-ROMs do suffer limitations, however. Because a large amount of data must be read from a CD-ROM for video images, these video images typically do not look very good, especially in comparison to a VCR. As the ROM acronym indicates, CD-ROMs can only read the data already written on the CDs, and devices to write on CDs are expensive. Rental or purchase of such a machine would be necessary for game control to create messages in the course of a game which specifically respond to player actions.

The foundation of a simulation exercise is information — information that characterizes or describes such concepts as the resources available to each player, their capabilities, the political situation within each player's "nation" or "group," a physical description of the region, and the background to the scenario. Because of its importance in decision making, the method of data storage, whether a database or knowledge base, must present the information players would have available to them in an actual situation concisely and in a manner readily accessible for use during a game. Databases and knowledge bases may also be used by game control to release information and monitor what information is given to each player during the course of the game.

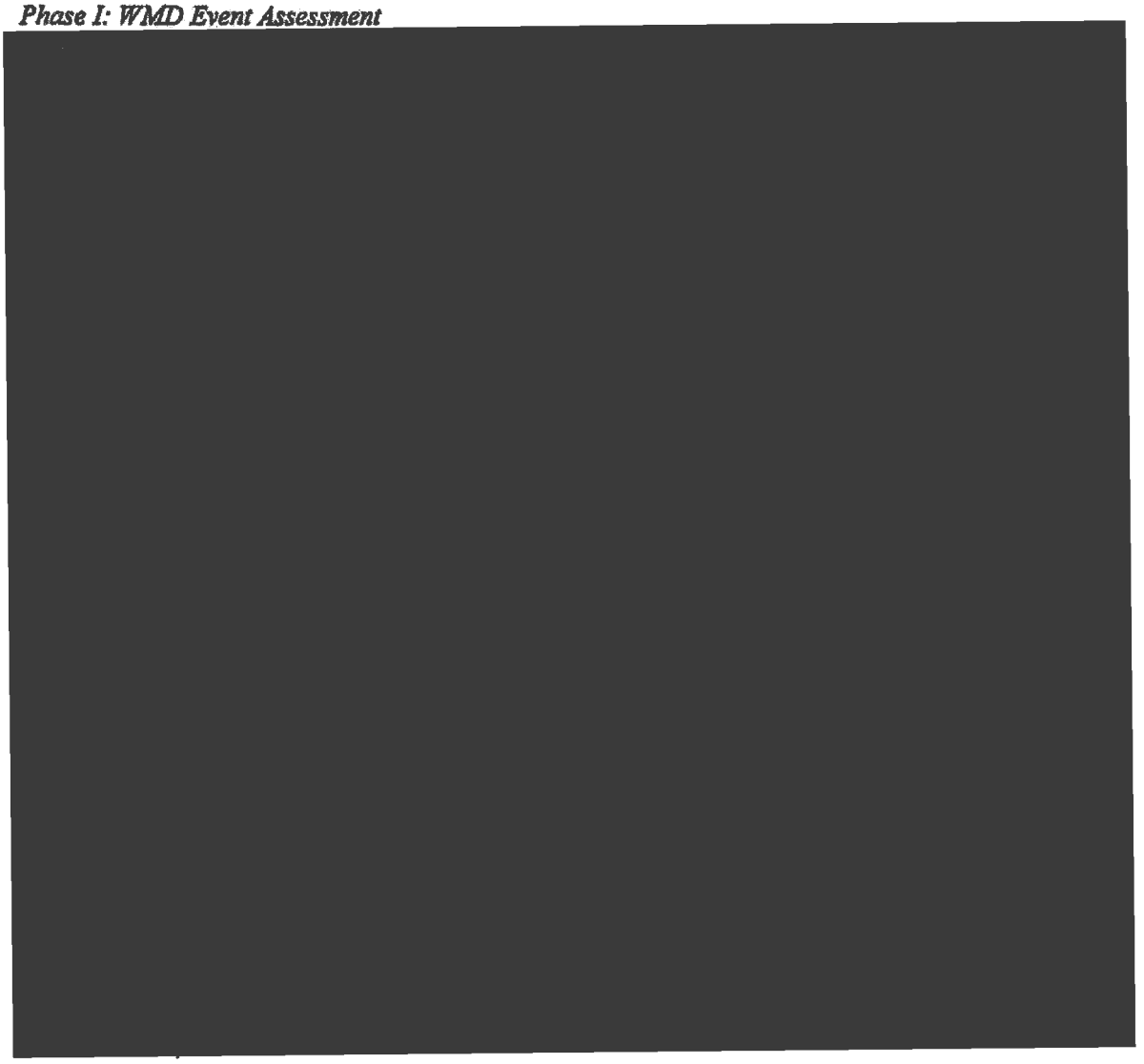
Artificial intelligence (AI) technology permits the use of "artificial" players, computer-based agents for such minor yet necessary roles as the representative of a neighboring country not directly involved in the scenario, or a subordinate of the decision-maker, such as a military commander, a political official, or an intelligence analyst. But artificial players often lack the flexibility, creativity, and common sense we take for granted in human participants. They also have difficulty understanding situations different from two-player, zero-sum games. Research continues to address these and other shortcomings of artificial agents, and this report proposes an architecture for maximum use of artificial agents in wargames given the current state of technology.

Chapter 5
Security Planning Options for U.S. Decision-Makers

The Analytical Framework

Gaming is a uniquely powerful tool through which US decision-makers can better prepare themselves to respond to future crises, including those involving WMD. Grey Team wargames, more complex and detailed than older "Blue-Red" wargames, can accurately depict dynamic real-world situations and enable players to react in a more realistic manner. Such games illustrate various technical and political characteristics of proliferator states. To improve the quality of such gaming exercises, we recommend that a three-phase analytical framework be employed to assess potential scenarios.

Phase I: WMD Event Assessment



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PURSUANT TO 5 U.S.C. § 552 (b)(5)

Conclusion

Although the end of the Cold War has reduced the danger of nuclear attack on the United States, the risk of nuclear weapons being employed against US allies and regional interests is rising. WMD employment, however, does not necessarily mean actualy military use; possession of nuclear, chemical, or biological weapons, or even aspirations for WMD acquisition, can have tremendous impact, both regionally and globally. Further complicating the issue, numerous terrorist, organized criminal elements, and other non-state actors have WMD ambitions.

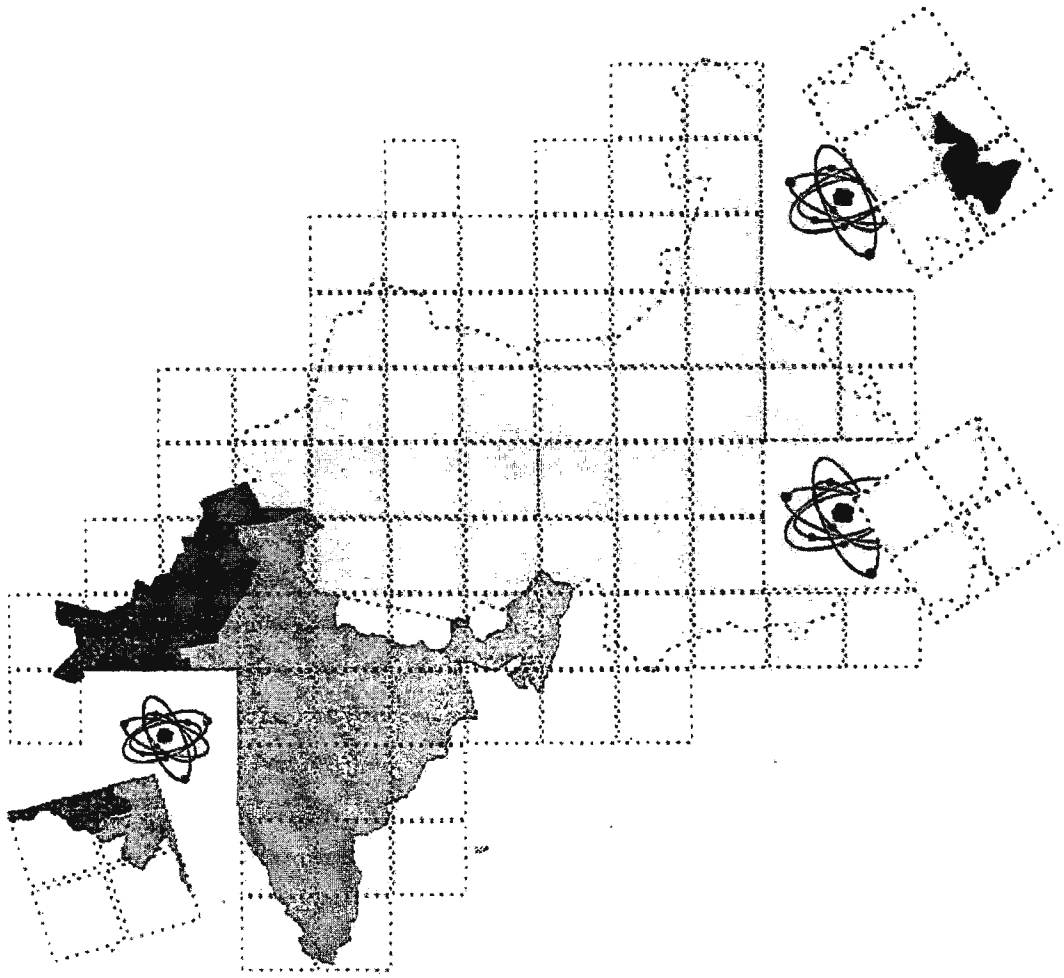
Grey Team wargame scenarios can accurately depict crises in the complicated and unclear post-Cold War era. Such simulations correspond to the reality of non-military responses to regional situations, such as economic, political, and/or humanitarian. As in actual "real world" events, decision-makers may be faced with either too much or not enough information. To further simulate the confusion of a crisis, information available may be misleading or inaccurate, and oftentimes expeditious analysis of this information is required.

The WMD Planning Operation Framework presented here can assist decision-makers, not by "rehearsing" certain scenarios, since all crises are unique, but by enabling familiarization with the

process. In a real WMD situation, proficient and trained decision-makers will be vital to the effective resolution of crises.

CHAPTER 1

WEAPONS OF MASS DESTRUCTION ROLE AND DOCTRINE: CASE STUDIES



CASE STUDIES
AN INTRODUCTION

The immediate post-Cold War period has previewed the emergence of conflicts — the Gulf War, the Somalia operation, and the conflict in Bosnia — which are considerably different from those that previously drove defense planning. The potential conflicts that the United States is likely to face in the future will range across a spectrum from major engagements on a regional scale in which the full panoply of advanced military technology is employed to humanitarian and peace support operations calling for highly tailored and circumspect forces. Neither extreme of this continuum constitutes an adequate framework for military planners; the entire range of contingencies must receive attention.

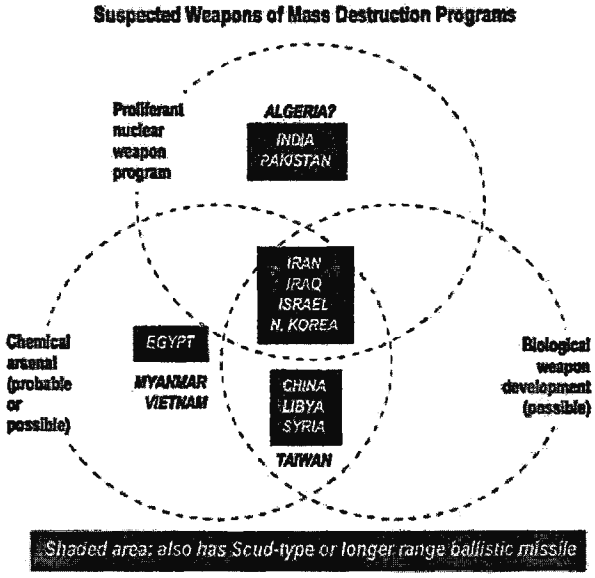


FIGURE 1—1

The proliferation of advanced military technology makes these conflicts more lethal and more dangerous. Proliferation is a major security problem because it creates an explosive combination of regions of great tension and weapons of immense destructive potential. The proliferation of advanced military technology, and of weapons of mass destruction in particular, is fostered in the current international environment by a number of factors, including the persistence of regional conflicts among increasingly well-armed rivals; weakened taboos against the use of weapons of mass destruction; industrialization and the diffusion of advanced technologies; and resistance from regional powers to arms control regimes that are perceived as discriminatory.

Proliferation, however, is not a stand-alone problem to be addressed in isolation. For efforts to stem proliferation to be successful, they must take into account two critical considerations: first, proliferation is only a symptom of a larger problem. It occurs where political and military conflict rests close to the surface. Nonproliferation efforts, therefore, must be related to and coordinated with other aspects of policy, especially efforts to address the sources of conflict. Second, proliferation is about more than just nuclear weapons; indeed, it is about more than just weapons of mass destruction. The proliferation of advanced conventional technologies can also be destabilizing and devastating should war occur. Moreover, increasingly it is not finished weapons that are proliferating, but production technologies. The problem is compounded by the diffusion of such technologies which also have legitimate "civilian" applications, such as industrial chemical or biomedical facilities. Proliferation of nuclear weapons has the potentially greatest consequences, but proliferation of nuclear weapons — or of weapons of mass destruction — should not become the sole prism through which the problem is viewed.

Conventional Arms Transfer Agreements with the Third World in 1992: Leading Recipients	
Taiwan	10,000
Saudi Arabia	4,500
Indonesia	1,400
Kuwait	1,100
Malaysia	1,000
Egypt	800
Israel	700
Singapore	600
Thailand	500
UAE	500

in millions of U.S. Dollars

FIGURE 1—2

Proliferation in the 1990s shatters the limitations on conflict that existed during the Cold War. Weapons of mass destruction provide a capability for attacking large area targets with fewer numbers of munitions than do conventional high explosive munitions. As a recent Office of Technology Assessment (OTA) study points out, states able to couple weapons of mass destruction to delivery systems, such as missiles with longer range or a greater ability to penetrate defenses, threaten more nations with higher levels of destruction with a greater likelihood of success. A Congressional study of the proliferation of biological and chemical weapons reinforces this view, arguing that the combination of smaller chemical weapons stockpiles, increased emphasis on biological derivatives such as toxins and pathogens, and missile proliferation may tend to reorient the threat from tactical targets to large, more strategic troop concentrations and the civilian population. In terms of both geographic scope and levels of destruction, proliferation expands the horror of war.

The Scope of the Proliferation Problem

A study of the Office of Technology Assessment synthesizes the major work done by nonproliferation experts to suggest the scope of the proliferation problem as it currently stands. The findings of this study relating to nuclear, chemical, biological, and ballistic missile proliferation is represented in Figure 1—1. Figure 1—2 highlights the leading recipients of arms transfers in 1992 and Figure 1—3 combines all of this information in summary form.

The summary provided by Figure 3 suggests several important observations. First, there are some regions of the world where the threats of proliferation are minimal: Latin America and sub-Saharan Africa (especially after South Africa's decision to abandon its nuclear program and adhere to the Nuclear Nonproliferation Treaty — NPT). Putting aside the question of the nuclear capabilities of the traditional five nuclear weapons states, the most immediate and serious proliferation threats beyond the former Soviet Union are the Korean peninsula, South Asia, and the Middle East. This is true both for weapons of mass destruction and conventional weapons (although East Asia has clearly become an active conventional arms market as well).

This concentration of the proliferation problem argues for a regional approach rather than defining the issue in global terms. As the OTA report argues, in the long-term, dealing with proliferation of weapons of mass destruction will require strengthened global norms; in the short term, however, proliferation problems are particular. This perspective is reinforced by the Congressional study that argues that specifically in the case of biological and chemical weapons, the capabilities exist generally as a matter of regional conflicts. It can also be argued that the immediate impact of proliferation is regional, with the spread of weapons of mass destruction having its primary impact on regional dynamics, shifting balances of power, and destabilizing the interaction between states who might be parties to a local conflict.

Even in regions where proliferation is occurring, however, the threats posed by

advanced military technology are not of equal weight. In South Asia, for example, nuclear politics have dominated the process; India and Pakistan seem less concerned about chemical and biological weapons. Second, the regions in which proliferation is occurring are also regions in which the prospect of conflict runs exceedingly high. The Middle East remains the most militarized region of the world in large part because the states of the region are still formally in a state of war. The Demilitarized Zone in Korea is now the most heavily armed border in the world, reflecting the deep-seated suspicion that reigns on both sides. The prospect of conflict in environments in which proliferation has occurred reflects the worst of the post-Cold War security agenda, but it is this prospect that gives such urgency to dealing not just with proliferation but with the political problems prompting potential conflict.

Countries with Suspected WMD Programs

Country	Nuclear Weapons	Chemical Weapons	Biological Weapons	Conventional Weapons	Ballistic Missile Capability
Algeria	✓				
China	✓	✓	✓		✓
Egypt		✓		✓	✓
India	✓				✓
Indonesia				✓	
Iran	✓	✓	✓		✓
Iraq	✓	✓	✓		✓
Israel	✓	✓	✓	✓	✓
Kuwait				✓	
Libya		✓	✓		✓
Malaysia				✓	
Myanmar		✓			
North Korea	✓	✓	✓		✓
Pakistan	✓				✓
Saudi Arabia				✓	✓
Singapore				✓	
Syria		✓	✓		✓
Taiwan					
Thailand				✓	
UAE				✓	
Vietnam		✓			

FIGURE I—3

For these reasons, it is not sufficient to examine the proliferation issue from a global perspective, but a much more detailed examination is needed of the local context of proliferation and the specific concerns of the states who are involved. For this reason, specific case studies are provided in the following section.

Acquisition of Weapons of Mass Destruction: Motivations and Implications

States may pursue programs to develop weapons of mass destruction for a variety of reasons. As with any weapon the first goal is to develop a military capability. From a military perspective weapons of mass destruction could be used either strategically or tactically. The use of weapons of mass destruction strategically would represent a dramatic attempt to force an opponent to change his fundamental calculations regarding the costs and benefits of prosecuting a conflict. Tactically, weapons of mass destruction could be used either directly to destroy or disable military targets or indirectly by compelling the enemy to change his operations to cope with the extraordinary threats posed by such weapons. The Congressional study cited earlier argues that in the military realm, weapons effectiveness is probably the most striking difference between nuclear weapons on one hand and biological and chemical weapons on the other. Nuclear weapons can have an immediate and decisive impact regardless of measures taken by an opponent. In contrast, the effectiveness of chemical and biological weapons declines if the opponent takes timely action to protect himself.

Some countries may view weapons of mass destruction as more cost effective alternatives to increasingly expensive conventional forces. As the OTA study points out, however, in most cases the quest for weapons of mass destruction is usually embedded in an across-the-board arms buildup.

Saddam Hussein demonstrated that the process at work is not one of sequential pursuit of different capabilities (e.g., "Nuclear weapons are too expensive or too difficult technically, so

I'll try CW or BW"), but the simultaneous effort to acquire the full range of weapons of mass destruction as well as more capable conventional forces.

As the case studies below demonstrate, weapons of mass destruction are pursued for reasons that, at times, are unrelated, or at least disproportionate, to their military utility. These weapons may be sought for the symbolism and prestige they confer, deterrence, or political intimidation, none of which necessarily imply a desire to use such weapons on the battlefield.

Whatever the reason for the program, weapons of mass destruction derive their leverage from their potential impact in conflict situations, whether in crises short of war or after conflict has erupted. The specific impact of these weapons can only be fully realized by examining the context in which they are placed. This is done in the case studies that follow. There are some general observations regarding their implications, however, that are appropriate to highlight at this time.

Chemical Weapons (CW)

As with other weapons of mass destruction, states pursue CW for their deterrent value, military utility, or political impact. In terms of political impact, however, international abhorrence of CW is so far ranging that little is likely to be gained politically through a CW program. Indeed, such a program is likely to make the state pursuing it more of a political pariah than enhance its international stature.

Regarding deterrence, CW has sometimes been labeled the "poor man's nuclear weapon," suggesting that chemical weapons can be used to offset another state's nuclear capability. Arab rhetoric, for example, portrays CW as a potential counter to Israel's nuclear weapons, and the Arabs' refusal to sign the Chemical Weapons Convention (CWC) is linked to the lack of movement by Israel toward joining the NPT.

Whether CW actually provides a deterrent, however, is debatable. Certainly, Saddam Hussein's CW threats did nothing to deter the operations of the coalition. In addition, suggesting a tradeoff between CW and nuclear programs reflects a lack of appreciation of the role that nuclear weapons play for a country such as Israel which views them as the ultimate guarantor of their security, a role that no CW could play. This imbalance between the perceived value of the respective assets makes any tradeoff between chemical and nuclear weapons highly unrealistic.

On the issue of military utility, there is some debate as to whether Saddam Hussein used CW during *Desert Storm*. If so, however, their use was relatively isolated. Saddam certainly did not use CW in a strategic sense — for example, to bring Israel into the conflict by attacking Israeli population centers which would have put the anti-Iraq coalition under enormous pressure. Nor did Iraq integrate CW into an offensive concept of operations as it did during the war with Iran when CW were used to good effect against an unprotected opponent.

CW does have some indirect military utility in that their use can change an opponent's military behavior, thereby reducing his effectiveness. The need to don protective gear in the face of a credible CW threat, whether or not that threat is ever implemented, can severely degrade performance. In the NATO case, for example, estimates suggested that the donning of protective gear to confront Soviet capabilities could have reduced the effectiveness of NATO forces by more than 50 percent.

Iraq's use of CW against its own Kurdish population is an example of a state with CW who may be inclined to use it, at least in some conflicts. In internal conflicts, it is less likely that government opponents will have access to CW. In situations in which state authority has collapsed, however, it is conceivable that more than one party to the conflict could gain access to stockpiled CW. It must be recognized, however, that effective use of CW on the

battlefield demands tons of agent to which non-state actors are not likely to have access. More limited use of CW against population centers nevertheless, remains a serious problem if non-state actors were to acquire CW, if only for its psychological impact. It is possible, therefore, that U.S. forces involved in a regional conflict could face the prospect of having to operate in a CW-contaminated environment whether or not they were the object of a CW attack.

Biological Weapons (BW)

Biological weapons may become the weapon of mass destruction of choice in the future. BW have potential strategic impact, are relatively inexpensive and easy to produce, and illicit programs are comparatively easy to conceal.

BW have not been without their problems, however, problems that have made them considerably less attractive as military instruments. Weaponizing BW, for example, has been difficult due to agent instability and its rapid decomposition. Another problem is the uncertain battlefield impact of BW given the susceptibility of BW agents to vagaries of climate such as rain, wind, and sunlight. Moreover, the speed and extent of BW dissemination in any particular case is not easy to predict.

Some analysts have suggested that the impact of rapid advances in genetic engineering and biotechnology could make possible the creation of "superagents" less affected by these difficulties. A more likely prospect, however, is that scientific and technological advances will make it easier to do things that have been difficult in the past. Such advances, for example, could prompt more rapid production of BW agents, thereby reducing the need for storage during which time BW can degrade. They could also lead to the development of more robust agents themselves less susceptible to degradation. As analyst Brad Roberts argues, "the primary effect of the biotechnology revolution will be to raise questions about some of the assumptions and perceptions that underpin U.S. policy — especially the view that anyone studying BW is likely to conclude, as the United States did, that their utility is narrow and difficult to achieve."

BW potentially pose a serious threat to U.S. projection forces as well as to those of its allies. New challenges will have to be met with regard to deterrence and defense as a result of innovations in the development and use of BW.

Another aspect of the BW threat, especially from non-state actors, is BW terrorism. Many of the more effective agents can be found in nature in abundance and can be produced in sufficient quantities for terrorist use by relatively primitive means. Regarding means of delivery, the most effective method to affect large populations is via aerosol clouds, and aerosol technology — for example a pesticide spray tank attached to a *Piper Cub* airplane — is very easy to obtain. The scenarios for BW terrorism are as many as one's imagination. These issues are reviewed in detail in Chapter 3 of this study.

Nuclear Weapons

Many of the concerns associated with BW hold for nuclear weapons as well. They are both a military and terrorist threat with potentially major political ramifications.

In the context of regional conflict, the proliferation of nuclear weapons raises three major risks:

First, a state with nuclear weapons might be tempted to resort to their use if its survival was at stake. One scenario that provokes a threat to a state's survival is a successful internal conflict seeking to dissolve the state or separate some of its parts. In such a situation, however, a major question that emerges is whether a state would use nuclear weapons against its own people.

Another scenario in which a state's survival may be threatened is defeat in a major regional conflict against an adversary sworn to its

destruction. Even in this case, however, whether a nuclear state would resort to nuclear weapons is the product of complex factors that must be examined closely, as is done in the accompanying case studies.

Second, a crisis sparked by regional conflict could spin out of control and result in the use of nuclear weapons, even when the issue of ultimate survival was not necessarily at stake. There is a debate, for example, as to how close India and Pakistan came to the nuclear brink in 1990 during a flare-up of their dispute over Kashmir. Whether or not South Asia was on the brink of a nuclear confrontation, what is striking in the South Asia case is the confidence of the leadership in both countries in their ability to manage the nuclear relationship even at the height of severe tension and in the midst of deep crisis. It is not a confidence necessarily shared by others.

Third, a variant of the Russian "loose nukes" problem could emerge. The security of nuclear programs, especially those that are illicit and undeclared, must be questioned, especially in the turmoil that would likely surround a major regional or internal conflict. Such turmoil may create the opportunity for non-state actors to secure access to nuclear weapons. The problem, however, is not limited to the weapons themselves, but to weapons grade nuclear materials as well, access to which is considered the most difficult dimension of developing a nuclear weapon.

Employment of nuclear weapons, or any weapon of mass destruction, does not necessarily always mean detonation; threats of use can also strongly influence a particular situation. Such threats may be made in order to conclude a crisis on favorable terms or to deter external intervention that may tilt the outcome in an unfavorable direction. This impact was suggested in an oft-quoted observation by a former Indian Army general who suggested that a major lesson of the Persian Gulf War was not to fight the United States without nuclear weapons. Others have modified this comment to suggest that a state with nuclear weapons may not have to fight the United States given the impact of its threatened use on U.S. political calculations.

Confronting weapons of mass destruction would obviously make U.S. involvement in regional conflicts, whether unilateral or in coalition with others, both a much more difficult political decision and a much more dangerous military operation. The heightened risk of casualties could prevent the development of necessary political support. An increased risk of attack against the United States itself, particularly with nuclear or biological weapons, could also accompany such a decision. The populations, economic infrastructure and military capabilities of allies would be at great risk, probably facing the prospect of bearing even heavier burdens than the U.S. if attacked. Such a prospect could lead to decisions regarding access and logistics that do not allow U.S. forces to operate effectively. Saudi willingness to allow U.S. forces to use its ports, for example, in the face of Iraqi threats to use an acknowledged capability is highly questionable.

The proliferation of weapons of mass destruction to regional states and non-state actors is of vital national security interest to the United States for several reasons. First, it potentially engages the security concerns of major and medium powers. It is critical to know in what cases, and how, those interests will become engaged. Second, it is crucially important to understand the dynamics of potential confrontations between proliferators and other states in its region, as well as with major non-regional powers who nevertheless have strong interests in the proliferator's area. Third, it is also vital to understand how proliferation might shape the cost/benefit analyses of particular courses of action for the proliferator, the other states in its region, and external powers who might face these newly developed capabilities.

The factors shaping a state's decisions regarding development or acquisition of weapons of mass destruction, or what to do with such weapons when acquired, are extremely complex. So also, accordingly, are the avenues through which the United States can potentially influence both sets of decisions. A critical factor in U.S. preparation for future conflicts, therefore, is a thorough and detailed understanding of factors shaping the decision-making process in countries of concern regarding potential weapons of mass destruction proliferation. Contributing to such an understanding is the purpose of this study.

CASE STUDY
THE PEOPLE'S REPUBLIC OF CHINA

Introduction

China considers itself a responsible nuclear-weapons nation with a small nuclear arsenal and a highly principled declaratory policy that it has not violated over several decades. China has also declared that it does not possess chemical and biological weapons but has not convinced many observers of the truth of that statement. The present uncertainties in the status of the Chinese leadership, problems in the succession, and the secretive nature of the Chinese Communist Party and governmental processes, especially with respect to weapons of mass destruction, leave many questions unanswered and many concerns. Among these is China's demonstrated intent to continue to improve its nuclear arsenal, as recent testing has confirmed. Immediately relevant is the issue of how a decision to employ weapons of mass destruction would be made given the probable incompetence of paramount leader Deng Xiaoping and the doubtful stature of those holding titular power.

Despite official statements about support of worldwide nuclear disarmament, Beijing's implicit intentions with respect to weapons of mass destruction, and especially nuclear weapons, remain a troubling, if largely dormant, enigma. China's burgeoning economy and concomitant military modernization have drawn Western attention and created open concern among China's Asian neighbors. China's increasingly capable conventional forces, with its nuclear arsenal ever present as a backdrop, allow China to continue to pronounce itself opposed to the use of military force while increasing its ability to exercise coercive diplomacy through the mere existence of its greater economic and military power.

However, China has not been reckless in its nuclear policies and practices, or those related to chemical and biological warfare. Further, China increasingly seems to covet its enhanced status as a responsible member of the community of nations, a factor that may further reduce the likelihood that China could become the second nation in history to employ nuclear weapons or join those nations that have employed chemical weapons on a large scale.

Weapons in the PRC Inventory

Nuclear Warheads and Delivery Systems

The People's Republic of China's nuclear warhead stockpile is similar in number to that of Britain and France. Although the count is uncertain, the Natural Resources Defense Council estimates that China's stockpile is as great now as it has ever been, roughly 425 warheads held in 1993 of the total of 600 produced by China over the last three decades. If the highest estimates are considered credible, China's arsenal could be around 1,000 warheads, as compared to as many as 45,000 held by the former Soviet Union.

Possibly even more uncertain than the number of warheads in the Chinese arsenal is the matter of whether China has tactical nuclear weapons. There are accounts published in the West describing very large exercises conducted by the People's Liberation Army that include simulated delivery of tactical nuclear weapons against Soviet forces invading China from the north. Tests of low yield weapons (less than 20 kilotons and possibly as low as 2 kilotons) have been reported, and a "neutron bomb" test in 1988 has been widely reported. Despite exercises and warhead testing, however, it is not certain that China has produced these weapons or even that the leadership has made a decision to do so. We do know that there has been a prolonged internal debate on the matter. There are, however, no known technical barriers to Chinese development of tactical warheads.

AIRCRAFT

	Type	Year Deployed	Number	Range (km)	Payload(kg)	Warhead x Yield	Total Warheads
Hong-5 (B-5)	Il-16 *Beagle*	1968	30	1,200	2,000	1 x bomb	
Hong-6 (B-6)	Tu-16 *Badger*	1965	120	3,100	4,500	1-3 x bombs	150 Bombs
Qian-5 (A-5)	MIG -19 *Farmer*	1970	30	400	1,500	1 x bomb	
Hong-7 (B-7)	domestic design	1993?	0	?	?	1 x bomb	

- Yields estimated between 10 kt and 3 mt.
- Figures are for nuclear-configured bomber aircraft only - hundreds of bombers are deployed in non-nuclear versions.
- Aircraft range is equivalent to combat radius.

LAND-BASED MISSILES

	Type	Year Deployed	Number	Range (km)	Payload(kg)	Warhead x Yield	Total Warheads
Dong Feng-3A/CSS-2	liquid/mobile	1971	50	2,800	2,150	1 x 3.3 mt	50
Dong Feng-4/CSS-3	liquid/silo/rollout	1980	20	4,750	2,200	1 x 3.3 mt	20
Dong Feng-5A/CSS-4	liquid/caves	1981	4-12	13,000+	3,200	1 x 4-5 mt	4
Dong Feng-21/CSS-5	solid/mobile	1985-6	36	1,800	600	1 x 200-300 kt	36
Dong Feng-31	solid/silo-based	late 1990's	0	8,000	700	1 x 200-300 kt	?
Dong Feng-41	will replace DF-5	c. 2010	0	12,000	800	MIRV-?	?

- The Chinese define missile ranges as follows: short range - less than 1,000 km; medium-range - 1,000-3,000 km; and long-range - 3,000-8,000 km; intercontinental range - over 8,000 km.
- The nuclear capability of the Il-9 is unconfirmed and not included

SUBMARINE-BASED MISSILES

	Type	Year Deployed	Number	Range (km)	Payload(kg)	Warhead x Yield	Total Warheads
Julang-1 (CSS-N-3)	solid/one SSBN	1986	12	1,700	600	1 x 200-300 kt	12
Julang-2 (CSS-N-4)	solid/one SSBN	late 1990's	0	8,000	700	1 x 200-300 kt	?

- Two JL-1 SLBMs are presumed to be available for rapid deployment on a single *Golf*-class test submarine (SSB)

TACTICAL WEAPONS

	Year Deployed	Number	Range (km)	Payload(kg)	Warhead x Yield	Total Warheads
Artillery/rockets/ADMs	mid- 1970's				low kt	150

FIGURE 1—4

Nuclear testing

The PRC tested its first fission weapon in 1964, and then a small fusion device in 1966. In 1967, less than three years after the fission test, the first multistage thermonuclear test (3 megatons) was conducted; this brief interval was significantly less than half the time between the first fission and first multistage thermonuclear detonations by the other four acknowledged nuclear-weapon countries. The largest of China's 23 atmospheric tests was a 4-megaton explosion in 1976. China began underground testing in 1969 and has continued these tests (sixteen to date), with two conducted in 1992. One of these, in May of 1992, was a test of about 500-kilotons yield. China's last test, its thirty-ninth, was in early October of 1993. According to the Natural Resources Defense Council, Britain, Russia, and France combined have conducted 969 tests. Chinese foreign minister Qian Qichen recently told the UN General Assembly:

> China has always exercised great restraint in nuclear testing. The number of our tests is the smallest among all nuclear powers. . . . The Chinese government has always stood for a total test ban within the framework of the complete prohibition and thorough destruction of nuclear weapons. We support an early start of negotiations for a comprehensive nuclear test ban treaty and will work in common with the other countries towards a comprehensive nuclear test ban at an early date.

Immediately after its October 1993 underground nuclear test, the PRC government issued a lengthy statement defending its testing record. The text included the following:

> After a "Comprehensive Test Ban Treaty" is concluded and comes into effect, China will abide by it and carry out no more nuclear tests.

Strategic nuclear delivery

It is generally accepted that China now has deployed a total of eight or possibly ten ICBMs at two or more sites. The deployed ICBMs are

the *Dongfeng* (*East Wind*)-5, referred to in the West as CSS-4. This missile is liquid fueled and has a range of 12,000 kilometers. Among the deployed missiles are at least four upgraded missiles, termed the *Dongfeng* (*East Wind*)-5A, capable of carrying a payload of 3,200 kilograms over 13,000 kilometers. Although a Multiple Independently-Targetable Re-entry Vehicle (MIRV) capability may have been developed for the DF-5, it probably has not been deployed. An additional ten DF-5s are estimated to be in the arsenal, along with about thirty older DF-4 (CSS-3) ICBMs with a payload of 2,200 kilograms and a range of 4,750 kilometers or more.

Also deployed are 60 to as many as 125 IRBMs. The IRBMs are liquid-fueled *Dongfeng*-3 missiles, designated CSS-2 in the West, with a range of 2,800 kilometers and a payload of 2,150 kilograms (the same type that the PRC sold to Saudi Arabia in the late 1980s).

In addition, the PLA Navy has a single (not two, as is often asserted) ballistic missile submarine (SSBN), the *Xia*, with twelve missiles. The *Xia* SSBN carries the *Julang* (*Giant Wave*)-1 (CSS-N-3) solid-propellant missile, with a range of 1,700 kilometers and a payload of 600 kilograms. A land-mobile version of this 14.7-ton missile is called the DF-21 and is said to be deployed. Some of China's obsolescent *Hong*-6 medium bombers and possibly the *Hong*-5 and *Qian*-5 tactical aircraft are nuclear capable.

TNW delivery

In addition to tactical aircraft, tactical missiles, and artillery, Chinese interest in nuclear mines (atomic demolition munitions, ADM) has been evident for almost two decades. These devices were considered as means to close mountain passes, divert rivers, and otherwise impede enemy progress. As with tactical nuclear weapons, the Chinese are mute on the matter of possible delivery vehicles for such weapons.

Expected enhancements of nuclear delivery

Replacement of the liquid-fueled missiles with solid-propellant missiles is planned to be completed by 2010. Beginning in 1985, attention has been directed to an important step in this process: development of a unified (land- and sea-based) second-generation solid-propellant strategic missile. The land-based version is called the DF-31, and the sea-based version, the JL-2. It is expected to carry a payload of 700 kilograms over a range of 8,000 kilometers.

This sea-based JL-2, too large for the *Xia* SSBN, is intended for deployment in a new class of SSBN said to be under development. However, Chinese enthusiasm has not been great for the use of SSBNs. Many arguments have been offered by officials and designers against reliance on SLBMs. It is highly unlikely that the PRC would undertake significant expansion of its SSBN force, which has consisted since the early 1980s of only one submarine with now another possibly under development or construction. The *Xia* SSBN was launched in 1981 and did not reach its still dubious operational status until 1987. China is believed to have successfully launched only one SLBM from the *Xia* in 1988 after other unsuccessful attempts.

Following early work on the DF-31, preliminary research began in 1986 on the longer-range *Dongfeng*-41, a three-stage solid-propellant missile to replace the DF-5s. It would have a range of 12,000 kilometers, a payload of 800 kilograms, and be mobile. The M-9 and M-11 tactical missiles, which have received notoriety over concerns that the Chinese are transferring them to Syria and Pakistan, both can carry payloads of 500 kilograms, the M-9 to a range of 600 kilometers and the M-11 to 300 kilometers. Deployment and warhead fitting plans are unknown.

Accuracy of their missiles remains a significant problem for Chinese scientists. In our terminology, their missiles would be called "counter-value" because of their poor accuracy

and their consequent inability to destroy hard targets. The Chinese are reportedly attempting to use man-made satellites rather than stellar (celestial) positioning, having been impressed with the U.S. positioning systems employed in the Gulf War. This report tends to confirm that the Chinese are attempting to find a means to improve accuracy.

Biological and Chemical Weapons

China has asserted repeatedly, if not necessarily believably, that it does not possess chemical and biological weapons. In a 1984 letter to then-U.S. Secretary of State George Shultz, then-Foreign Minister Wu Xueqian wrote:

> . . .China was one of the victims of biological (bacteriological) weapons. China has never produced and possessed such weapons, nor will it do so in the future. . . . The Chinese government also hopes that a convention on the all-around prohibition and complete destruction of chemical weapons will be formulated as soon as possible.

In 1989 Zhang Zai, the delegation leader to a conference in Australia, said:

> The Chinese government and chemical industry lend wholehearted support to the objective of complete prohibition and thorough destruction of chemical weapons. China neither possesses nor produces chemical weapons. China has all along attached great importance to and taken an active part in the negotiations on the Chemical Weapons Convention in Geneva, working constructively for its early conclusion.

Western journalists and intelligence analysts remain unconvinced. They contend that there is evidence of the production and testing of chemical and biological agents in China. Several authors have suggested that China's vivid memory of the use of chemical and biological agents by Japan prior to World War II might lead Chinese military planners to demand an offensive capability. A 1993 Congressional Office of Technology Assessment publication places China on the list of "countries generally reported as having undeclared offensive chemical and biological warfare programs" but states that the list is not authoritative. The *International Handbook of Chemical Weapons Proliferation*, published in 1991, describes China as "only a minor suspect for offensive CW capability." The *Handbook* goes on to cite Congressional testimony in 1988 and 1989 by successive Directors of Naval Intelligence, Rear Admirals Studeman and Brooks, labeling China as one of four Asian "states developing chemical warfare capability" or having "achieved CW capabilities."

The Chinese admit to nothing beyond testing of defensive measures against such agents. (They manufacture and openly exhibit and advertise for sale protective equipment.) There have not been, at least in recent years, attempts to carry out on-site inspections to verify Chinese assertions. If such a request were to be made, the response would be predictable. Consider, for example, the 1990 statement by Foreign Minister Qian Qichen in Geneva:

> The key to the thorough settlement of [the issue of] chemical weapons is that the countries possessing the most chemical weapons must destroy all these weapons as soon as possible, still less should they manufacture or develop new chemical weapons. China has consistently advocated the total prohibition and thorough destruction of chemical weapons.

In the 1991 negotiations that led to the Chemical Weapons Convention, China's position (that a challenging nation should prove the validity of its case before an on-site inspection) raised concerns about China's willingness to join consensus on the final text of the agreement. China, however, did sign the Convention in January 1993 and it is also a signatory to the Biological Weapons Convention which came into force in 1972.

After citing and describing numerous reports from over the years that suggest or assert that China has CW weapons, the *International Handbook on Chemical Weapons Proliferation* concluded:

The public record lacks substantiation for any CW stockpile newer than leftovers from World War II. Allegations are primarily based, not on CW production or storage facilities, but on rumors of use or transfer of CW agents or munitions, or on logical leaps from China's conventional forces and strong CW defense effort.

China seems very unlikely to pursue an offensive CW capability as a "poor man's atom bomb." China has conventional superiority over all its neighbors except the Soviet Union [this was written in 1991]. And against the latter, China has sufficient nuclear weapons for a deterrent, while chemicals would have minimal impact on Soviet forces if China ever chose to attack. But it is possible that an offensive CW capability has been or may be acquired as an in-kind deterrent against the Soviets, in order to minimize the pressure on China to use its nuclear weapons in a future conflict if the Soviets sought to counter Chinese mass attacks with chemical weapons.

CW and BW delivery means

In addition to the missiles described above (although no allegations have surfaced concerning CW or BW warheads for these), the PLA has a number of tactical missiles resembling the *Silkworm* that could be employed in this role. At least three obsolescent PLA aircraft are candidates for delivery of chemical weapons. The 120 *Hong*-6 bombers (a version of the Soviet Tu-16) have a combat radius of almost 2,000 miles and can carry almost 20,000 pounds of bombs. The 250-300 *Hong*-5 bombers (*Ilyushin*-28) could strike to a range of over 500 miles with a bomb load of almost 7,000 pounds. The 500 *Qian*-5s have a radius of about 400 miles carrying over 2,000 pounds of bombs.

Factors in decisions to employ WMD

Military doctrine

Before examining in some detail the strategic and tactical nuclear doctrines of the PRC, it is appropriate to consider the overall military doctrinal context into which these two sub-doctrines fit. There is very little to be learned from comparing Chinese military doctrine with that of the United States or other developed countries. Not only is the PLA, and each of its components, far behind in technology and capability, but the Chinese armed forces are just beginning to try to define their roles beyond regional and border defense.

Two concepts define China's armed forces at this point in Chinese history: *modernization* and *support of national economic development.* President Jiang Zemin, speaking as Party General Secretary and Chairman of the Central Military Commission, told the military members of the National People's Congress in early 1993:

> Only by building up a strong army commensurate with our national status can we guarantee that national security will be safeguarded and that socialist modernization can smoothly progress.

The concept of how best to support the continued economic development of China must include creating or ensuring a regional (or even worldwide) defense environment in which a territorially secure China can both maintain commerce with its trading partners and exploit the seabed resources off its long coastline and beyond. Further, in the view of Party and government leaders it must, without making a great noise audible to Western ears, ensure that internal stability is preserved. There is the additional factor that the rapidly expanding economy and very sizable foreign exchange reserves, which have become the PLA's priority objective to perpetuate, now mean that funds can be made available to modernize China's armed forces.

Modernization, the PLA's obsession

In the eyes of Chinese generals and flag officers, the need for modernization is clearly the foremost priority. The PLA, which includes the PLA Navy and PLA Air Force (PLAAF), is backward in its technology, training, command and control, intelligence, and other key areas. When compared with Western forces or, possibly more important, when stacked up against the forces of Japan, Taiwan, and Russia, the qualitative lag in many key areas is

measured in decades, not just years. As imprecise as such measurements necessarily are, especially when the Chinese try hard to hide their obsolescence, many analysts assert that the Chinese are 20 to 30 years behind the state of the art. This is not to say that the Chinese forces are not formidable to many of the PRC's neighbors. These specific cases of clear relative superiority, however, do not bring consolation to Chinese leaders; China does not have clear superiority over those that concern it most. Further, the PLA's leadership was stunned by the success of the advanced systems and precision weapons employed in the Gulf War. If the Chinese did not realize it before, they now inescapably face the reality that their forces would likely be decimated on the ground, in the air, and at sea—in some cases before they had even detected the approach of an adversarial force.

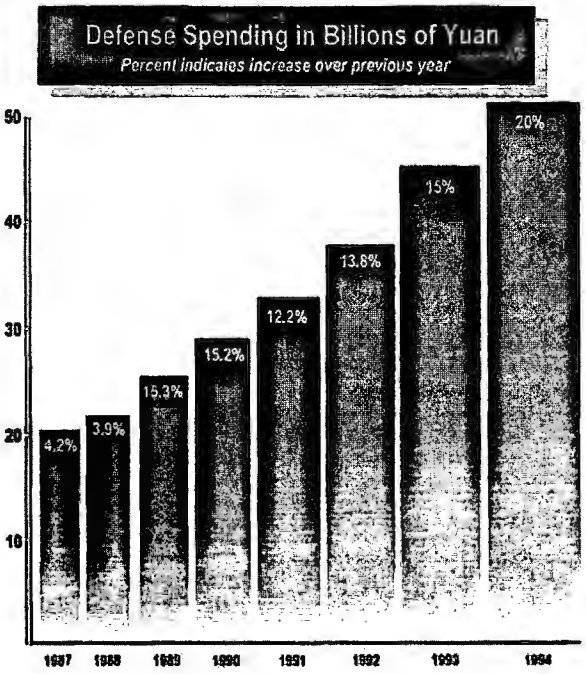


FIGURE 1—5

Budget growth

An essential element of the ongoing modernization of the PLA is the growth of the Chinese defense budget. When the declining Chinese defense budgets of the 1980s are recalled, the growth since 1989 is all the more remarkable. In three of the five published defense budget totals since that time, the increase over the previous year has been over 15%. Overall, not taking inflation into account, the portion of the PLA budget that is made public is twice as large in 1993 as it was in 1987, $7.65 (¥42.5) billion as compared to less than $3.78 (¥21) billion. (By various estimates, these amounts constitute only 40-50% of the expenditures on the categories of defense items similar to those covered in the U.S. defense budgets. Many items including procurement of new equipment, research and development, certain maintenance costs, and pensions may not be in the published Chinese budget.)

There is an additional factor that is apparently not included in the public calculations of defense outlay that makes the increase since the 1980s even more dramatic: the combined income from arms sales, the production by defense industries of civilian goods, and PLA commercial ventures. Each of these three areas is big business, and each has increased greatly since 1987. Although statistics are not made public in these areas, the information that is available makes the point dramatically: arms sales in 1992 were about $2.5 billion. The output of China's roughly 50,000 military factories is now about 75% civilian commodities, up from only 8% in 1979. The changes in production from tanks to trucks and from bullets to bicycles are continuing and are expected to be as much as 80% of the output of these military factories in 1994. David Shambaugh, an authority on PRC defense policy and editor of *China Quarterly*, estimates that in 1989 military factories produced ¥20 billion ($3.6 billion) worth of civilian goods and that possibly 60% of that income reverted to the PLA; he thinks it is reasonable to assume that twice that amount, roughly the equivalent of the announced defense budget, will be earned by these factories in 1993. It is not clear what portion of this is profit and what portion goes to

the cost of materials and operation of the factories.

The budget growth saga does not end there. The PLA, in a concept very strange to the West, owns and operates hotels, restaurants, airlines, farms, and light industries that process food, make shoe polish and alarm clocks, and compete with local businesses in many ways. It is estimated that there are more than 10,000 such enterprises, employing close to a million soldiers, sailors, airmen, family members, retired military people, and others with total earnings of over $5.41 (¥30) billion—having increased 15% or more annually since the mid-1980s. Many of these activities contribute directly to the well-being of the troops and units that run them; the pigs raised at the division's farm are butchered and eaten there with the excess sold locally, for example. However, Shambaugh estimates that these activities could be adding as much as $6 (¥34) billion to the funds available to the PLA.

Trying to sort out these figures, we see that the actual defense budget could be over $20 (¥100) billion and that the real increases over budgets of the last decade are truly significant. As mentioned at the outset, it is probably almost meaningless to compare this estimate of an absolute total to Western defense budgets because of cultural, structural, and other differences in the circumstances of various defense establishments. It is probably more meaningful to consider that a similar compilation of possible total funds available to the PLA in 1987 produces a figure well less than $10 billion and more likely less than $8 billion. The published budget shows dramatic growth of over 100% over that period; educated guesses at the real totals indicate that growth may be in the range of 200%.

But there is still more to tell. Private conversations with Chinese military officials and personal observations reveal that it has been the policy and practice of the PLA since the beginning of this decade to reduce active manpower and retire older equipment so as to apply the savings to the procurement of modern systems and equipment, making a larger percentage of the budget available for modernization. An additional noteworthy development is the accumulation in recent years by the PRC of $20 to $40 billion in foreign currency reserves. There is no doubt that modernization is the keystone of today's PLA and that the PRC now has the wherewithal, at least from a financial aspect, to carry it off.

Chinese leaders do not seem to appreciate the concerns felt by China's neighbors and others about its modernization program. One hears in conversations with senior military officers and in Chinese think-tanks candid explanations that unwittingly reveal this lack of appreciation or seeming naiveté about the concerns of neighboring countries. As one American specialist on China has recently asserted, the Chinese appear to believe their own propaganda that the PLA is backward and does not threaten anyone. An example of this conviction appeared in September in *Ta Kung Pao*, the Hong Kong newspaper that is an authoritative mouthpiece for Beijing. The article was responding to recent criticism of Chinese policies by President Clinton:

> China has clarified time and again that it will never seek hegemony. The people around the world can see that China has no troops stationed abroad, has no military bases, and does not constitute a threat to others. China has no alternative but to develop its national defense capability, but its investment in this respect is quite limited. In 1993, China's national defense budget is only $7.3 billion, less than three percent of the United States', which stands at $274.3 billion. Calculated on a per capita basis, China's national defense expenditure is $6, whereas the United States' is $1,100. Obviously, the fabrication about "China's threat" does not hold water. But they want to use this to force China to give up its national defense construction. A mere look can lay bare their real intentions.

Technology acquisition

China's indigenous ability to develop technology and to apply it to weapon systems is improving and should not be disregarded.

Significant advances have been achieved within China in a number of areas, apparently without significant outside help—or, in some cases, absent recent voluntary or intentional help from other countries. These areas include ballistic and cruise missiles capable of delivering WMD and nuclear warheads. However, one of the most important aspects of the modernization program is the Chinese success in acquiring from Russia and others the technology and assistance it needs to try to leap-frog over its 20-to-30-year gap in so many important areas. This effort has been greatly facilitated by the "fire sale" of military equipment in Moscow and other parts of the former Soviet Union and the availability of scientists and technicians from these countries willing to aid China and willing in many cases even to come to China to live and work.

The most widely publicized example of acquisition of a specific advanced weapon system is the purchase of 26 Su-27 aircraft (with two or three times that many more to come) that, even in these small numbers (about 1% of the PLAAF's largely obsolescent tactical aircraft fleet), will allow the Chinese to assert air superiority over the disputed areas of the South China Sea, specifically the Spratly Islands archipelago. Other important possible arms purchases include antiaircraft missiles, modern diesel submarines, transport aircraft, and many other systems. Some of the areas do not draw attention in the form of headlines around the world but are equally important. For example, the Chinese acquired from the U.S. during better times in the bilateral relationship several General Electric LM-2500 marine turbine engines and have only recently installed this engine in their latest *Luhu* class destroyer. Sanctions imposed after June of 1989 preclude acquisition of more of these engines from the United States. The Russians have made compelling overtures to the PLA Navy, offering to sell them a substitute engine for this class of ship and possibly other naval uses. The Russian engines fall short of the efficiency and reliability of the widely acclaimed LM-2500, but it would certainly allow the Chinese to continue to move away from antiquated steam powerplants and lower-powered diesel engines they have used before and to stick with their decision to have their new generation of fast surface combatants powered by modern gas turbine engines.

The air routes between Moscow and Beijing have been filled with military and scientific delegations headed in both directions. Not only are they discussing specific systems such as those just described, but also they are arranging for Chinese access to broad areas of technological information. Russia and other countries of the former Soviet Union are not the only sources of such aid. Much attention has been given by analysts and the press to the developing military technology relationship with Israel and what this is doing to further the development in China of a new fighter aircraft and antiaircraft missiles. Before the Tiananmen Square incident, the United States was actively involved in at least four programs to provide key systems to the PRC: an upgrade to their F-8 fighter avionics that would have given them the look-down/shoot-down capability they have now obtained with the Su-27; delivery on an "as-is" basis of the "Firefinder" counter-battery radars; antisubmarine homing torpedoes; and large caliber fuse manufacturing equipment. Chinese officers say openly to military visitors that they desperately want and need, for example, U.S. assistance in development of a modern sonar and homing torpedo. To Chinese officers and their civilian leaders, the need to have a modern force is self-evident and so are the purposes for which such a force is intended.

New roles and missions

The deputy commander of the PLA Navy, Vice Admiral Chen Mingshan, provided a comprehensive briefing on the guidelines for building his Navy—a modern Navy "with Chinese characteristics." The following is an extract from a report of the briefing:

...oceans are important assets upon which mankind relies for its existence and development, and the oceans are also tremendous treasure houses of

resources. The political, economic, scientific and cultural centers of littoral states are all located in their coastal regions, with the ocean serving as a screen to cover and protect cities and regions of strategic importance. The oceans are of great significance in adding depth to national strategic defense and land defense stability. . . . As the oceans become more important in place and role, the present worldwide scrambling for maritime rights is becoming more intense. In these scrambles a miscalculation from any side may cause a regional war at sea. In this kind of conflict or confrontation the ocean will be the main battlefield, with navies playing the key roles. If war breaks out between coastal states, even if the main battlefield is on land, the sea will be an important supporting battleground. . . . The multifunctional and multipurpose nature of a navy thus allows it to promote a country's foreign policy in peacetime and to operate in three dimensions—sea, land, and air—in war.

Admiral Chen went on to say that a navy is closely bound up with the national economy. A navy is not only a product of a country's economy, science and technology but is also an immediate protection of its maritime economy and foreign trade. . . . Because the oceans are a treasure house of resources, international competition and confrontation are in the process of being switched from land to sea. China's maritime territory is very rich in natural resources and the tapping and exploitation of these will have much to do with the future of China as a nation. There exist disputes concerning the ownership of islands and the demarcation of maritime territories between China and several littoral countries, so that China's maritime territory has been sliced away and its resources plundered. In order to tap and exploit our maritime resources, to safeguard our legitimate maritime rights and territorial sovereignty in the face of these actual and potential threats, it is imperative for us to speed up the building of a Navy with modern fighting capabilities.

Similar statements have been offered by many of China's senior defense officials and other service representatives. These statements reflect an effort to define a new role for China in the emerging world order. In development of a new defense doctrine, Chinese officials are both concerned and hopeful. They are wary of the new environment and constantly looking over their shoulders to see what new anguish Japan, the United States, or even Russia and other neighbors may wreak on them. They see imperialism and hegemonism as alive and active and rail against them at every opportunity. On the other hand, they see the changes within China and read what the West has to say about the future of a Chinese economy that many may live to see acclaimed as the biggest in the world. There is excitement and enthusiasm for their country, for the PLA as a force in the country's future, and for futures for their individual services among the real navies, air forces, and armies of the world. There is a bright future made possible by the strength of the economy and other propitious developments and a role for their armed forces to play in trying to ensure that the regional and global environment fosters this growth, or at least does not retard it. Although no longer fashionable in China after the last shake-up in military senior leadership, the phrase "PLA escort of economic reform" may linger in the psyche of those who see the future of the PLA and the PRC economy intertwined.

As Chinese strategic thinkers have begun to get their bearings in this new situation, there has been a realization that despite their concerns about various neighboring nations and frets over Taiwan, their security environment is better now than it ever has been in modern times. They were stunned by the Gulf War and are both embarrassed and concerned by the obsolescence of most of their arms and equipment, but they have no pressing military threat and have the opportunity to modernize in order to be able to cope with future external threats and become steadily more able to "manage" what they see as "sovereignty issues" concerning Taiwan, the Spratly Islands, and Hong Kong. As they modernize, they will become increasingly capable of greater degrees of what several writers have termed "coercive diplomacy." For example, the mere acquisition of Su-27 air superiority fighters serves to intimidate the Vietnamese and make Vietnamese adventures in the Spratlys far less likely, even without having to base the new

aircraft on Hainan or Woody Island (in the Paracels). China can have its cake and eat it too: they can accede to the Nuclear Nonproliferation Treaty (NPT), abide by guidelines and parameters of the Missile Technology Control Regime (MTCR), act responsibly in the UN Security Council, and renounce the aggressive use of military force as a matter of national policy and still quietly employ an inherent "military-psychological pressure," as Lloyd R. Vasey, founder of the Pacific Forum/CSIS, termed it. The words of the commander of the Chinese Navy help illustrate the new thinking. Admiral Zhang described his vision:

> Speaking in an international context, a navy has always been regarded as a symbol of national power, a miniature representation of the nation's political, economic, military, scientific and technological power. . . . A powerful navy can not only show off the might of the country and its armed forces, manifest the scientific and technological, industrial and economic standards of the country, but is also of inestimable practical and far-reaching importance in resisting invasion from the sea, deterring enemies from war, safeguarding territorial sovereignty and integrity, and promoting the development of the maritime economy. Therefore, we must build well the People's Navy in accordance with the overall plan for State economic construction.

Peripheral defense and forward projection

China calls its new military doctrine peripheral defense and forward projection. Analysts do not view the concept as altogether new, tracing its roots to the mid-1980s when Deng sought to have the PLA "regularized" so as to cope with future wars. In essence, the number and roles of Military Regions have been reduced and diminished in favor of combined arms units. Twenty-four group armies based on the combined arms concept were formed. These group armies allow China better to cope with what they have termed "limited and regional" wars and illustrate the abandonment of the concept that conventional war must lead quickly and inevitably to a nuclear conflict. Emphasis is now given to rapid reaction forces or "fist units," as they are called. When fully operational, these units are expected to be able to deal with contingencies on the borders, within China, and beyond China's continental borders to areas including the Spratlys. The expectation is that these conflicts will be short and intense, possibly revealing optimism on the part of Chinese military leaders that these rapid reaction forces will materially contribute to the intensity and brevity of such an engagement.

Preserving internal stability

There is, however, another very important aspect of Chinese security policy that is addressed only obliquely at best by Chinese officials and strategists. It can be argued compellingly that China faces no real external threat of any consequence. The same cannot be said for the internal situation. Hand in hand with economic development and the concomitant opening to the outside have come new ideas and a desire for greater freedom and democracy—whatever those concepts may mean to Chinese of various ilks. From the perspective of the PLA, not only must the Communist Party be protected, but there is also the imperative to preserve internal stability. Whether in the view of a party ideologue or a dynamic, young entrepreneur in China today, the really fundamental concern is not with socialism but with acquiring wealth and possessions, achieving a better life—getting rich. Consequently, there is an undercurrent in everyday political discussions which makes it evident, if unspoken, that future "foolish actions" resembling those of the dissidents of Tiananmen would destroy the opportunities now available to a part of the burgeoning Chinesee economy. It is feared that such actions may take the country back to its earlier desperate circumstances. It is also clear from the words of Chinese defense officials and strategists that the PLA feels an obligation to be the ultimate guarantor not only of the Chinese Communist Party but also of an environment within China that will, at the very least, not disrupt the headlong national lunge toward becoming the largest economy in Asia or even the world, with all that implies for the long downtrodden Chinese people.

China wants to continue as rapidly as possible to grow stronger economically and militarily and seems destined to do both. Even if there are slowdowns and interruptions, the odds greatly favor a continuation of the present trends. Much of what is happening in China now seems irrevocable, even if there should be a change of heart on reform and opening among the leadership after Deng Xiaoping's passing. A stronger China seems almost inevitable. This implies that China will at the very least play a role in virtually every significant regional matter and that the People's Liberation Army will be a modern force more capable of ensuring China's future and influencing events outside of China as well as within.

Looming quietly, if ominously, in the background is China's status as a nuclear power, a status of increasing significance both because of agreements by the Soviet Union and the United States to reduce their nuclear arsenals and most prominently because of the new situation in Russia and in the quasi-nuclear states created by the collapse of the Soviet Union.

Strategic doctrine

It is asserted by informed scholars of the early period of China as a nuclear-weapons country, the 1960s, that there was no overarching strategic doctrine informing Mao Zedong's decision to proceed with a strategic missile program. Dr. Chong-Pin Lin, a recognized scholar on Chinese nuclear doctrine and the PLA, wrote in his dissertation on PRC nuclear strategy:

> "Self-defense," "total disarmament," and "breaking superpowers' nuclear weapons monopoly"—the PRC's only declared purposes for acquiring nuclear weapons—pale in directness and explicitness as compared to, for example, the "massive retaliation" doctrine of the U.S. enunciated in 1954 or the *force de frappe* of France under de Gaulle.

The Chinese sought status as a nuclear power even before the split with the Soviet Union, wishing to avoid overreliance on a Soviet nuclear umbrella. Mao Zedong is said to have viewed China's nuclear program as "a singular expression of the country's national autonomy." The Chinese remembered well a long and unhappy past at the hands of Western countries and wished by any means to avoid the shame and loss of national self-esteem they had frequently suffered. They were also motivated by national pride and the growing firm conviction that nuclear deterrence was necessary to national defense. Mao said in a speech in 1956, "In the present world we have got to have this stuff so that we will not be bullied by others." Zhou Enlai said soon after the initial detonation of a nuclear blast in 1964, "Have we not detonated an atom bomb? Has not the label 'sick man of the East' given us by Westerners, been flung off?"

The objective then became deterrence (but generally thought of in China at the time as simply *defense*) of the two threatening superpowers, the United States and the Soviet Union. The early *Dongfeng* series missiles (DF-1 and DF-2) were designed to be able to reach U.S. bases in Japan. Then, progressively, the DF-3 could strike Clark Air Base and Subic Bay in the Philippines, the DF-4 could reach Anderson Air Force Base's B-52s and U.S. Navy activities at Agana in Guam, and the DF-5 put at risk the continental United States. Mao's rather primitive concepts of "inevitable world war" (a consequence of class struggle) and "major nuclear war" (foreseeing a protracted conflict with an inevitable nuclear exchange) were adopted by the early 1970s. The need for defense or deterrence was deeply felt. Fear of the U.S. as a nuclear attacker did not begin to subside until the '70s; a reduced concern about Russia has come about only more recently.

The initial effects of the break with the Soviet Union in 1960 (1959 as the Chinese tell it) were simply to make it clear that China had to be able to act independently to deter the perceived threat from the United States. As the military situation with the Soviet Union became a greater concern, the DF-4 ballistic missile was

altered in 1970 so as to be able to reach Moscow. The pressure of the Sino-Soviet conflict also led to the emergency early deployment in 1980 of the DF-5. Then China's strategic view began to change drastically. For the first time serious strategic thought came into play, probably because Mao's strategic views could now be safely ignored by the new leadership and China was maturing as a nuclear weapons power. The term deterrence became more visible in discussions of security, probably with a concomitantly more sophisticated appreciation among Chinese leaders of the implications of the term. As Dr. Lin describes it:

> While nuclear weapons in the predetonation days were by no means cheap for the PRC to acquire, they have offered in the post-Mao era an alternative to buy security cheaply. A sweeping weaponry modernization of the PLA up to the level of the superpowers could be prohibitively expensive—more than even the American economy could sustain. . .let alone the third-world class Chinese economy. . . . [A] skillfully designed nuclear force could fulfill China's security requirement without excessive reliance on foreign technology transfer.

In 1984, the leaders of the PRC concluded that no major world war would occur in the coming ten to fifteen years. This would provide the PLA with the luxury of more than a decade to field new systems and to shift to solid-propellant missiles. Now, they decided almost a decade ago, the goal could be weapons of greater sophistication, not just the ability as rapidly as possible to deploy a missile to meet an urgent threat.

This brief historical summary is provided in an effort to shed light on Chinese thinking with respect to the development and employment of weapons of mass destruction. At first blush, there seems an almost suicidal tendency during that period to confront the two superpowers with a handful of rudimentary weapons. The seeming irrationality of this concept is tempered somewhat by the constantly repeated refrain by Chinese leaders of "no first use." (Then-Vice Foreign Minister Qian Qichen said in March 1987: "As early as 1964, China declared explicitly on the very first day when it came into possession of nuclear weapons that at no time and under no circumstances will it be the first to use nuclear weapons." Qian, as Foreign Minister, has repeated that commitment, as have other authoritative spokesmen. In October 1993 Qian said: "China has long since unilaterally undertaken not to be the first to use nuclear weapons at any time or under any circumstances. . . .")

It must be recalled that the Chinese felt themselves truly threatened by the United States and then by the Soviet Union. In the early 1950s President Eisenhower had used the full force of nuclear diplomacy to bring about the armistice in Korea. In late 1954, the U.S. and Taiwan signed a mutual defense treaty, and in early 1955 Zhou Enlai made the public statement that "the population of Asia will never forget that the first atom bomb exploded on Asian soil." As early as the late 1950s, the U.S. had *Matador* surface-to-surface missiles in Taiwan that could be launched with nuclear warheads and deployed nuclear-capable tactical aircraft to Taiwan on a rotational basis. In other words, the Chinese may have truly expected to employ their nuclear weapons, useful solely in a retaliatory anti-population, counter-value mode, only under the horrendous circumstances of already having undergone a nuclear attack. Their construction during that period of numerous large underground shelters in major cities tends to confirm that this expectation was seriously held. One must wonder, however, to what degree the more pragmatic of the Chinese leaders may have actually taken comfort in the less fatalistic belief that their possession of nuclear weapons capable of reaching their adversaries' cities was adequate deterrence so that they need not harbor quite so deeply an abiding fear that they were inviting a pre-emptive nuclear strike. That is clearly the situation now. China does not see itself as a target because of its nuclear arsenal. Dr. Chong-Pin Lin, a noted scholar on

the Chinese military now with the American Enterprise Institute, wrote:

> [T]he Chinese depend more on concealing missiles than hardening the missile silos. Missile sites are carefully camouflaged or securely hidden in man-made caves in mountainous terrain. To facilitate concealment, missiles are deployed in smaller clusters than those in the U.S. and Soviet Union. . . . A high-ranking Chinese defense official even said in 1984 that sufficient sites remained undetected to deny the Soviet Union a first-strike capability. . . .
>
> To effect ambiguity in perception, routine concealment is punctuated with selective and deliberate revelation. Occasionally, missiles were displayed to satellite passes and their photos were published. On October 1, 1984, China purposefully showed off its most advanced strategic missiles in the national day parade; both the full range and the limited range ICBMs (*Dongfeng* 5 & 4) were displayed to the public for the first time.

Although China has no hope of prevailing in a nuclear exchange with either Russia or the United States, these and other countries—including India, Vietnam, Taiwan, and Japan—must contemplate Chinese nuclear weapons in virtually every scenario involving the PRC. A small number of nuclear weapons coupled with a very large army and a regionally significant air force and navy provide China with the ability to speak with authority, intimidate and even coerce its neighbors. Thus China's clearly minimum deterrence—with respect to the major nuclear powers—remains useful.

The small number of Chinese weapons and their relative lack of capability are major determinants in formulation of Chinese policy with respect to possible weapons of mass destruction employment as well as the use of these weapons as a deterrent. Dr. Chong-Pin Lin refers to this as Chinese *minimalism*. He wrote:

> A fourth strategic trait in the evolution of China's nuclear force is aversion to escalation of strategic means and ends, or minimalism. Simplistically expressed as "less is more" or "few victorious over many," minimalism is evident in ancient Chinese military classics and practices. A similar characteristic is observed in contemporary China's approach to nuclear arms at two levels: restraint in numerical expansion of force deployment and reluctance to escalate input for weapons development.

Some may accuse the Chinese of adopting policies with respect to their nuclear force that put their population at risk, since even the policy of retaining a minimal number of nuclear weapons may imply a reduced concern about large losses given China's massive population. Beijing over the years has even attempted to convince adversaries that a nuclear attack on China would be useless because any subsequent invasion or occupation would bog down among innumerable defenders of every sort from a formal army to local militia and saboteurs.

Others among analysts and writers assert or imply that the development of China's nuclear force was driven primarily by the technology it could acquire or develop, rather than by a coherent strategic concept that weighed the various risks and advantages. Hua Di, who worked in the Chinese missile program for over twenty years and is now at Stanford, makes that point in a recent comprehensive article. Dr. Chong-Pin Lin wrote of the "intentions-capability dynamic" as an element of the development of Chinese nuclear doctrine, providing a reminder that the acquisition of technology and more advanced systems can have an important influence on military intentions, including altering intentions in an aggressive direction, as well as the obvious effect on capabilities. Harry Gelber has pointed out that calculated ambiguity in doctrine is a fundamental element of China's nuclear strategy, and Thomas Robinson of AEI emphasizes the difference between China's declared nuclear doctrine and its nuclear strategy, pointing out that there is great danger in taking the Chinese at their word. Regardless of the extent to which these presently largely unprovable assertions are considered valid, China has been cautious, possibly even quite prudent, in the management of its nuclear

forces. It has avoided brinksmanship; it has not been observed to engage in nuclear blackmail; and it has allowed the no-first-use principle to prevail in its admittedly sketchy proclamations about nuclear weapons employment policy. China cannot be regarded as a reckless nuclear power.

Analysts cannot, however, feel confident that they know well PRC doctrine. Dr. Lin, drawing attention to the difficulty of determining Chinese nuclear doctrine, wrote in 1986:

> China has never enunciated its nuclear strategy. Only politically and ideologically oriented nuclear doctrines have been pronounced. China's nuclear force structure is more shrouded in secrecy than those of the superpowers that were required by arms control agreements to allow greater visibility.

This is a sobering reminder that knowledge of China's nuclear weapons program is limited and that the PRC government does not want people to be better able to understand its nuclear doctrine. We do know that Chinese leaders have for decades been ideologically convinced that communism would survive and confident that China's area and population would give it great advantage in a nuclear war.

The utility of China's nuclear status

Although lacking a publicly enunciated comprehensive strategic doctrine, there is implicit in China's nuclear weapons programs and the statements they have made on their policy a pride in their status as a nuclear-weapons power, a reliance on their weapons as a counter-value force to be used in retaliation rather than in a pre-emptive strike, and an emphasis on the defensive nature of the force and its value as an essential deterrent. (It is noteworthy in this context to recall that China has nothing resembling a survivable command, control, communications, and intelligence system or anti-ballistic missile network.) The Chinese foreign minister's statement in late 1993 reiterating the no-first-use policy concluded with these words: "[China has undertaken] not to use or threaten to use [nuclear weapons] against any nuclear-free zone or non-nuclear-weapon state."

China continues, however, to value its small force (high estimates in the mid-1980s were less than 200 megatons) and, indeed, has made firm statements about retaining that force at least until the other powers' nuclear forces have been reduced to a magnitude similar to that of the Chinese arsenal. Some years ago Deng Xiaoping stated that "Star Wars must not become a reality," expressing fear that China's strategic weapons arsenal would become impotent and obsolete. Beijing continues to rail against an "arms race in outer space," an area where it fears it cannot compete and will fall hopelessly behind—reducing or negating the utility of its earth-bound nuclear arsenal. In October 1993 the official New China News Agency carried a Chinese government statement that nuclear testing by China would end only after acceptance of a comprehensive test-ban treaty. Dr. Lin describes a "profound Chinese strategic concept that has been ignored. Instead of viewing the outcome of war in a victory-defeat dichotomy, Chinese strategic tradition conceives a tripartite framework: winning, losing, and neither. . . . Being undefeatable. . .denies the enemy victory and insures oneself against defeat." Mao said, "Dig tunnels deep, store grain widely, and avoid hegemony," an expression intended to stress inconquerability. China's nuclear arsenal seems tailored to be directly supportive of this concept, emphasizing the achievement of "undefeatibility" over the goal of victory. China may not be able to win a war with a nuclear power, but its minimal nuclear force may keep it from having to face defeat.

In addition to whatever security China's leaders may feel as a result of their nuclear capability, China continues to derive practical "everyday" utility from its nuclear forces and its weapons development programs. To try better to comprehend this, one might contemplate China's perceptions during its last decade before becoming a nuclear power. The view offered in China is that, following Chinese

entry into the Korean War and the ensuing U.S. and UN retreat, nuclear threats from the U.S. reversed the situation and were a major factor in the negotiations three years later. American researchers have essentially confirmed these Chinese convictions by documenting several instances during the 1950s when the United States gave serious consideration to using nuclear weapons against China—more often, a Harvard study states, than against all others.

Further, one can guess about the Chinese perception of possible American aggressive actions that were hypothetically deterred in the 1960s and early 1970s; the potential border incursions, and worse, by the Soviet Union that were conceivably prevented; and about the attacks by India that did not occur—all deterred in part as a consequence of China's status as a nuclear power. Through Chinese eyes, the U.S. may have been discouraged from highly prejudicial actions in support of Taiwan because the U.S. could not threaten and bully China the way it could have done with a non-nuclear country. The Chinese believe that Russia was forced to act with greater restraint and encouraged to negotiate more seriously with China on border disputes because of China's status as a holder of nuclear weapons. The prestige of its nuclear status put China, at least in Chinese eyes, in a more favorable position to deal with India, a budding nuclear state with whom it fought a war and has border disputes. The U.S., Russia, and India have all been forced for decades to view China in the special light of having its ballistic missiles aimed at their major cities. China does not want to deliver its nuclear arsenal, but it wants to keep it and continue to derive benefit from it.

Nuclear weapons and China's global reputation

Possession of nuclear weapons has also enhanced the position of a large, but backward, China as a major player in the community of nations. Recently China has clearly become enamored of its status as a constructive member of that world community. Consequently, the Chinese are made all the more cautious in their nuclear weapons employment policy and related proclamations by a desire to protect this coveted status. The possession of nuclear weapons has added to China's prestige; the use of those weapons could detract from or even destroy China's fragile reputation, real or perceived, as a responsible nation.

The Chinese government seizes every opportunity to tout its "principled position" with respect to its status as a nation with nuclear weapons. In a late 1993 example of such declaratory policy, *China Daily* quoted in a front-page article some of this government declaratory policy: "[I]t is entirely for the purpose of self-defence that China develops and possesses a small number of nuclear weapons." The *China Daily* article goes on to reiterate: "It [the PRC government] also strongly called for parallel negotiations among nuclear powers to conclude an international convention prohibiting first use of nuclear weapons and the threat of their use against non-nuclear states."

Dr. Lin adds another perspective by describing Chinese nuclear policy this way:

> In Beijing's declaratory nuclear doctrine, the aspect of *disutility* rather than *utility* of nuclear weapons receives greater emphasis. For example, the doctrine does not pronounce positively when and how China would employ its nuclear weapons; the doctrine spells out a negative provision: under what condition China will not employ weapons.

Notwithstanding its lofty declaratory policy with respect to weapons of mass destruction, China's status as a responsible member of the community of nations is far more vulnerable than that of the Western nuclear powers, if for no other reason than its position as a totalitarian country and one of the few surviving Communist states. There is an expectation among many countries of the world that China will act crudely or irresponsibly. Increasingly, Chinese leaders do not want to have that reputation.

The tactical nuclear issue

It is possible that the PRC's declaratory policy has had an unexpected side effect—which might be called the Chinese version of a policy *neither to confirm nor deny*, in this case applied to tactical nuclear weapons (TNW). There have been press reports in and out of China of the existence of tactical warheads and bits of circumstantial evidence. However, Beijing has not confirmed such a development. (b)(5)

The threat of Soviet use of TNW was clear and publicly acknowledged. Here is a 1980 extract from the newspaper of the PLA:

According to the current level [of Soviet TNW deployment], an army corps during one offensive operation may employ from 20 to 70 nuclear warheads; a division during an offensive battle may employ six to eight nuclear warheads; the army corps during a defensive operation may employ 15 to 25 nuclear warheads.

The PLA was clearly fully aware of the scope of the threat they faced from tactical nuclear weapons. Further, there is ample evidence that the PRC has for a number of years had the scientific and technological capability to produce tactical warheads. The systems to carry out delivery of the weapons—aircraft, missiles, large-caliber artillery pieces—are without question in the Chinese inventory.

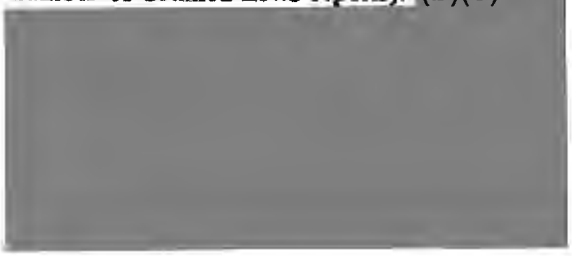
Tactical nuclear doctrine

As Dr. Lin has written, the PLA carried out some time ago in its newspaper *Jiefangjun Bao (Liberation Army News)* a serious discussion on tactical nuclear warfare. The discussion makes clear several assumptions: (1) TNW are likely to be most useful in the early stages of a conflict. The employment of TNW early would upset the offensive of a large invading force, and developments later are difficult to forecast. (2) It may be possible to defend against an enemy's TNW; such weapons can be used and the fighting can continue. A TNW war is "fightable." (3) The use of TNW does not necessarily imply the initiation by either side of use of strategic nuclear weapons; there is the potential for escalation but also the potential for limitation to the tactical realm. (4) Neither defense against TNW nor the counteroffensive use of TNW should be considered in isolation; such weapons are not effective by themselves but must be part of the overall tactics of the PLA.

The writings state explicitly that the PLA must not only be capable of protection against TNW but also possess the capability to conduct a counteroffensive using TNW. (There is not, however, explicit acknowledgment of this capability.) There is a preference stated for blasting a hole in the enemy's front rather than deep attacks against headquarters or artillery, derived at least in part from an effort to put to best use a limited number of TNW. "Our TNW targets should be the enemy's front-line defense. Rather than punching a hole in the enemy's center, we should chip its edge." In 1980 articles, the capability and cost-effectiveness of enhanced radiation weapons (neutron bombs) was enthusiastically described. It was also pointed out that the site of the explosion could then quickly be safely occupied by the

combatants. Dr. Lin points out the advantages in tactical nuclear warfare of China's larger numbers of combatant troops, reinforcements, and large unpopulated areas amenable to TNW use with little collateral damage. He concludes that China has developed a decisive tactical nuclear doctrine fully committed to employment, not as warning shots in the air (as he views French TNW), but as destructive weapons on the invading enemy's forces.

PLA training for TNW is revealing. The training has taken place over a number of years and not just in the areas near the Soviet border. There has been, according to the PLA newspaper reports, at least one exercise where the PLA carried out the simulated use of a five-kiloton TNW to attack an enemy defensive position. Much time and many resources have been expended in this training (or, viewed cynically, in the fabrication of a very large number of detailed news reports). (b)(5)



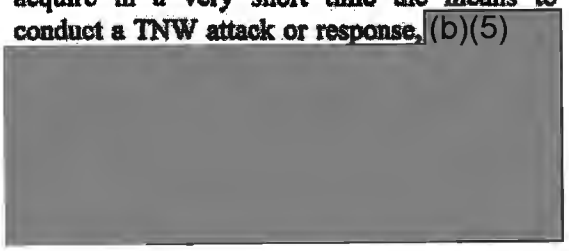
Trying to understand PRC silence on TNW

It is difficult to be satisfied that China's silence with respect to possession of TNW is based primarily on unwillingness seemingly to repudiate its no-first-use policy. Certainly the Chinese, instead of abrogation of TNW, could have argued to the world that their possession of TNW was necessary to counter the very real Soviet threat. They could have pointed out nobly that, if the Soviets were to have used TNW, China would have been capable with TNW of its own to reply in kind rather than resorting to launching its small strategic missile arsenal—or just submitting.

(b)(5)

(b)(5)

In any case, it must be assumed that the PRC has or could acquire in a very short time the means to conduct a TNW attack or response. (b)(5)



CW and BW doctrine

Chinese military doctrine with respect to chemical and biological agents employed as weapons of mass destructions is even more elusive than its nuclear doctrine. As stated above, China has consistently asserted that it neither produces nor possesses such agents or weapons. At risk of stating the obvious, one can conclude that the measure of deterrence derived from such a position is minimal. Of course, it can be concluded alternatively that China is in fact having its cake and eating it too by posturing as a stalwart in the battle to rid the world of chemical and biological weapons and yet letting its neighbors, who must of necessity view its assertions coldly, live with the realistic knowledge that such a threat is likely. As Dr. Lin describes it:

> What underlies the particular Chinese style of deception is the art of ambiguity: the marginal manipulation of the enemy's perception through a combination of massive secretiveness, concealment and cryptic or redundant revelation. . . . The art of ambiguity in Chinese strategic tradition is the ultimate form of psychological warfare.

Viewed less captiously, China's repeated assertions that it does not possess CW and BW are certainly serious self-imposed constraints on

the implicit or explicit threat of their use. These pronouncements may also impose constraints on the production, stockpiling, deployment, and training of troops for the use of CW and BW. China must continually guard against revelation or discovery of its weapons, assuming that it does produce and possess them. One might also conclude, based on these oft-stated Chinese positions, that it would be highly unlikely for China to employ these weapons in any but the most desperate situation, desiring to preserve the integrity of its many strong public pronouncements. This is admittedly thin gruel; the lack of solid data in this area, however, may be in part an indicator of the low probability that chemical or biological weapons would be employed as weapons of mass destruction by China in any situation other than a war threatening its national integrity. (In this light, it should be remembered that one of the scenarios most likely to threaten national integrity is a break-up of the country involving civil war. The possession or capture by one faction or another of CW or BW weapons under these circumstances is a possibility to be feared.)

Chinese positions on control of weapons of mass destruction, disarmament, test bans.

China does not experience disadvantages in pursuing its national goals by the possession of nuclear weapons and the means to deliver them, but in many ways it faces the same or greater constraints and deterrents to the use of these or other weapons of mass destruction than do Western countries. The Chinese share with most of the world the view that the avoidable use of nuclear weapons or other weapons of mass destruction is one of the most reprehensible—and risky—actions that a nation can take. Foreign Minister Qian Qichen has since at least 1987 advocated a prohibition of weapons of mass destruction. For example, he said to the UN General Assembly in September of 1991: "Effective disarmament is an important means to ease international tension [and] China has all along stood for the complete prohibition and thorough destruction of nuclear, chemical, and biological weapons and banning research and development of any new type of weapons of mass destruction."

China and the NPT

China acceded to the Nuclear Nonproliferation Treaty in March of 1992 after sneaking up to the decision over several years. China provided a positive sign when it attended the 1990 NPT conference, as an observer. China had not attended the five-year review conferences in 1975, 1980, or 1985 and made it known that its 1990 attendance was significant. This move came after initially condemning the treaty in the late 1960s, as a plot against China (at that time a nuclear-weapon state but not a member of the UN) followed by two decades of considering the NPT contrary to its interests and to those of other developing countries and non-nuclear nations. The September 27, 1993, statement to the 37th session of the International Atomic Energy Agency by Jiang Xinxiong, head of the PRC delegation, recalls the arguments China has offered over the years. Jiang asserted that some developed nations have undermined the rights and interests of the developing countries by preventing them from obtaining nuclear technology for peaceful uses under the guise of halting proliferation of nuclear weapons. He said further that industrialized nations continue to monopolize nuclear science and technology.

It appears that the proximate cause of Chinese accession to the NPT was the effective negotiation carried out by then-Secretary of State James Baker on his November 1991 visit to Beijing. The Chinese foreign minister agreed that the matter of NPT accession would be put before the National People's Congress for formal approval within three months. This, however, was not a sudden turnabout. China appears gradually to have realized that non-proliferation was in its interests. It had joined the IAEA some years before and also taken up the cudgel of a comprehensive test ban. China saw, it appears, how its interests would be harmed if nuclear weapons came to the Korean peninsula and to Japan. The PRC also saw that it probably took on no new obligations by

accession. Another strong reason—possibly the most important—is China's new affection for a constructive role in the community of nations. That image was not consistent with continued rejection of the NPT.

In 1995, 25 years after it came into force, the countries that are parties to the NPT will decide on whether it is to be extended indefinitely or for a certain period. China's position, as one might expect, has not unequivocally supported the unqualified U.S. support for indefinite extension. Beijing has supported a "smooth" extension, continuing to complain about perpetuation of big power hegemony and attempts to maintain absolute nuclear superiority. The Chinese positions that may result in difficulties for NPT renewal have been presented recently. The official government pronouncement after the October 1993 underground nuclear test included the following:

> . . .China believes that a pledge by all nuclear-weapon states not to use nuclear weapons at all is of even greater significance as it is a more effective step towards the nonproliferation goal underscored by the "Treaty on the Nonproliferation of Nuclear Weapons" [as the NPT is referred to in China]. To this end, China strongly calls for a parallel negotiation by all nuclear-weapon states aimed at concluding an international convention on unconditional non-first-use of nuclear weapons and non-use and non-threat of use of nuclear weapons against non-nuclear states and nuclear-free zones.

The *Beijing Review*, an English-language periodical, carried an article by Wang Ling in September 1993. The following is an extract:

> To perpetuate the Treaty on the Non-proliferation of Nuclear Weapons, the West is likely to speed up its work for a total nuclear test ban. The Non-Proliferation Treaty, which took effect in 1970, will be re-examined in 1995. America, Britain and France have stated they want the treaty to extend perpetually. Many non-nuclear countries hope that the extension is based on the condition that the nuclear-weapon countries take action on a nuclear test ban. If the nuclear countries do not stop developing new nuclear weapons and do not sign a total nuclear test ban treaty, other countries can hardly be expected to give up the choice of developing nuclear weapons.

These words seem to be precursors of the PRC position at the 25-year extension NPT conference. They seem to reflect a move away from the fervent pitch that non-nuclear nations are being treated unfairly toward emphasis on commitments on non-first-use, on non-use against nuclear-free states and zones, and for a comprehensive test ban.

U.S. ability to influence and restrain the PRC

Foreign Minister Qian, speaking in 1993 to the UNGA, this time said: "The Chinese government has stated on many occasions that China stands for non-proliferation of all weapons of mass destruction. At the same time we hold that the ultimate objective of mankind should be the complete prohibition and thorough destruction of those weapons. Now that the conventions banning biological and chemical weapons have been concluded, we deem it high time that the complete prohibition and thorough destruction of nuclear weapons were put on the agenda." Beijing's official announcement in October 1993 following its last underground nuclear test stated that the development of nuclear weapons was "entirely for the purpose of self-defense" and called on the countries with the largest arsenals to carry out reductions "so as to create conditions for other nuclear countries to take part in the nuclear disarmament process."

The abilities the United States and its Allies can develop to reinforce these constraints and deterrents—especially in a time of crisis—are among the strongest weapons in attempts to control PRC use of WMD. China could abandon these lofty positions if put in an untenable position with little to lose by radical action. The West should be in a position with China to make a compelling case—on the basis of equality and mutual interests, not as an adversary employing only pressure and threats—that their best interests are not served

by the use (or proliferation) of weapons of mass destruction.

Political Leadership Constraints

(b)(5)

a decision by the authoritarian primary Chinese leader or the collective Chinese leadership to employ WMD would not seem at first look to be encumbered by the complex constraints present in a Western democracy. However, in reality, many of the constraints and fears felt by Western leaders would exist for Chinese leaders. There are also constraints unique to China.

SENIOR CHINESE LEADERSHIP APPOINTMENTS

Senior Governmental Leadership

President	Jiang Zemin*
Vice President	Rong Yiren
Premier	Li Peng*
Vice Premier	Zhu Rongji*
	Zou Jiahua
	Qian Qichen
	Li Lanqing

Major Communist Party Appointments

General Secretary	Jiang Zemin*
Chairman of the National People's Congress	Qiao Shi*
Chairman of the Chinese People's Political Consultative Conference	Li Ruihuan*

Central Military Commission Members

Chairman	Jiang Zemin*
Vice Chairman	Gen. Liu Huaqing*
	Gen. Zhang Zhen
Minister of Defense	Gen. Chi Haotian
Chief of the General Staff	Lt. Gen. Zhang Wannian
Director of the General Political Department	Lt. Gen. Yu Yongbo
Director of the General Logistics Department	Lt. Gen. Fu Quanyou

* Contenders for dominant leadership after Deng's death

Figure 1—6

The Deng death watch

At this time in Chinese politics, the uncertain circumstances of PRC leadership are a major factor in most matters. This uncertainty derives from the lingering unofficial but key leadership role of the aged and increasingly incompetent Deng Xiaoping. His ambiguous position and the far less substantial statures of the official leaders arrayed beneath him muddy the decision-making situation and could be a major complicating factor in arriving at a decision on employment of WMD. Put simply, the Party General Secretary, the Premier, and the Central Military Commission would be faced with the dilemma of either seeking from Deng his approval to act and/or his guidance in selection from among complex options or, alternatively, acting without consulting him. Deng, in his senile condition, may not understand the situation or may make a decision that none favor or would be willing to carry out. On the other hand, given the uncertain individual authority of the other leaders, a decision of such magnitude taken without consulting Deng may be difficult to carry out, especially if other important leaders do not agree.

Leadership succession clouded

Even if this dilemma were somehow bypassed (by resolute consensus among the younger leaders or even pre-arrangements among the official leadership to circumvent Deng, for example), there is not now in China a recognized single leader other than Deng who could take it upon himself with assurance to make the major decision to use weapons of mass destruction, especially in a situation that may bring massive retaliation or other serious consequences for the country. Conversely, this absence of such a leader implies as well that there is no one capable of resisting the enormous pressure that could exist to use WMD against an invading force or to threaten such use against a strong power perceived as transgressing. Party General Secretary and State President Jiang Zemin does not have the stature as a leader or the requisite influence with the PLA to assume that role.

Many in China, including figures in the leadership and the military, consider the recently ailing Premier Li Peng—whose name is so closely and unfavorably linked to Tiananmen—more a buffoon than a leader. Rising but untested Vice Premier Zhu Rongji probably lacks adequate political and PLA support at present to jump into the breach.

[redacted]

The West is, of course, not alone in the ability to recognize these uncertainties in the Chinese leadership situation and their consequences. If China were at war or faced an imminent threat of great dimensions, someone, like Jiang, Li, or Zhu, could be given or take a preeminent leadership role. Others currently out of favor or close to power now could also be catapulted to the top in a crisis. For example, the Party could turn in a crisis to former president Yang Shangkun and/or his formerly powerful (in the PLA and other circles) half-brother Yang Baibing. Both the Yangs were recently replaced in a move toward moderation, but many analysts believe the Yang brothers cannot be counted out of a potential play for power.

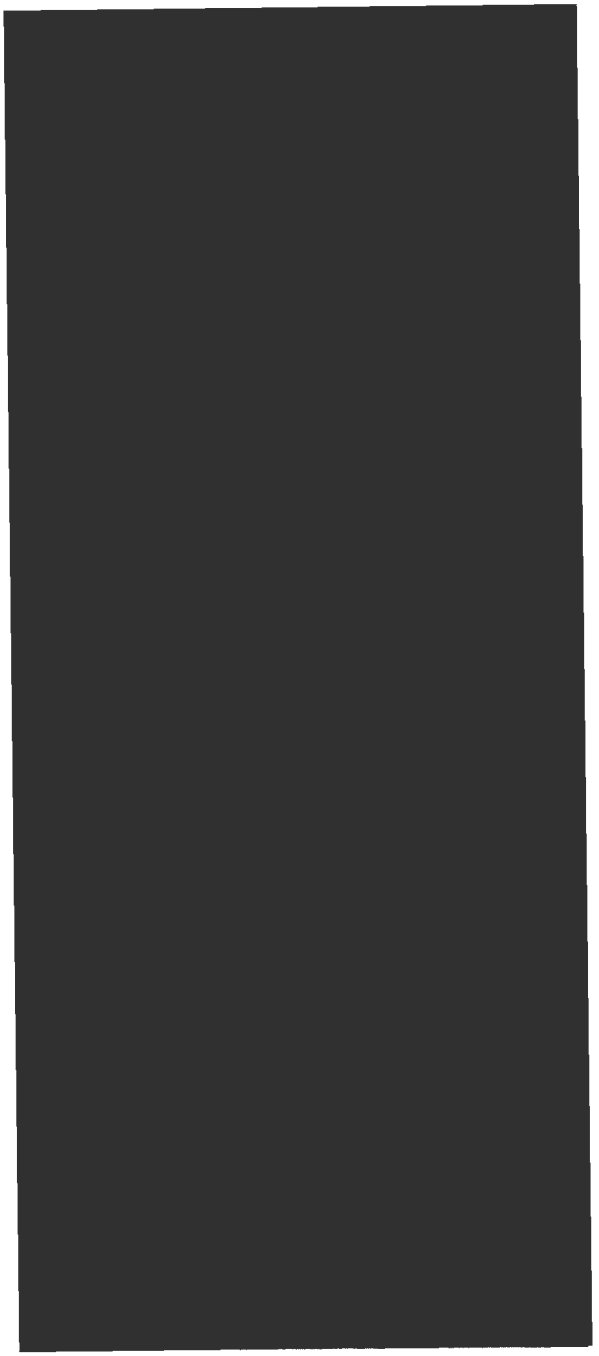
[redacted]

The preeminent role of the party

In watching for developments of this sort in China, the Chinese Communist Party should be the place where attention is focused. It will be in the gatherings of the Party elite where the key decisions will be made, and especially any decision on a new preeminent leader. Government ministries and bodies, including the National People's Congress (NPC), will not be the effective forces in the crucial decisions. In recent years the NPC, admittedly, has shown some increase in independence. Its role as a rubber stamp has passed, at least in some areas such as economic development projects. These gradual changes have not, however, approached the point where urgent, critical decisions concerning national security would be subjected to such a body for deliberation or approval. The most to expect is that some details of the decision could be fleshed out by a government body before implementation.

[redacted]

[redacted]



Military institutions

The Central Military Commission

The Central Military Commission of the Communist Party is the body (under the thumb of the Politburo Standing Committee) that makes defense policy in China and that would flesh out and implement major military decisions in an emergency. (The Ministry of National Defense is not central to these activities, although the 63-year-old Minister and former Chief of the General Staff, General Chi Haotian, is a member of the CMC.) The Fourteenth Party Congress in 1993 drastically reduced the size of the Central Military Commission from the sixteen members it had following the Tiananmen Square crackdown in 1989 to just seven members. This smaller CMC may permit crisper and faster implementation of decisions in a crisis. Although reasons were not provided for the change to a smaller CMC, it is significant to consider that the membership was previously reduced from thirty-four to sixteen in the wake of Tiananmen. This would tend to lend credence to the theory of streamlining to enhance decision-making and the ability to carry out promptly Standing Committee direction.

Party General Secretary and State President Jiang Zemin is the CMC chairman. This too-often unimpressive man, with no experience in the PLA and uncertain support from it in many situations, is an unlikely counterweight to the remaining six military members. A senior U.S. government official who sat in on the meeting in Seattle in November 1993 between Presidents Jiang and Clinton, described Jiang as "a prisoner of the approved interagency talking points." The two vice chairmen and the other four members are seasoned, hard-bitten senior general officers of the PLA. First vice-chairman Liu Huaqing is the former commander of the PLA Navy. He has been the central figure in the ongoing modernization of the PLA. Similarly, he is the CMC figure most closely linked to technology and to the application of science to defense. Liu Huaqing's counsel on technical aspects of the employment of weapons of mass destruction would carry the most weight. One can imagine Liu as an interpreter and arbiter of targeting accuracy issues, vulnerability of Chinese weapons to defenses and countermeasures, and similar matters. Second vice-chairman Zhang Zhen has considerable combat experience and also is a first-rate strategic thinker. His wisdom

on the strategic value or risks of weapons of mass destruction employment would be sought by his fellow CMC members. The other four members have no special qualifications of interest in this examination.

(b)(5)

It is instructive to note, for example, that the senior Chinese military leadership was sympathetic to the August 1991 anti-Gorbachev coup in Moscow. Their consideration of the relative weight of various factors in a decision to employ weapons of mass destruction would probably not resemble the debate in Western deliberative bodies. They would act to preserve the Chinese Communist Party, the People's Republic of China in its present form, and the People's Liberation Army—even if enormous sacrifices were involved. The predictable adamant advice along these lines of CMC members would carry great weight with the ultimate decision-maker. It is important to remember that the Party looks to the PLA, through the CMC, as the ultimate guarantor of its retention of power. An extract from a recent article in *Far Eastern Economic Review* illustrates that it remains acceptable brashly to make this point:

> In a front-page article in the *People's Daily* in late July [1993], Liu Huaqing and Zhang Zhen, the PLA's senior-most generals, warned that the seductions of capitalism threaten to obscure the PLA's primary mission: defending the Communist Party. 'All sorts of unhealthy attitudes and negative phenomena from society are continuously using all paths and routes to infiltrate the military, putting army construction in danger,' they wrote."

Changes to the CMC are not expected soon. If one looks at a different CMC, perhaps without these two strong leaders, Liu and Zhang, it is likely to be less influential but would still be the body by which the Party would have the PLA carry out the will of the Politburo Standing Committee and dominant leader.

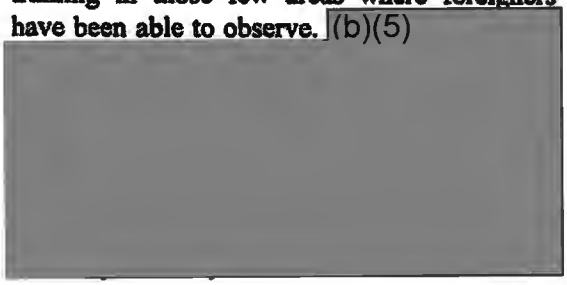
The PLA missile launching organizations

The Second Artillery is the PLA's strategic rocket force. The Second Artillery's strategic systems and the tactical systems consisting of the Navy's *Xia* SSBN and China's tactical nuclear forces in the Air Force and ground forces of the PLA are not nearly as flexible and as reliable as those in the West. In particular, the *Xia* SSBN's operational capability is quite uncertain. For whatever reason, this submarine very rarely deploys. However, there is no reason to expect that most of the systems would not function essentially as intended. (b)(5)

Shortcomings

There is reason to believe that there would be more system failures and greater inaccuracy in striking the targets than expected by the Chinese system designers. However, this hope is not based on hard evidence. It is primarily based on the general state of Chinese technology and quality control. There is also an inherent inadequacy in training that derives from the lack of actual launches and weapon deliveries and the failure to conduct other realistic training that, if carried out, would disclose bugs and smooth out procedures. Further, the PLA is not known for realistic

training in those few areas where foreigners have been able to observe. (b)(5)



Role of the scientific elite

The usual secrecy, but some clues are visible
China has not been open about the role of its scientific community in the development of warheads and missiles. We can, however, ascertain four aspects of the programs that shed some light on the role scientists have played:

(1) To a significant degree, China's programs have been technology driven. The caps on development and goals have been largely the limitations of the technology that China has been able to develop or acquire from others and assimilate. Among other things, this has meant that senior Chinese scientists have, by necessity, traditionally been those at the decision-making table who have said whether a proposed step in weapons development is reasonable or feasible.

(2) Chinese nuclear scientists, including those prominent in weapons development, have been recognized and placed in prestigious positions. Of at least equal significance, the children of senior Chinese officials have been trained in nuclear science and become active in the field.

(3) The push to make sales to other countries—often politically very controversial sales—has largely been an effort by the Chinese "academies" to obtain funds for their research and development programs for missiles. These sales programs have proceeded even in the face of considerable worldwide pressure on China to stop, reflecting the clout of those running the R&D programs.

(4) The continued testing of warheads, including the two underground tests in 1992 and the test in early October 1993, may well be a reflection of successful pressure by scientific (and military) leaders to continue warhead development despite the international political disadvantages to China of conducting these tests when other nations are observing a moratorium. All four of these visible aspects of the role of the scientific elite point to considerable influence in decision-making.

As an indirect affirmation of the above, an examination of events preceding the October 1993 underground nuclear test may be revealing. President Clinton had applied considerable pressure to attempt to get the Chinese to cancel the rumored test. Chinese Foreign Minister Qian Qichen, in a speech before the UN General Assembly, did not react directly to President Clinton's urging that China not break a global moratorium on testing, but did restate China's position advocating a ban on tests as part of a broader agreement to do away with all nuclear weapons. One can conclude that the scientists and others (probably including the PLA) who want to improve China's warhead technology prevailed in the internal debate over whether China had more to gain by testing or by making a grand gesture to continue the moratorium. Possibly even more revealing was a less-publicized statement at this same time by Secretary of State Warren Christopher. After meeting with the Chinese at the UN, Christopher said he thought the Chinese would probably proceed with the test because the device was already in the test hole and wired. It would be more dangerous to extract it than detonate it, he stated, seemingly repeating reasoning he had heard from the foreign minister or his aides. This argument certainly smacks of considerable influence by the technical and scientific elite in influencing the decision. In any case, the momentum toward the planned test prevailed over foreign policy considerations.

(Unfortunately, we must frequently rely on such indirect and anecdotal evidence in analyzing

China's policies and actions. Interestingly, there was identified in this event another group that appeared to wield considerable clout, if only temporarily. The timing of the test seems to reveal that the backers of Beijing's bid for the Olympic games in the year 2000 succeeded in having the test postponed until the decision, rejecting Beijing's bid and awarding the games to Sydney, was announced.)

R & D organization

The Chinese nuclear weapons and missile development organizations are known as academies. Subdivisions of these academies are called institutes. For example, the First Academy is the Carrier Rocket Research Academy. Institute Twelve (Control System Institute) and Institute Thirteen (Inertial Component Institute) are components of the First Academy. The work of the Second Academy includes surface-to-air-missiles and for a few years included the development of the JL-1 SLBM and DF-21 MRBM; the Third Academy develops anti-ship missiles; the Fourth Academy is the Solid Rocket Motor Academy; and the Fifth Academy was from the early years identified with ballistic missile development. The Ninth Academy is roughly equivalent to our Los Alamos, Sandia, Livermore, etc. combined; it is composed of eleven institutes, all but one in Sichuan Province in western China. The Central Military Commission provides the overall guidance from the Chinese Communist Party. The Commission of Science, Technology, and Industry for National Defense, among other things, approves the activities of these various academies as they undertake the tasks assigned to them by the Ministry of Space Industry, for example. This sketchy outline of the research and development organizational relationships illustrates the complex posture of the Chinese bureaucracy of research and development in these programs. Available evidence indicates that the scientific elite has been able to work within this complicated organization to further the programs to which it is dedicated and to wield considerable clout when these programs are threatened.

No evidence has arisen suggesting that Chinese scientists favor discontinuation of nuclear tests or other curtailment of weapons programs. We should not expect that the scientific elite would undertake such a role—opposing the use of nuclear weapons, for example—during a time of heightened tensions. This is not to say that no Chinese scientists hold such views. It is to say that, even if held, it is unlikely that those views would or could be aired in such a way as to influence Communist Party or PRC government decision-making about the employment of weapons of mass destruction. Virtually every aspect of the system in China would discourage such dissent.

Alliance relationships

Connections, not alliances

Although the PRC has a formal alliance with only North Korea, its relations with Russia, Pakistan, India, Iran (and several other Middle Eastern countries), Burma, Thailand, and the Khmer Rouge are of interest in this context. (By some accounts even the mutual defense treaty with North Korea is somewhat uncertain in its validity and effect. One knowledgeable Chinese source asserted that his government considered the agreement as having lapsed.)

Russia redux

China's renewed friendship with Russia, although it hardly has the intensity and scope of that prior to 1960, is the most important relationship for consideration with respect to weapons of mass destruction issues. China's early missile development was based directly on exploitation of systems provided by the Soviets. Later, improved missiles were targeted on the Soviet Union. The current situation is a bizarre updated combination of these two past forms of the relationship. It is conceivable that factions or individuals in Russia or other successor states to the Soviet Union would now sell China technology and/or systems that could radically change the size and capability of the Chinese weapons of mass destruction arsenal. Reports have already surfaced that Moscow has been quietly providing rocket motors for

satellite launch vehicles. It is also conceivable, at least to the Chinese, that Russia could once again become a nuclear threat to China. There is concern in China about the possible twists and turns of Russia's political future, and there is talk of a resurgent Russian desire to be a great power with a resultant expansionist threat to China. As Bonnie Glaser wrote in the March 1993 *Asian Survey*:

> The geographic area occupied by the former Soviet Union is viewed in Beijing as the most uncertain and potentially unstable region in the world. . . . The Chinese have long-term concerns about the large number of Russian forces deployed along their common border. . . . There is also concern in Beijing about the massive transfer of arms from the European theater to east of the Ural Mountains as a consequence of the Conventional Forces in Europe (CFE) Treaty signed in late 1990.

There is very direct concern about the SS-20 IRBMs that Moscow has arrayed in eastern Russia. Although these missiles are slated for destruction, the timetable—and compelling evidence of intent to destroy them quickly—is far from clear. When added to other ICBMs capable of being targeted on Northeast Asia, the SLBMs of the Russian Pacific Fleet, Russian strategic bombers, and tactical nuclear weapons, the threat is daunting. Consequently and paradoxically, Russia is part of the equation both as a supplier and as a major threat.

Chemical weapons in the hands of the Russians are also a matter of concern to the Chinese. The *International Handbook on Chemical Weapons Proliferation* recalls a 1984 statement attributed to the CIA: "The Chinese. . .know the [chemical] weapons in a single Soviet storage depot (near Buyanki, about 60 miles from the Chinese border, which is surrounded by more than 200 decontamination vehicles) are more devastating than China's entire inventory." The *Handbook* authors suggest that this situation provides "the most compelling reason for [China's] having an offensive CW capability—to lessen the pressure for escalation to nuclear weapons in a future conflict."

Pakistani partnership

The situation with India and Pakistan is no less complex or convoluted. The feature of the Sino-Pakistani relationship that has been most greatly noticed is China's provision of technology, equipment, and material that have aided Pakistan's nuclear energy program and contributed to its development of nuclear weapons and the means to deliver them. It is assumed by most observers that these actions by China have resulted in significant payments to China, although such assumptions can be questioned on the basis of Pakistan's financial plight. Alternatively, China's actions could be explained as aiding Pakistan against India, the common enemy. It is reasonable to conclude that a combination of these two factors is at work.

The Indian factor

China's nuclear weapons development program benefits both from the money paid by Pakistan and the research and other experience that results from the effort. At the same time, one must ask what such intimate Chinese cooperation with Pakistan implies should either Pakistan or India initiate a nuclear exchange. If Pakistan is able to deliver one or two nuclear weapons—and no more—China could be faced with the dilemma of allowing Pakistan to endure possible further nuclear attacks from India, trying to decide if it should threaten India to prevent retaliation, or electing to supply Pakistan with weapons. This supplying of nuclear weapons might be done clandestinely or overtly. There is a danger, at such a point, of unpredictable outcomes such as Chinese forces becoming involved in support of Pakistan with the fearful consequence that this could somehow escalate into a nuclear confrontation between China and India.

India minus the Pakistan factor

It is also necessary to consider the Sino-Indian situation without Pakistan in the equation. Currently, Sino-Indian relations are on the mend, and the enduring border disputes are not a central concern for either country. Confidence-building measures have been

agreed pertaining to the Himalayan border area. The annoyance to Beijing of India's meddling in the issue of Tibetan independence or the rights of Tibetans has eased as India has recently made conciliatory statements about Tibet and has turned its attention elsewhere. The lingering disputes do not seem to hold the seeds—certainly not in the short term—for renewed Sino-Indian hostilities, much less a resort to weapons of mass destruction.

The most that can be made of the tensions in the relationship stemming from the possession of nuclear weapons or devices by both sides is a great deal of envy by India and a measure of regret and unhappiness on the part of the Chinese. From the Chinese point of view, the most troublesome part of India's status is the threat it poses to Pakistan and the dilemma that it could produce for China. From a proliferation or disarmament perspective, there is also the factor that neither country wishes to be forthcoming and relinquish its nuclear weapons while the other retains that capability or even potential capability. However, according to former U.S. ambassador in New Delhi, William Clark, China does not need its nuclear weapons to keep India in its place bilaterally, and it hardly seems that India's foggy nuclear capability, or even its conventional force, is worrying Chinese leaders, at least not in terms of India representing a threat to the territory of the PRC.

Iranian intrigue

China has also made substantial contributions to Iran's "peaceful" nuclear program and to its arsenal of missiles and ability to produce missiles. The same question arises in trying to fathom Sino-Iranian relations as in China's relations with Pakistan: Is it love or love of money? Or is it a combination? The answer is, if anything, even less clear, although China'a desire to ensure current and future access to oil must be seen as a key motivating factor.

According to the Congressional Office of Technology Assessment, there is little public evidence of progress in Iran on a nuclear weapons program, with the added comment from that office that there has been CIA testimony estimating that production of nuclear weapons is unlikely before the end of the decade without foreign assistance. The pertinent question is whether China will provide such assistance, while the issue of China's technological support for an Iranian weapons program remains unclear—and worrisome.

(b)(5)

A possible corollary exists with respect to this point concerning Islamic fundamentalism as a threat to China. If, as a condition of its receipt from China of nuclear technology, Teheran has made a commitment to Beijing not to assist Central Asian Muslims in any way that would threaten China, Iran may have the leverage to keep China's assistance coming for its "peaceful" nuclear program.

For several years allegations have been made about transfers to Iran of chemical materials or poisonous gas for military purposes. Chinese officials deny such transfers. These denials gained some measure of public credibility when, after global attention to U.S. intelligence reports, the Chinese ship Yin He was searched for such materials and none were found. For most observers, that did not resolve the fundamental issue; profound concerns persist.

Others in the Middle East and Africa

Many of these same factors are applicable to China's relationships with other (oil-producing, in many cases) Middle Eastern and North African countries. For example, China has been involved with Syria with respect to missiles that could be used to deliver weapons of mass destruction, even as China and Israel have grown close in both the diplomatic and military technology areas. China is aiding Libya with nuclear research. These and other instances, including past aid to Iraq, are troublesome when one contemplates the long-term consequences of China's actions. They do not seem, however, to portend Chinese involvement in either a transfer of nuclear weapons or an employment of weapons of mass destruction as a consequence of any of these relationships. Chinese ties to sub-Saharan countries are close in several cases but not of interest in this context.

Saudi Arabia as a special case

One cannot be quite so confident in the case of Saudi Arabia. At the time of Riyadh's purchase of CSS-2s from China, many wondered whether Saudi Arabia would have spent several billion dollars on an inaccurate missile system unless nuclear warheads were part of the deal, at least under certain conditions, such as having to assent to Chinese control of the warheads. Nevertheless, Beijing and Riyadh have stated firmly that the Chinese missiles sold to Saudi Arabia in the late 1980s are armed only with high explosive warheads. As was the case during the Gulf War, given the financial resources available to Saudi Arabia and the evident hunger for hard currency of China, there is at least some reason to fear that the PRC could provide nuclear warheads if the price is right. The primary constraint that exists for China is the jeopardy to its international standing, currently a key concern for Beijing. Consequently, it is easiest to envision the Chinese transfer of nuclear warheads to Saudi Arabia at a point when China feels it has nothing to lose with respect to its reputation and everything to gain from a large payment and long-term assured access to Saudi oil.

The Koreas

China has established diplomatic and extensive trade relations with South Korea, but it has not abandoned its erstwhile ally North Korea. There has been evidence of collaboration by China and North Korea on missile programs. Over the years, North Korea has obtained assistance with its nuclear program from the Soviet Union, the PRC, and even the IAEA. There is no evidence, however, that China is now aiding North Korea with its nuclear program—and especially not with its nuclear weapons program. It seems that North Korea appears sufficiently unreliable to deter China from rendering support for PyongYang's nuclear ambitions, for either political or economic benefits. North Korea seems now to be undertaking its large scale nuclear and alleged nuclear weapons efforts independently.

Under some scenarios, one might reasonably conclude that the existence of Chinese weapons of mass destruction could deter the use of weapons of mass destruction by South Korea against North Korea. From another perspective, Beijing would be faced with a profound dilemma if North Korea were attacked by South Korea, particularly if the United States were to become involved. A similar, if possibly less compelling, dilemma would exist for Beijing in the more probable scenario of an attack by the North. It does not seem likely, however, that China would join North Korea in a nuclear attack against South Korea or provide it with missiles and/or warheads. China has much to gain from stability on the Korean peninsula and from its new, prospering relations with South Korea. Sufficient incentives to support a renegade North Korea in the use of weapons of mass destruction seem to be absent.

Turning this scenario on its head, it is virtually inconceivable, despite the vastly improved bilateral relations and recent diplomatic recognition, that China would join South Korea in any hostile actions against North Korea. With possible drastic changes in China's future political situation in mind, one might see in the decades to come China and South Korea joining

together to intimidate North Korea into reunification on terms favorable to South Korea and China, but neither present nor future relations between Beijing and Seoul portend their collaboration in the use, or threat of use, of weapons of mass destruction against Pyongyang to force reunification or for any other purpose.

China has annoyed Washington by not pressing North Korea harder to abandon its nuclear weapons development effort. The Chinese say first that they have done a great deal, and might contend that they have facilitated talks between the Koreas, helped with a dialogue between Pyongyang and Washington, and urged North Korean adherence to the NPT. Assistant Secretary of State Winston Lord stated on PBS's *MacNeil-Lehrer Newshour* on November 18, 1993, that Chinese officials are privately saying to U.S. officials that they are continuing to "do something" about Pyongyang—as Washington has asked.

However, Beijing has gone on to say that the application of pressure on Pyongyang or any other capital is improper international conduct and likely to be counterproductive. At a March 31, 1993, news conference Premier Li Peng answered a question about the possible imposition of sanctions by the UN Security Council:

> . . .China and North Korea have maintained long-term friendly and cooperative ties. . . . We neither encourage nor support nuclear proliferation, and. . .we believe that there should not be any presence of nuclear weapons in Korea, whether it is in the North or South Korea, because that will then be conducive to the stability of the situation on the Korean peninsula. As North Korea is a sovereign state, so it takes patience to solve this problem. It is our view that, if this case is submitted to the Security Council, we are afraid that it is not necessarily helpful for the smooth solution of this problem.

Regardless of how true this statement concerning the consequences of applying pressure may be with respect to North Korea, there is underlying the Chinese position the adamant feeling that China has suffered from such pressure and is likely to do so again. It wants no part of pressure tactics, being convinced of its own susceptibility. Foreign Minister Qian Qichen said to the UN General Assembly in September 1993:

> We should firmly oppose and adopt a serious attitude in dealing with aggressive acts of large and strong countries bullying small and weak ones, and of trampling on the sovereignty of another country in the international arena. However, China disapproves of the frequent indiscriminatory use of sanctions or force in the name of the United Nations.

Further, China's long-standing diplomatic and trade relationship with North Korea would make it a primary enforcer of any international sanctions that might be imposed. Of course China also has the luxury of not fearing directly a threat in any form from North Korea. In this vein, it was interesting—even startling—to learn that Chinese Defense Minister General Chi Haotian reportedly told a senior Japanese visitor on October 20, 1993:

> As for North Korea's development of nuclear weapons, even if North Korea has plutonium, it would be technologically difficult for that country to develop nuclear weapons, and the development of the means of delivering nuclear weapons would cost North Korea huge amounts of money. I believe that North Korea cannot develop nuclear weapons.

None of this is to say that Beijing should not be urged to press Pyongyang to permit inspections. There is possible reason to hope for enhanced interest in Beijing in being helpful on this, especially if China's newly important trading partner, South Korea, can make the right form of appeal and if rumbling persists that Japan seems likely to arm itself with nuclear weapons in fear of North Korea. As Winston Lord reminded the world as he spoke on television from Seattle during the APEC meeting, China also desires stability on the Korean peninsula and wants to discourage Japan's development of nuclear weapons. However, no one should be surprised at the appearance, at least, of Chinese ambivalence on the matter.

Southeast Asia

China is providing military aid and advice to Burma and has supplied equipment both to Thailand for its use and through Thailand to anti-Vietnamese factions in Cambodia. None of these situations suggests the introduction of weapons of mass destruction.

Cultural factors

The cultural factors pertinent to an examination of weapons of mass destruction in the Chinese context fall into two categories: (1) relevant aspects of the Chinese character that may affect a decision concerning the employment of weapons of mass destruction against another nation (barbarians, in the Chinese view), to the degree that one can generalize in the examination of such factors yet not fall into the trap of useless stereotyping, and (2) those aspects of the way Chinese look at their own country that might result in the use of weapons of mass destruction within China (still the Middle Kingdom below heaven, the center of the universe as the Chinese see it).

Long-suffering poor China as a victim of the West's perfidy

Many Chinese leaders at all levels beat contemporary American society to the punch in making much of themselves as victims in a world of oppressors. American officials living and visiting in China are frequently subjected to lectures on the evils that the U.S. (and others) have showered on China since at least 1840. China, according to the diatribes, is misunderstood, exploited, bullied, threatened, and mistreated in every conceivable way. Even when the U.S. attempts to be helpful, many in the Chinese hierarchy describe our action as a strategy of *peaceful evolution*, an effort to destabilize China by inducing political and economic chaos to undermine the Party, the government, and the socialist system. For all these reasons, the U.S. is still viewed by the older septuagenarian and octogenarian leadership as an untrustworthy, imperialist, hegemonic country out to impose American values on a pure China. A substantial dose of that attitude has been swallowed even by most of the younger leaders, in their 50s and 60s. A slightly more balanced view exists among those in lower-level positions who are younger; however, they are prone to think that Washington does not give adequate weight to Chinese views and is unlikely to cooperate with Beijing except in those few area with which Washington is obsessed. All generations of the leadership, however, are almost equally ready to cast the U.S. in the role of the devil, when angered or frustrated with Washington.

The words of Tsang Tak-sing, editor-in-chief of *Ta Kung Pao*, illustrate this point and make clear both that this vitriolic art form remains vital today and that Chinese bitter memories live on. Tsang was asked to contribute to a well-known periodical a short essay on the state of Sino-U.S. relations. Significantly, he elected to dwell on the *Yin He* affair, the tracking by the U.S. and the U.S.-demanded unproductive search of the PRC ship that U.S. intelligence insisted was carrying substances for delivery to Iran to be used in the manufacture of chemical weapons. Tsang wrote:

> To make false accusations against a neighbour is hardly the way to a stable relationship. The *Yin He* affair has made it clear that the US has neither any basic respect for China nor for international law. . . . Based upon the same kind of intelligence or idiocy, the US has imposed sanctions against China for the alleged sale of advanced-missile technology to Pakistan.
>
> The Clinton administration has strangely allowed its foreign policy to be run by spies. If US intelligence services were that competent, they should have captured the warlord Mohamed Farrah Aideed in Somalia long ago, or would have had advance warning of the Iraqi 1990 invasion of Kuwait. Were China to adopt the same course and formulate her policy towards the US based on intelligence reports about the latter's attempts to sabotage the Chinese socialist system, Peking [sic] would have already severed relations with Washington. . . .
>
> US officials did not even apologise when they discovered their mistake, not to mention any compensation for the ship's losses. . . .

In the early years of the founding of the People's Republic of China, there had already been attempts by Peking to start a new relationship with the US on the right footing, only to be spurned by American leaders who despised the Chinese communists. There was the occasion when John Foster Dulles rejected Zhou Enlai's outstretched hand. . . .

Now Washington has again made it clear that China is not up to US standards, and regards those making decisions in Peking as. . .'bad guys'. . . .

Americans want to change China, and want to choose the government for the Chinese. There is no longer any appreciation that the Chinese are proud of their own history and culture. Although Americans have difficulty relating to one another, the one thing at least they may learn from the Chinese is that friendship can only be based on trust—and not on intelligence.

A variation on this theme appears in the oft-heard discourse describing China as a poor, misunderstood developing country compared to a rich and powerful United States that not only takes advantage of China but also expects too much of a country with so many problems to solve. It should be evident to others, it is argued, that China is justified in resolving its problems by whatever means it can bring to bear. Added to this attitude is the conviction, oft-stated and conceivably believed by many, that China's positions are principled and correct, with the implication that the positions of others are not.

These Chinese attitudes raise the troublesome specter that the Chinese may convince themselves, even more easily than might other societies, that an action they are contemplating is proper and correct. Furthermore, that action may be justified by past wrongs perpetrated by other nations and China should be excused or understood in light of the undeserved humble status that China has been forced to occupy. Compounding the matter is the propensity of the government in Beijing to proclaim to itself, its citizens, and the world that China will never succumb to pressure. China must be treated on the basis of equality and will not allow itself to be forced or pressured into any course of action, the litany goes.

Possibly this all boils down, for this examination, to the question whether all the previously discussed constraints on the use of weapons of mass destruction could evaporate in a puff of angry steam. It is not possible to know enough about the recent history of Chinese internal deliberations at the highest level to arrive confidently at conclusions. One can hope that the visible record of China's rational conduct with respect to its weapons of mass destruction arsenal is the best indicator—the record of not resorting to brinksmanship and repeated statements about no-first-use, for example. On the other hand China has not been put to a test resembling the Cuban missile crisis. China has not faced imminent destruction of its nuclear arsenal, and has not for some decades feared that its cities were vulnerable to imminent nuclear attack or threat by other weapons of mass destruction. If confronted with these situations would China back down and seek compromise or would it launch and feel wholly justified in doing so? The answer is sufficiently unclear for there to be good reason to fear the worst.

The PRC government is not a monolith

In dealing with the PRC in a time of crisis, it is important to keep in mind that even in China there are competing arguments in the decision-making process. James Lilley was U.S. Ambassador to China during the Tiananmen Square events and for the period of retention in the American embassy of prominent scientist, dissident, and asylum-seeker Fang Lizhi. Lilley wrote in late 1993 after leaving his position as Assistant Secretary of Defense for International Security Affairs:

On the Chinese side there are still the traditional contradictions in foreign policy between those who want to join the established world order and those who do not. China can thus cooperate with the US in the Gulf War, but then turn around and acquire and proliferate weapons of mass destruction in the name of its national interest . . .

China's performance has been erratic, often reflecting insecurity, chauvinistic and aggressive behavior when vulnerabilities are perceived. . . .

The critical issue of proliferation and acquisition of weapons of mass destruction needs to be addressed in a strategic context through political-military discussions between the leaders of both sides. Deception has been part of China's strategic game for centuries, just as laws are part of ours today, but we can find common ground as we have in the past...

So, although there is good reason to fear that the Chinese leadership may enter into the worst forms of deception and make dreadful decisions, there is reason to hope for better; and there are opportunities to foster reasonable and responsible actions by the Chinese government. There were for the PRC government the fiascoes of the 1979 invasion of Vietnam and the 1989 massacre around Tiananmen Square, but there has not been an attempt to invade Taiwan and a commitment has been kept over the last few years not to resolve the Spratly Islands disputes by force.

An indomitable China versus an indulgent Western society

Compounding the problem of perceived vilification and unfair treatment is the Chinese conviction, especially by more senior military people, that the PLA and Chinese citizens can endure any hardship, withstand any attack, undergo any deprivation, and eventually prevail in the conflict. Mao was very pointed in this regard when he made his oft-cited comment that nuclear weapons were paper tigers that could not even kill all the pigs at Bikini. Mao asserted that, as a consequence of its population, China would emerge triumphant in a global nuclear war. For many, the Maoist strategy stands: the PLA with its large numbers of troops and superior determination and persistence can eventually surround and overcome any enemy, regardless of the weapons and other technology employed. Further, China is patient; it can outlast any adversary in diplomacy, siege, or strife. The corollary is that the countries of the West, and especially the United States, will falter under pressure and collapse in the face of real adversity, or at least relent as the months or years of difficulty pass. Mao, once again: "The enemy camps, we harass; the enemy tires, we attack. The enemy advances, we retreat; the enemy retreats, we pursue."

Before the ground phase of the Gulf War began in 1991, then-Deputy Chief of the General Staff General Xu Xin invited the American defense attaché in Beijing and visiting former Under Secretary of Defense Fred Iklé to a small but grand dinner at the Chinese State Guesthouse called Diaoyutai. He almost immediately launched into his analysis of the war to liberate Kuwait. He said without equivocation that the Iraqi strategy was to prolong the war and thereby overcome the technological and firepower advantages of the multi-national force, a force that must have a quick end to the war. He projected enormous losses by both sides, clearly implying that the U.S. and its allies could not absorb large numbers of casualties while Saddam Hussein could. General Xu even held up the specter of the enormous damage to the environment that the Iraqis were carrying out as a factor that would abet rapid erosion of the coalition governments' will to fight. He was, as his conversation the rest of the evening reflected, fighting vicariously through the Iraqis a war in which a developing nation confronted an invasion by technologically advanced American and allied forces. Iklé wanted that evening to explain to Xu the key role being played by high-tech weapons Iklé had pushed while at DoD. Xu was not rooting for technology.

Earlier the same day at the Beijing Institute for International Strategic Studies (BIISS), the Americans had heard from the Institute's deputy chairman, retired Major General Chai Chengwen, his "concerns" about the Gulf War's escalating and not ending quickly. He doubted the commitment of coalition partners if chemical and biological weapons were introduced. He warned that, in war, governments can be expected to take any

measure to survive. He called on the Institute's "Middle East expert," a research fellow named Sun who had "worked in Iraq," to offer his conclusions. Sun described the tens of thousands of casualties inflicted by CW during the Iran-Iraq war and pointed out the "serious problem to the U.S." of worldwide terrorism that Iraq and its allies could carry out in conjunction with the war. He said that "despite casualties inflicted by repeated air raids, Iraqi ground forces were still strong, with intact command and control. Despite defections, morale is relatively high, and the defection rate much smaller than in the Iran-Iraq war. . . . In addition to the Iraqi regular forces, they also have a militia of 850,000 and 1.2 million members of the ruling party. That party has very strict discipline. . . . Even if Iraq is driven from Kuwait, the ruling party will continue a protracted war. . . .There will also be pressure on the United States because of an exacerbated Israeli-Arab conflict. The United States will also find there will develop problems with political stability among its allies in the region." The drumbeat went on; Iraq the underdog would wreak misery if not defeat on a United States that was not good for the long haul, especially when international and domestic political problems multiplied and there was no end in sight to the war.

In August of 1991, after the Gulf War, General Chai told the American defense attaché and a visiting U.S. congressman that American "relative power" was now less than after World War II. He said, "...the Gulf War was fought under exceptional circumstances. . . . [I]f the U.S. had not formed a political coalition, such success would not have been possible." Chai noted, "[O]nce force is used it will lead to colossal damage and casualties." Commenting on the role of hi-tech precision weapons, Chai countered the utility of them: ". . .but the other party will use force—and not necessarily follow your rules of the game. Casualties and damage will not be limited as you planned." In the heart of septuagenarian General Chai Chengwen and those around him in the PLA-sponsored BIISS (now called the China Institute for International Strategic Studies), the ability of a strong-willed party backed by a large and loyal army is an invincible force against a fainthearted nation, regardless of the weapons it uses.

Might this conviction on the part of Chinese leaders translate in stark terms to a conclusion that, should China use nuclear weapons at sea against a Seventh Fleet task force, the threat of even a single Chinese warhead reaching New York City or Washington would deter retaliation by the weak-willed United States; or, to take it a rung farther up the escalatory ladder, that China could withstand attacks on many of its military facilities, ICBM sites, and cities but that the Americans will cave in when their first or second or third city is hit? The Chinese could well think, just as they did during the time of Mao, that in a nuclear exchange China will prevail by perseverance and force of will and by virtue of its huge population, all 1.2 billion of them so well accustomed to the harshest things that life can bring. China will rise from the rubble like a phoenix, and a hard blow will have been struck against the pervasive evils of Western imperialism and hegemonism.

China now, in fact, does have a great deal more to lose than when these attitudes were formed. There will be a struggle between those who consider these ideas chauvinistic and archaic and those who hold on to them firmly, either out of hopeful reverence for the past or enduring conviction. The degree to which they are held among various Chinese leaders correlates relatively well to age, although the proportion of nonbelievers is increasing. Few remain who recall the Long March of 1934-35 as the seminal event of their lives. With the amazing growth of the Chinese economy and the rise of a truly entrepreneurial spirit, many among the leadership and the population live for much more than revolutionary ideals and selfless devotion to the Communist Party. Some, even among the most vociferous zealots, may be harboring profound doubts about their system and its sporadic condemnation of Western devils. Their confidence in their

convictions has been shaken by the economic and social successes of their compatriots in Hong Kong and Taiwan and by the changes in Eastern Europe and the former Soviet Union. However, in a society where survival has meant, and often still means, outdoing the orthodoxy of thy neighbor, few—especially among the privileged leaders—are brave or foolish enough to utter heresy either to countrymen or foreigners. Yet it is clear in southern China and even in Beijing that many millions of influential people do not consider communist ideology and other aspects of their governmental system as relevant either to their lives or to the future of China. These precepts are often viewed by up-and-coming people either as little more than a troublesome archaic and crumbling obstacle to be surmounted or a joke that can be laughed at and then ignored.

In dealing with this aspect of the Chinese outlook, U.S. interests are best served by strengthening the positions of those more likely to be progressive and rational. In a crisis, if those we want to be influential have clout and can produce tangible results, the odds are greatly improved for a favorable outcome. These tangible results can take the form of the ability to contact Western leaders, negotiate and make progress, and offer sound alternative solutions amid pugnacious proclamations by others. As with the crumbling Soviet Union, there will be compelling demands for fiscal and other aid. The likely problem for the West, and especially the U.S. government, will be ascertaining who among these progressive leaders is in a position to speak for important factions in China and to deliver at home—and to do so in a way that leads to success rather than counter-productive revelations of American "interference." Another problem will be that of meeting or skillfully deflecting those demands for support that will undoubtedly be made, certainly to include requests for funds and other forms of aid, conceivably including military assistance in various forms.

Seeking solace in consensus

China is a land in search of harmony. There is the still-popular parable that places the blame in a barking-dog controversy on the aggrieved neighbor who has not been able to accommodate to his plight of endless nights without sleep. When confronted with a difficult issue, the Chinese tendency is not to get behind a strong leader with innovative ideas who can lead them decisively to a solution. Instead, they want to find a way that accommodates all parties and viewpoints. Yes, there have been strong Chinese leaders who have undertaken startling initiatives—some of them terribly ill conceived—and they have acted quickly and decisively at least to get rid of their enemies and opposition so they might have consensus behind their decisions. On a matter as far-reaching as a decision to use weapons of mass destruction, a leader may make a decision and give an unequivocal order. By the time he has done so, he will have sought agreement from several bodies of leaders, the final and most important being the Party elders.

In China, the desire to avoid confrontation, the desire for harmonious relations, and the need to allow others to save face are all a much greater and more important part of the culture than Americans appreciate. It is such a part of the cultural fabric that good solutions and good decisions often do not carry the day. The comprehensive volume, *China: A Country Study*, compiled by the Library of Congress sheds some light on the origin of this cultural factor, stating:

> An ethical system of relations. . .carefully defined each person's place in society. In this system, harmony of social relations rather than the rights of the individual was the ideal. The highest social status was held by scholar-officials, the literati who provided the interpretations needed for maintaining harmony in a slowly evolving world.

This concept from Confucian teachings has survived. The desire, or even need, to avoid absolute defeat of an opposing position or to avoid becoming isolated while championing

one's own position has been learned over countless generations and often can be a primary factor in the Chinese handling of an issue when Westerners would find the process absurd.

Through Western eyes, this process contains the seeds of paralysis and consequent disaster. A recent example makes the case: the events of May and June 1989 have had enormous adverse effect on China. The actions of the PLA in front of a global television audience are to many of the world's leaders and citizens their defining event for China and its government. Yet some serious analysts of the events that led to the Tiananmen Square massacre contend that a clear order to fire on the demonstrators was never given. There was, it is asserted, equivocation and the issuance of unclear orders—orders that could have meant authority to use lethal force or could be subject to other interpretations. Then, amid provocative actions by the demonstrators and attacks on troops, firing began. In this scenario, the nearest thing to clear direction from above was the absence of an order to cease fire. In this example, although admittedly not confirmed by documentation, events in a military setting mirror a prevalent situation in Chinese life: conceivably, no one could bring himself to make the decision to act in a very difficult situation, and then no one made the decision to stop the action that somehow occurred.

China could find itself using weapons of mass destruction without having made a clear-cut decision to do so and then find itself lacking in the ability promptly to rescind the perceived order to launch or otherwise to call things to a halt before they proceed further. The nation that is the object of Chinese wrath in the form of conceivable employment of weapons of mass destruction has great reason to be concerned about ambiguity in signals it receives from the Chinese leadership. One can hope, on the one hand, that the inherent Chinese desire to obtain consensus will lead to the most careful deliberations and rational decisions or a delay in possible precipitate dangerous actions. Of far greater concern is the other scenario: uncontrolled action evolving out of uncertainty and confusion wherein no one gave a direct order to start and no one gives the order to stop.

A land of connections, not laws

If this sounds preposterous, it should be recalled that China is not a country of laws and regulations that are followed when the chips are really down. China is a country run on *guanxi*: relationships, connections, personal contacts, family ties, close friendships over decades, power derived from networks of people for whom the most important to the most trivial of favors have been done, influence stemming from wealth and the ability to get things done for people who know the system does not work for them. In some cases, laws are enforced and procedures are complied with simply as one of many means of supporting the *guanxi* system—not because compliance with the law is the right thing to do. The Chinese do not crave the precision and predictability of the word of the law or regulation. There is no general abhorrence in China of uncertainty. Uncertainty permits flexibility. Grey areas are the land of opportunity. Clarification makes it more cumbersome to do that which one wishes. The Chinese government has no desire to clarify for the United States or the world the way in which it controls its nuclear arsenal. If there are elements of ambiguity in these launch procedures, there are undoubtedly members of the Standing Committee of the Politburo and the Central Military Commission who are not upset by this situation. They see it instead as a possible avenue to exercise their will in a crisis. It will be a fair fight: the guy with the most *guanxi* wins—just as it should be.

The obsession with stability

A pervasive factor in current Chinese political thinking is the obsession with internal stability or political stability, purportedly as the means, among other things, to continue and enhance national economic development or to avoid bringing such development to a halt. Of course it means avoiding chaos and keeping the workers in the factories and the farmers in their

fields rather than having them marching through the streets and waving signs in city squares. It also means keeping the Chinese Communist Party in power. It means ensuring that the same economic reforms do not evolve into uncontrollable demands for political change that mirror those that have occurred in the former Soviet Union. To try to ensure all these things, the Party and the government it controls so closely give the very highest priority to lessening the risk of instability. These efforts to preserve stability are not just the subject of secret deliberations among the leadership or the privately held convictions of the elite. The Chinese public is subjected to a continuing din of pronouncements asserting that economic and social progress cannot continue if the country is not stable—meaning that workers, students, and intellectuals should not engage in dissent and should not make demands or attempt to attain political reforms unacceptable to the Party.

Could Chinese WMD be used within China?
This devotion to ensuring stability is so deeply held that one at least must examine the possible use of weapons of mass destruction by the Communist Party and PRC government against its own citizens. This matter is made all the more complicated by the enormous changes now occurring in the Chinese economy and way of life. Professional China analysts have no greater fixation than the effort to determine how continued Chinese economic growth and the accompanying opening to the outside world will affect the pace and direction of political and social reform. Almost all conclude that radical change is inevitable. The outcome could be evolutionary or it could take the form of a *real* Chinese revolution or civil war.

For this reason, it is necessary to consider the potential for use within China of weapons of mass destruction, for example to quell a major anti-government and anti-Party uprising. Short of the highly unpredictable milieu of a civil war, the use of weapons of mass destruction to suppress dissent can be dismissed if for no other reason than the unlikelihood of a need for it. The People's Armed Police (PAP) and the PLA, with the support of all of the internal security and intelligence networks need not resort to such drastic and counterproductive actions to accomplish control of an unruly citizenry. The Chinese government and its forces are now prepared to be far more effective at very early suppression of an uprising resembling the student protests at Tiananmen Square and to do so without the great amount of bloodshed and international notice that occurred in 1989.

The question of PLA and PAP loyalty to the Party
The scenario described above assumes the continued loyalty of the PAP and PLA to the Party and the government. The tales of certain PLA units' reluctance to act against the students in Tiananmen Square in June of 1989 may fuel speculation about defections by military commanders and units. The tradition of local military commanders setting up fiefdoms in the military regions may add more fuel to that speculation. However, the Party has moved since 1989 to eliminate these potential problems. They replaced many unit commanders and carried out a major shake-up in the military regions to demolish these regional concentrations of military and economic power. There is no assurance available to the outsider that these sweeping actions achieved the desired result, but the Party seems content with the changes it has wrought. The odds are at least very greatly reduced that the PLA will at an early stage contribute to a movement to tear China apart or to overthrow the Party—or to stand aside while such events transpire.

Closet dissenters in the Chinese hierarchy?
There are imponderables in these equations. Among them is the question of whether there are hidden in China's leadership and bureaucracy progressive and thoughtful younger people who are deeply unhappy with the Communist Party and their government. In a time of political crisis, will there be many who will consider it a time of opportunity and decide they have been living a lie? Will

significant numbers decide that the risks of enduring the likes of the present tribulations of Russia are worth taking to try to transport China into the future as a democratic nation, or at least a nation not under the yoke of communism? If so, then one of the most troublesome, even if improbable, scenarios involving the possible employment of weapons of mass destruction is in the internal struggle as a besieged Communist Party fights a battle without restraints for self-preservation. Unlikely? Yes. Impossible? No. No indignity imposed on the Chinese people over the millennia has exceeded those they have suffered at the hands of their governments or fellow citizens, even unto the modern era.

Too busy making money to make trouble

Lest there be undue attention given to the cataclysmic events hypothesized above, another key factor in China's ongoing rapid economic development and opening to the outside must be taken into account. At least in the cities of China, where there is the most realistic potential for uprisings, there is another layer of protection for the government and the Party beyond the PAP and PLA and the protective effects of incessant propaganda about the necessity for stability. Today, the primary weapon of the Party and the government against unrest is prosperity. To put it simply, the young people of China are too busy making money and enjoying a better life and the excitement of entrepreneurship to dwell on dislike for an authoritarian government.

This is true to a far lesser degree in the countryside, but the danger there from united action by disciplined dissenters is far less and more easily kept from growing to troublesome proportions. Certainly one does not want totally to discount the possibility of a grand spontaneous uprising by farmers, workers, and students. However, it is difficult to give serious consideration to the probability that all the shielding layers cited above would be demolished or overturned, that the dissent would grow to massive proportions, and that the Party would then make the momentous decision that the day could be saved by the use of weapons of mass destruction.

Ethnic unrest in China's "autonomous regions"

Separate consideration must be given to Tibet, Inner Mongolia, and Xinjiang. (Xinjiang is the large arid "autonomous" region that composes the bulk of far northwest China.) Tibetan dissent, regardless of how unexpectedly persistent or intense, remains subject to suppression by conventional means. There are simply no targets for nuclear weapons that one can imagine even in the scenario of a wildly rebellious Tibet. To give even passing consideration to the use of the chemical and biological weapons (that the Chinese profess not to have), one must get past the issues of their lack of utility, the stigma associated with internal use, and the large number of Han Chinese (the majority group in China) who are now interspersed among the Tibetans. A very similar situation applies in Inner Mongolia, despite a report early this year that Beijing has put out feelers about reuniting Mongolians in Inner Mongolia, Mongolia, and Buriyatia (in Russia)—apparently as part of China.

Xinjiang, and to a lesser degree other Muslim or Turkic regions within China, cannot be dismissed quite so handily. Here there is the added element of potential collaboration between the people of Turkic extraction in Xinjiang, who have traditional animosity toward the Han Chinese, and highly volatile governments and factions in the Central Asian Republics that were formerly part of the Soviet Union. Beijing envisions a threat from Pan-Turkism that could affect China's far western provinces and autonomous regions, and possibly Tibet. Chinese specialists on Central Asia assert that senior officials of Turkey have made statements revealing aspirations of a bloc of Turkic countries including Azerbaijan and the five Central Asian Republics. There are also concerns that a bloc of Islamic nations could emerge armed with nuclear weapons from the former Soviet Union.

Once more, we are not looking at an imminent contingency but rather examining an unlikely, but not impossible, sequence of events. In this case the Chinese would be viewing the situation as a threat against their sovereignty, an effort by outsiders from Central Asia to wrest Xinjiang, or a piece of the region, with its essential oil reserves and other natural resources, from their legitimate possession. On the other hand, the natural constraints against the use of weapons of mass destruction also have to be taken into account in calculating the odds that the Chinese government would employ them. Weapons of mass destruction would not be an early or likely choice to quell revolt in Xinjiang.

Regional Political Context

Taiwan

On every possible occasion, China makes the point that it considers Taiwan as simply a wayward province which will some day again acknowledge its proper position in the fold of mother China. Implicit in that strongly held view is abhorrence of the notion that Taiwan could become an independent country. At present, the governments of both the mainland and Taiwan acknowledge that there is only one China, the PRC taking the position described above and the ROC officially asserting that it will one day free the mainland from the yoke of communism and assume its rightful position of national leadership. As greater political pluralism has taken hold in Taiwan, there are factions, including the indigenous residents, who do not share the bonds to the mainland that are so important to those who crossed the Formosa Strait in 1949. The consequence of all this is PRC saber rattling each time there is talk on Taiwan of independence.

The bellicose bluster from Beijing in response to these outbursts on Taiwan now takes the form of military exercises or troop movements on the mainland opposite Taiwan, or possibly just as frequently only verbal bluster. The point is that threats of the use of nuclear weapons are certainly not part of Beijing's reaction. In addition to the PRC's oft-repeated statements about no-first-use and no use against non-nuclear-weapon states, there is the inherent constraint imposed by the very concept of using WMD against fellow Chinese in what is claimed to be a part of China. Further, it would seem counter-productive to use such weapons against Taiwan and then to expect that the people of Taiwan would forgive and forget as they and subsequent generations lived out their lives under PRC governance. The idea of a nuclear conflict between the mainland and Taiwan seems all the less likely as the economic ties grow and Beijing's stake in the positive trend in political relations increases. Beijing's attention now is healthily directed toward promoting greater investment from Taiwan in the PRC's economic reform movement.

Nevertheless, China is a nuclear power. If Beijing were faced with the prospect of defeat and dismemberment, as it would likely perceive Taiwan's attaining independence, it may decide that the consequences of that outcome warrant taking the most drastic actions.

The prospect of a nuclear-armed Taiwan

An unwanted complication in this straightforward scenario would be the development or imminent development by Taiwan of a nuclear weapon. Certainly the pressure from the U.S. and other countries would be intense should there be a hint of this occurring, but, if diplomacy and threats did not suffice and Taiwan seemed about to become nuclear-armed, the PRC government would feel threatened and uncertain about the implications. Regardless of how insignificant Taiwan's nuclear arsenal might appear compared to that of the PRC, there is at least a reasonable chance that the PRC would feel vulnerable and compelled to act, as Taiwan has only one enemy against whom such a weapon could be used. One solution the PRC could employ would be to conduct covert sabotage or an overt conventional strike to destroy the nuclear weapons development facility. Although it is difficult to forecast the other factors that might

come into play during such a crisis between the PRC and ROC, it would seem that Beijing could carry out such an action and probably escape retaliation by the United States and maybe even by Taiwan. The PRC could cite the Israeli precedent and make other high-sounding noises, especially if the destructive action was conducted cleanly and limited to the suspected nuclear facility. It seems far less plausible that the PRC would use a nuclear weapon in this situation.

Chemical Weapons

Another twist is introduced if one gives weight to the *International Handbook on Chemical Weapons Proliferation*'s suggestion that China is less likely than Taiwan to have chemical weapons. This publication points out that "press assessments name Taiwan as a state with a high probability of possessing CW munitions. . . and Taiwan was named by Director[s] of Naval Intelligence Studeman and Brooks" as developing or having achieved chemical warfare capabilities. The *Handbook* goes on to state that the ROC "might be expected to publicize such an 'equalizer' if it had one—or even if it did not—yet public information is weak and the ROC has denied the capability. In another section it asserts that a threat from Taiwan "is not to be taken seriously," stating that one should look elsewhere for the principal source of a CW threat to China—and, of course, a provocation that might loose China's CW and/or BW arsenal.

A nuclear power backing Taiwan's assertion of independence

An aspect of the matter that is less clear cut is PRC reaction against another nation that violates the Chinese version of its sovereignty and interferes profoundly in PRC-defined internal affairs by aiding the ROC or a Taiwan faction in a serious effort to declare Taiwan independent and make that declaration stick. It is conceivable in some versions of this scenario that the PRC could ominously remind the ally of Taiwan of the "wholly defensive" nuclear arsenal that it has maintained, especially if that ally of Taiwan were a nuclear-weapon-holding state. The specifics of the PRC's options and the choice of potential targets are more difficult to analyze. If the ally were, for example, to put in place around Taiwan protective naval forces sufficient to overwhelm the PLA Navy, it seems at least conceivable that at some point the PRC might consider, threaten to use, or actually employ one or more nuclear weapons. The use of nuclear weapons at sea in a demonstrative mode, in an actual attempt to weaken a Navy cordon around Taiwan, or to weaken the will of the aiding nation's population is a conceivable concern with an unpredictable outcome. PRC strategists could hypothesize (dangerously), as some of their American counterparts did during the Cold War, that a single nuclear weapon used at sea would make the point and not result in further nuclear escalation. Dr. Lin cites a debate conducted in the official and authoritative PLA newspaper in 1979. Here is an extract pertinent to this issue:

> . . .Obviously, the employment of tactical nuclear weapons has already separated itself from that of the strategic nuclear weapons, rather than being a part of a continuum. The employment of tactical nuclear weapons has the potential for escalation but also the potential for limitation to the tactical realm. For example, in the future war, if the enemy employs tactical nuclear weapons in the direction of our primary defensives and we also employ only tactical nuclear weapons for counter-offensives, then the enemy may not rashly employ the strategic nuclear weapons for fear of suffering unfavorable consequences internationally.

Japan

There is among many Chinese a deep dislike and distrust of the Japanese. In examining the origin of this tension in the modern era, one should go back at least as far as the defeat of China in 1895 at the conclusion of the Sino-Japanese war (that had the fate of Korea as a focus). However, the current intense feelings stem primarily from the Japanese invasion of China in 1937 and the bloody and cruel eight years of war that followed. The very success of much more recent Japanese economic

undertakings in China have, for some Chinese, refueled the distrust and dislike.

For a period near the end of the Cold War, the Chinese embraced Japan as an Asian ally against a threatening Soviet Union. Currently, the Chinese harbor an abiding fear of resurgent Japanese militarism, a fear that permeates their strategic thinking and manifests itself in their foreign policy statements. Most recently China has been opposed to Japan's sending its forces abroad—mine sweepers to the Middle East and troops to Cambodia. Some Chinese specialists on Japan have offered the opinion that the passage in 1992 by the Japanese Diet of the law allowing peacekeeping operations was an initial move toward the use of Japanese forces in many areas of the world. Additionally, the Chinese see Japan as their primary competitor for economic and political dominance in East Asia. None of this, of course, has led China-watchers to a concern that China will use its nuclear weapons as leverage to exact from Japan retribution in some form for past atrocities and other misdeeds. This fear of Japanese militarism and the fact of economic and political rivalry only set the scene.

The conceivable danger, albeit remote, is that this long-standing and deep animosity could be coupled with another provocative factor that would lead China to consider the use of weapons of mass destruction against targets in Japan. The anti-Japanese feelings could serve to reduce Chinese compunction against putting the Japanese civilian population at risk. American actions, as in the possible active military support of a Taiwan separatist movement described above, could provide the catalyst. If this scenario seems far-fetched, it should be remembered that compelling assertions have been made that Chinese nuclear weapons have over the decades been targeted against U.S. bases in Japan, as well as in the Philippines.

Another scenario discussed in Chinese think-tanks is a severe economic downturn for Japan leading to a Japanese decision to become more aggressive, including the possible use of force, in an attempt to regain its status or to protect itself as it attempts to recover from a weakened and vulnerable condition.

Whether weak or strong economically, the Chinese see Japan as a potential nuclear-weapons state. They view the potential acquisition of nuclear weapons by North Korea and other Asian states (Central Asian Republics or Middle Eastern countries) as strong factors that could lead the Japanese to exploit their evident scientific and technological potential for the rapid development of nuclear weapons and delivery means.

None of this is to suggest that there is an imminent threat to Japan from Chinese missiles. The point is that the factors described should be kept in mind as other developments occur and other decisions are made. The combination in one boiling cauldron of a hated and feared Japan with nuclear potential acting as host to American forces, a perfidious nuclear-armed United States aiding a rebellious "island province," and a Chinese Communist Party and PRC government hanging on to power by its fingernails makes a volatile brew.

Vietnam and other Southeast Asian nations

China's southern neighbor, Vietnam, also presents a complex situation. China has stated repeatedly and adamantly that it will not use nuclear weapons against countries that do not have such weapons. Despite the backdrop of China's strong allegations that Vietnam conducted CW attacks during their brief 1979 war (and counter claims by Vietnam), it is difficult to imagine a situation where Chinese use of weapons of mass destruction against Vietnam would have utility or serve China's interests. (As the *International Handbook on Chemical Weapons Proliferation* reminds: "It is important to recognize that many CW allegations against China may actually stem from its possession and use of tear gas.") China has other (conventional) forces more usefully

employed against its old foe and South China Sea sovereignty rival.

The same can be said for other countries with competing claims to islands in the South China Sea. If any store is to be put in statements from Beijing, one must also take into account that Foreign Minister Qian Qichen pledged to his ASEAN counterparts in the summer of 1992 that China would not employ force in the Spratly Islands sovereignty disputes.

Even the formation of a threatening coalition of these countries making claims to the Spratlys or parts thereof is not enough to warrant fear that the PRC would threaten to use, or use, weapons of mass destruction. The entry of a nuclear-weapon-holding state as an ad hoc ally of Vietnam or of one or more of the other claiming nations would also not likely force the PRC to look to weapons of mass destruction. Vietnam must live with the knowledge, nonetheless, that its northern neighbor is a nuclear power with whom it has a history of bitter confrontations and an ongoing dispute over the Spratly and Paracel Islands. Though less actively involved, the Philippines and Malaysia also are forced into this realization. Its nuclear status is a not-so-subtle reminder of the strength of China's hand.

There are additional reasons for China not to resort to the use of nuclear, chemical, or biological weapons against Vietnam. Among them are the many external and self-imposed constraints on use of weapons of mass destruction already discussed. There is the rapprochement between Beijing and Hanoi witnessed at the start of this decade. As a consequence, Sino-Vietnamese relations have in recent years been restored to normality and many mutually beneficial governmental and economic links between the two countries have been established and are developing rapidly. Possibly the most useful way to look at the situation is to say that the shadow of Chinese capability always looms over their relationship. The more real threat to Vietnam, however, is improved Chinese conventional capabilities. As these conventional capabilities continue to improve, the already very remote threat of use of weapons of mass destruction grows even more remote. As Sino-Vietnamese relations continue to develop and provide mutual benefit, the prospects for conventional conflicts grow similarly more remote.

Objectives

Ranking of threats

Before examining and attempting to rank the various threats confronting the People's Republic of China, it is essential to put the matter of threats in context. China seems no longer to consider itself militarily directly threatened by other nations. This contention is borne out by the following discussion took place on January 23, 1992, at the prestigious military-oriented Beijing Institute for International Strategic Studies. American visitor Seth Cropsey, a former senior DOD official, the American defense attaché, and the American embassy political-military officer met with the Secretary General of BIISS, Mr. Cai Mengsun, a retired senior officer of the PLA. Cai had with him various members of his research staff.

Cropsey asked first for their thoughts on Japan. Cai said, "Japan is an economic superpower. . . . Additionally, we are worried about Japanese military expansion—but not seriously and not in the near future." A Mr. Yu interjected, "Countries occupied by Japan [before and during World War II] fear Japanese military and economic power. . . . The North Korean government two days ago made a statement about Japan's ability to obtain nuclear weapons." Cai made the obligatory statement that his government's position was that all American forces should leave Japan; in fact, all foreign forces should leave all countries, he went on to say. The American defense attaché noted that he had heard some Chinese say the U.S. should not be too quick to leave Japan. Cai said quietly, "You understand the Chinese position very well," clearly distinguishing between his government's pronouncements and

what they expected and desired. A Mr. Guo said bluntly, "Keep U.S. forces in Japan. The Japanese still do not regret their actions in China in 1937 and on through World War II. A unified Korea ten years or more from now, possibly with nuclear weapons, would be threatened by a Japan without U.S. military presence to exert control. In Chinese hearts, Japan is a real evil!"

Secretary General Cai turned to the general situation in Asia, apparently slightly uncomfortable with the candor that had arisen after his quiet comment about the desirability of retaining U.S. forces in Japan for the time being. "China's international situation is now better than it has ever been since the formation of the People's Republic of China. There is now no significant military threat." Mr. Guo added, "The greatest threat China faces would be a loss of its economic strength." Cai continued, "Our greatest concerns are population control of a country now numbering 1.1 billion and the necessity to continue economic development. We see no military threat, but we cannot be sure Russia and the CIS will be stable."

Mr. Li, obviously the delegated BIISS spokesmen on the issue, catalogued the external threats and/or concerns to China: "First is the Taiwan issue. The independence issue is developing there—a matter of concern here on the mainland, on Taiwan, and even in the United States. Also, there are the Spratly Islands. China has the luxury of the decisive say in this matter; the PRC will find the proper solution. Third, the regions of the former Soviet Union create uncertainty for China. Fourth, the security situation in Southwest Asia, Pakistan and India, is troublesome. Last is the matter of Chinese relations with the United States and Japan."

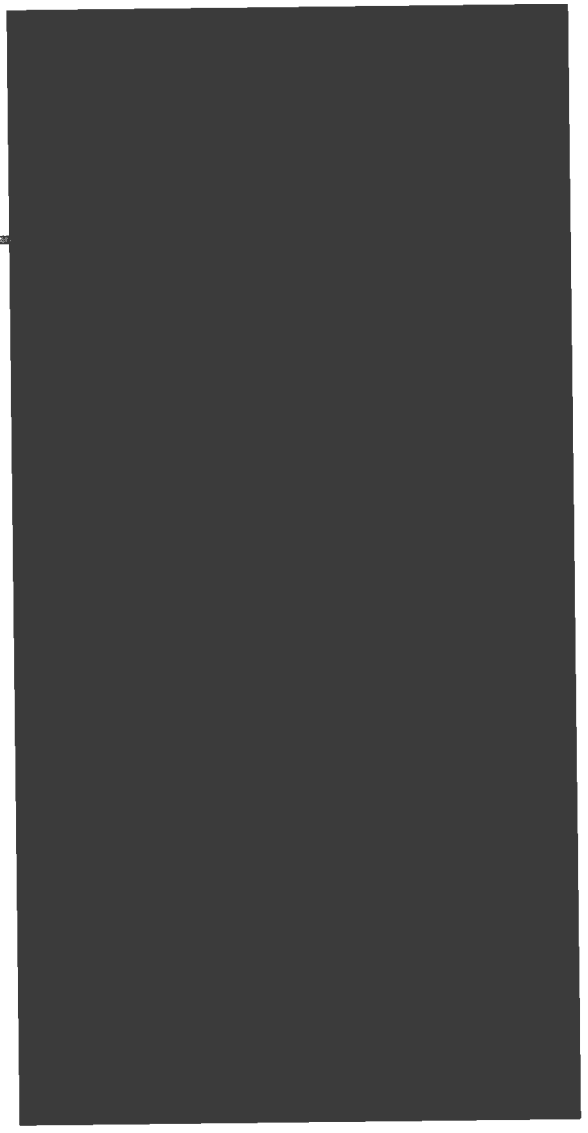
Later in the day, Cropsey asked Cai about the meaning for China of the turmoil in the former Soviet Union. Cai unhesitatingly focused on the problem of western China's ethnic minorities and the Central Asian Republics. "We must be careful in dealing with the people in western China. We have to improve further Chinese policy. If the standard of living is improved, the problem is less." Mr. Guo said he believed the [Muslim] minority problem in the west of China was a high risk matter. "If a 'commonwealth' forms in nearby former Soviet areas, this could draw in Xinjiang." As an aside, he said, "Also, growing economic and political divisions between the likes of prosperous and progressive Guangdong and Fujian Provinces [southeastern China] and Xinjiang are dangerous. We must be careful. The first goal of Chinese leaders must be to keep China whole." Cai summed up this point: "We must curb the chauvinism of the Han people [the majority ethnic group of China] and have them respect minorities. Look at Russian chauvinism! We must not let the gulf grow too wide between coastal provinces and other areas."

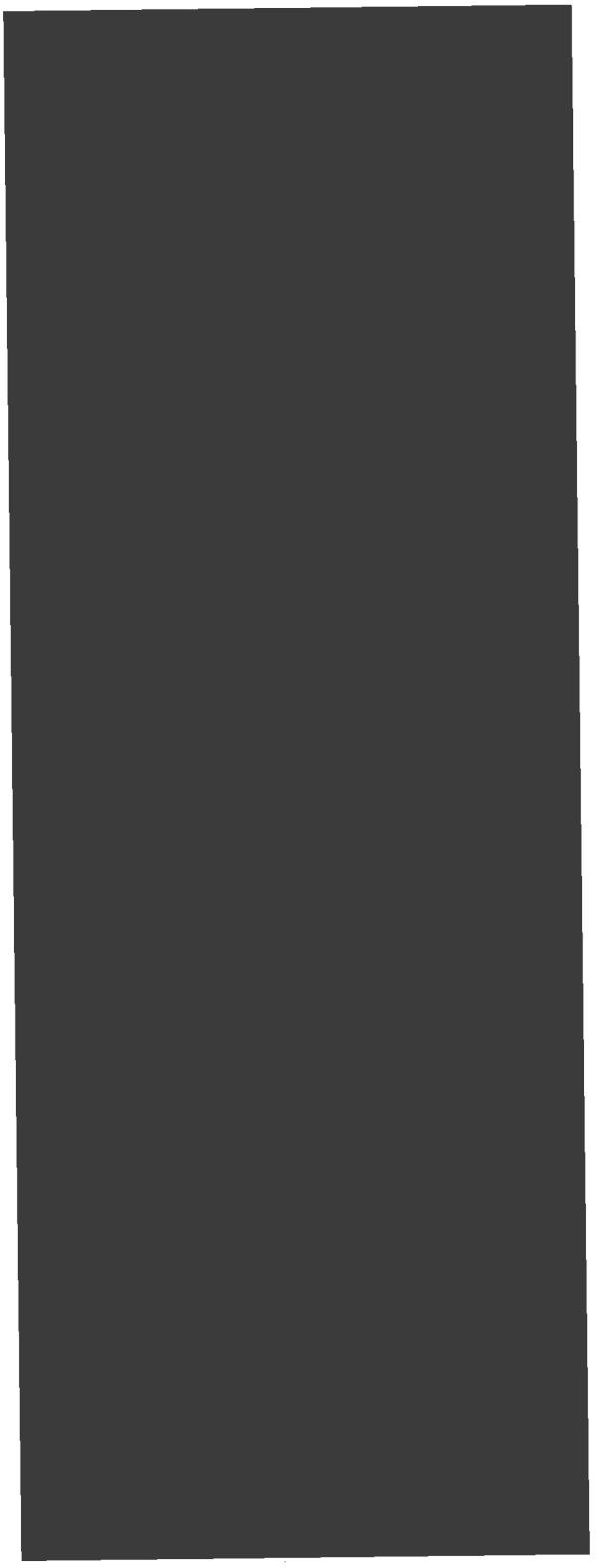
The day of discussion concluded with the issue of Sino-American relations. The negative impressions left on the American people and leaders by the events at Tiananmen and the questionable future of communism as a system were raised by Cropsey. Mr. Yu countered, "People in China have a different view. They now say that what the government did at Tiananmen was right. If they had not taken those actions, the Chinese people would now be hungry; see how the Soviet Union [sic] is now! In the future the government should do the same thing!"

Another exchange of interest occurred on May 7, 1992, when U.S. Under Secretary of State Arnold Kanter met in Beijing with PRC Deputy Chief of the General Staff Xu Xin. Kanter asked about developments in the former Soviet Union. Xu said some regions were subject to long-term turmoil. "There are contradictions in the fifteen countries of the former Soviet Union concerning borders, economic matters, politics, and religion." Xu remarked that the military threat [from Russia] had been reduced remarkably. He allowed Kanter to respond for a time, and then surprisingly homed in again on

the point he had alluded to about religious "contradictions." "And then there is a religious problem in middle Asia worth our attention. With the republics in turmoil, religious differences could lead to war. China has a border over 7,000 kilometers long, the longest parts with Russia, Kyrgyzstan, Tajikistan, and Kazakhstan. Before, that part of the border was with one country; now it is with four. Now the border situation is basically calm, but there are factors that could lead to serious instability."

Having attempted to give the flavor of Chinese views on threats to their security, the threats to China can be examined and ranked.





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India

As William Clark, formerly the American ambassador in New Delhi, affirmed in a conversation on October 19, 1993, Sino-Indian relations, including military relations are good and improving. The Sino-Indian border disputes are not important issues to either country or in the bilateral relationship. There is a bit of nuclear envy on the part of the Indians, and the Indians still smart after three decades from the quick punishment administered at the hands of the PLA in the serious border confrontation of 1962. None of this suggests a serious concern about use of weapons of mass destruction by either side.

It is, of course, the Pakistani factor that complicates the problem. Ambassador Clark asserts that there are no situations wherein India would not prevail in an all-out military confrontation with Pakistan. With that in mind, Chinese aid to Pakistan in its peaceful nuclear

program and, according to most analysts, its key role in the Pakistani nuclear weapons program and the means to deliver the weapons, if they have been assembled, must factor highly in India's assessment of China's role. If we assume that the long-standing animosity over Kashmir and other matters can escalate to the point of threats of use, or use, of nuclear weapons, China could be put in a box. If the Pakistanis make a plea that their national interests are truly threatened by a nuclear-armed India, China will have to consider whether it wishes to help.

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Japan

As examined previously, Chinese fear of resurgent Japanese militarism is one of the most important elements of PRC strategic analysis. The analysis seems to the outsider to be muddied by the strong anti-Japanese feelings that derive from the Anti-Japanese War (as the events before and during World War II are called in China) and from earlier historical events. Nothing the Japanese did in Asia has been forgotten or forgiven. Everything the Japanese do now is critically examined. Economic competition and related confrontations are the areas that could be the proximate cause of heightened antagonism and even future hostilities. Currently, the issue of sovereignty over the Senkaku Islands, northeast of Taiwan, has the immediate potential for a confrontation of naval forces from the PRC and Japan. It is hard to imagine the Senkakus as a direct cause of significant or prolonged hostilities. It is easier to imagine animosity over those islands added to some future Japanese ire over, for example, the Chinese archipelagic claims to the islands in the South China Sea creating a larger problem. Here Japan could envision its shipping routes to Southeast Asia and the Middle East (including its sources of oil) imperiled by the "legal" actions the PRC took in 1992 with respect to the Paracels and Spratlys (*Xi Sha* and *Nan Sha* in Chinese).

[redacted]

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United States

When the Chinese speak now of their fears about the United States, these fears are expressed in terms of concerns about deterioration of the bilateral relationship. The days of burrowing underground to escape feared American nuclear attacks are not even mentioned. The Chinese also do not often elect to set up the strawman of the U.S. as a military opponent because of American alliance with Taiwan. While Beijing may complain about U.S. provision of military equipment to Taiwan, Washington is largely left to its own devices to project the consequences should U.S. forces come to the aid of Taiwan in a confrontation with the mainland. China does not issue threats against the United States.

However, short of an incursion by some adversary into "real PRC territory"—the mainland, there is nothing more likely to drive the PRC to the brashest of action than moves by the United States perceived in China as an attempt to wrest away the province of Taiwan.

[redacted]

Turning to a less dramatic scenario, there are rumblings about the likely role of the U.S. Seventh Fleet if the Chinese become very heavy-handed in the Spratlys. These noises are made mostly by the Vietnamese, hoping to hear encouraging words that will discourage PRC oil exploration in areas of interest to Vietnam and the installation of more PRC military facilities on islands Vietnam also claims. When the Vietnamese have not heard what they hoped from the U.S., they have stopped issuing bellicose statements and swallowed their pride. Despite PRC statements that the Spratly Islands problem will be resolved without resort to hostilities, this issue has the potential to put U.S. Navy warships and aircraft in proximity to PLA Navy forces under unpleasant conditions. This, of course, does not suggest that the matter of WMD use would come into play.

CASE STUDY
NUCLEAR PROLIFERATION IN NORTH KOREA

Introduction

In 1941, the Japanese army chased a 29-year old Korean guerrilla leader named Kim Il-Sung from Manchuria into Russia, where he stayed in the city of Khabarovsk from 1941 to 1945. By the time his Russian-backed brigade made it back to Pyongyang in 1945, Japan had been attacked with the atomic bomb and been defeated. The Russians installed Kim as the ruler of North Korea and five years later the Soviet-supported Korean People's Army invaded the South. It reached the southern port of Pusan in six weeks only to be outflanked by forces led by U.S. General Douglas MacArthur fighting under the UN flag. After Stalin refused to lend North Korea any further help, Chinese troops saved North Korea for Kim Il-Sung. A military stalemate emerged around the original dividing line between North and South Korea but a cease-fire was only established after the United States threatened to use an atomic bomb to end the war. In 1956 Pyongyang began its long and costly quest for nuclear weapons. That quest may soon be coming to an end, one way or another.

Background

In 1985 North Korea acceded to the 1968 Nuclear Non-Proliferation Treaty (NPT) as a non-nuclear state, possibly as the price for continuing to receive support for its nuclear reactor program from the USSR, which had no interest in nuclear proliferation on the Korean peninsula. Although the treaty calls on parties to sign a Nuclear Safeguards Agreement with the International Atomic Energy Agency (IAEA) and arrange for inspections of their nuclear facilities within eighteen months of accession to the treaty, the Democratic People's Republic of Korea (DPRK, North Korea's longer form name) took until 1992 to do so. Five inspections took place in 1992.

The North Koreans admitted that they had extracted a "tiny quantity" of plutonium from its 5 megawatt (MW) reactor at Yongbyon in 1990 for purposes of research towards an indigenous plutonium fuel reactor. Although such efforts may be in keeping with the *juche* (self-reliance) ideology of Kim Il-Sung, North Korea stands a "long way off" from such advances in nuclear technology. Moreover, IAEA inspectors found strong evidence of four different extractions, one each in 1989, 1990, 1991, and 1992, totaling 148 grams of plutonium. In fact, IAEA inspectors found evidence of plutonium separation as early as 1977 when, under pressure from the USSR, North Korea allowed one small Soviet-built reactor to be placed under IAEA safeguards. Director of Central Intelligence Robert Gates called the 1992 findings "disturbing evidence of continued efforts to deceive" and said the North could have extracted enough fissile material for one bomb.

Suspicion immediately fell upon two suspected nuclear waste sites at Yongbyon, one built in 1976 and the other, dubbed "Building 500" by the CIA, and completed in 1992, as the likely locations of the missing plutonium, but these areas had not been listed by the North as nuclear-related sites in its agreements with the IAEA. The IAEA twice sought to inspect these facilities during its sixth regular inspection of DPRK nuclear plants from January 26 to February 8, 1993, and twice they were barred by Pyongyang from doing so. The North called them "two ordinary military sites" and said that the IAEA had behaved unfairly by acting on "faked-up.. third party... intelligence photos," that is, pictures from U.S. satellites. Pyongyang called on the IAEA to stop "obeying the superpower." The charge of fakery stemmed, in part, from the fact U.S. intelligence had deliberately degraded the photos in order to

hide from IAEA board members such as Libya and Syria how well U.S. satellites performed.

On February 9, 1993, the IAEA formally requested a special inspection of the two Yongbyon sites, as is their right under the Nuclear Safeguards Agreement. This was, however, the first such demand for a special inspection by the IAEA in its history. On March 8, the 1993 *Team Spirit* exercises began, involving 19,000 U.S. troops, over 100,000 ROK troops and U.S. F-16s, F-117As and B-1Bs. Four days into the nine-day exercise, the Central People's Committee of the DPRK voted to exercise its right to withdraw North Korea from the NPT, the first NPT signatory ever to do so. Under the terms of the treaty, North Korean withdrawal would be effective in three months, in this case, June 12.

Throughout March, April, and May various North Korean officials laid out Pyongyang's demands and conditions for remaining within the NPT and resuming IAEA inspections. They included a permanent end to the annual U.S.-ROK *Team Spirit* military exercise; inspection of various South Korean installations, including U.S. bases, by North Korea or the IAEA; removal of all U.S. nuclear weapons from South Korea; lifting of the U.S. nuclear umbrella over the South and removal of the "nuclear threat" to North Korea; removal of all U.S. troops from South Korea; guarantees against nuclear attack by the United States; "recognition of the North Korean socialist system;" and "fair," "impartial," and "neutral" treatment by the IAEA.

On April 9, Pyongyang announced it would not seek to resolve the inspection issue on a bilateral basis with Seoul, but called for meetings with the United States, saying that "final solution of this problem depends on DPRK-US negotiation." Later that month, the United States agreed to direct talks with North Korea, but reaffirmed its view that "the Korean problem must be resolved through dialogue between the North and South."

At the first set of U.S.-DPRK talks in New York in June, the U.S. delegation, led by Assistant Secretary of State for Politico-Military Affairs Robert Gallucci, made a four-part offer: the United States would give North Korea a guarantee against nuclear attack identical to that it gives all NPT signatories; an end to *Team Spirit*; further talks between the North and the United States on political and economic ties; and IAEA inspections of South Korean facilities, including U.S. military installations in South Korea, concurrent with IAEA inspections in North Korea. In exchange, the United States demanded that North Korea cease its withdrawal from the NPT, accept IAEA inspections, including special inspections of the two suspected waste sites, and implement the bilateral December 1991 Korean Denuclearization Declaration.

On June 11, one day before North Korea's withdrawal from the NPT was to take effect, North Korea "suspended" its withdrawal to remain within the NPT. "Suspension" differs from "retraction" in that the DPRK reserves the right to revive its withdrawal and be out of the NPT within 24 hours, thereby completing the three month withdrawal period; "retraction" would require a new three month period to elapse before North Korea was out of the NPT. The DPRK also claims that "suspension" means it is under no obligation to accept IAEA inspections of any sort until the issue is fully resolved.

A second round of U.S.-DPRK talks took place in Geneva in July. They concluded with the United States offering again to cancel *Team Spirit*, affirm that there are no U.S. nuclear weapons in South Korea, and give North Korea "negative security guarantees." The United States also promised to support North Korean efforts to acquire light water reactor technology. It insisted, however, that there would be no further negotiations between the United States and North Korea on these or other issues at the vice-minister/assistant secretary level until Pyongyang began "serious" negotiations with Seoul and the IAEA.

Between regular inspections, the IAEA operates film cameras at key locations in North Korea's acknowledged nuclear facilities and places seals on certain equipment. On two occasions since the last regular IAEA inspection and North Korea's subsequent withdrawal from the NPT, on May 8 and August 3-10, 1993, North Korea admitted IAEA inspectors to the acknowledged nuclear sites to carry out routine maintenance, replace film and batteries in cameras, and check seals on equipment. On October 14 the IAEA announced that it had to carry out routine maintenance within two weeks and threatened to take the issue to the United Nations Security Council if the North refused. On October 28 North Korea agreed to allow routine maintenance of monitoring equipment, but the IAEA changed its position, refusing to carry out further routine maintenance until the special inspection issue was resolved, declaring that NPT states "cannot pick and choose their nuclear safeguards."

Working level meetings between the United States and DPRK continued throughout the autumn of 1993. On January 5, 1994, U.S. Undersecretary of State for International Security Affairs Lynn Davis announced the two sides had reached a deal whereby North Korea would allow a one-time set of full inspections of its seven declared nuclear sites and in exchange there would be a third round of DPRK-U.S. talks at the assistant secretary/ vice-minister level. Discussion of special inspections of the two undeclared sites at Yongbyon would be "deferred" to the third round. Once the IAEA inspections were underway and the North resumed bilateral talks with the South, the United States pledged to cancel *Team Spirit* for 1994. *Team Spirit* was then scheduled for March 22-31, 1994, but was to be sharply scaled down from previous years, possibly to as few as 40,000 troops, as compared to 120,000 in 1993.

Whereas the United States had demanded throughout the working level negotiations that the inspections be carried out under the aegis of the NPT and Nuclear Safeguards Agreement, North Korea insisted that they were under no obligation to adhere to the NPT or NSA and that these inspections would be treated as an *ad hoc* arrangement. The United States never contradicted this assertion by the DPRK in its public announcement of the deal or any time thereafter, and the fact North Korea was allowed to proceed to negotiate with the IAEA over the terms of the inspection, instead of simply applying the terms of the 1992 agreement between the DPRK and IAEA, was a tacit admission of the North Korean position.

- The IAEA had consistently said that one-time inspections were inadequate, but within days it entered talks with the North Koreans to work out the details of carrying out the inspections to which it had agreed with the United States. In the course of these talks, the North Koreans made clear that they interpreted the agreement to mean only partial inspections of the two most important declared sites, the 5MW reactor and the one declared plutonium reprocessing facility at Yongbyon. On January 21, North Korea announced it had rejected the conditions demanded by the IAEA for inspections of the seven declared sites, calling some of the tests and procedures to be carried out at the two problematic declared sites "unnecessary" and "unfair."

Into February, there was strong speculation that if there were no progress in the inspection talks by February 21, the date of the annual meeting of the IAEA Board of Governors, the Board would call on the UN Security Council to impose an economic embargo on North Korea. On February 15, one day before the 52nd birthday of Kim Il-Sung's heir apparent Kim Jong-Il and six days before the annual IAEA Board meeting, Pyongyang agreed to the IAEA's demands for full inspections of all seven declared sites according to the IAEA's standard procedures. Then, on February 20, North Korea announced it would refuse to allow the inspections to proceed until the United States had committed to a specific date for the

third round of U.S.-DPRK talks. The United States insisted the January agreement did not call for a date to be set until the inspections were underway. On February 25-26, North Korea finally issued visas to IAEA inspectors and claimed that high-level talks with the United States were scheduled for March 21, one day before the scheduled start of *Team Spirit*. The United States insisted, however, that no date had been set or would be set until the inspections were in fact underway. On March 3, following the arrival of IAEA inspectors in Pyongyang, the United States confirmed the date of March 21 for a third round of talks and South Korea and the U.S. simultaneously announced the tentative cancellation of *Team Spirit* for 1994. Both the talks and the cancellation of the exercise were made conditional upon a satisfactory report on North Korean facilities by the IAEA and an exchange of envoys between North and South.

IAEA inspectors left North Korea on March 15 and reported that Pyongyang had prevented them from taking samples of material from inside the "glove box" or "hot cell" at Yongbyon, making it impossible to determine if North Korea had extracted further plutonium since the last inspection. Specifically, numerous seals on rods at the 5MW Yongbyon reactor were found broken, and because the cameras trained on the seals had run out of film, the IAEA demanded to inspect the glove box to see if the rods had been taken there to have plutonium removed. Pyongyang refused to allow the IAEA to see the glove box, arguing not that the glove box was outside the February agreement between the DPRK and IAEA (it was specifically written in the agreement), but that Pyongyang was protesting Seoul's refusal to accept its conditions for proceeding with an exchange of envoys. IAEA and American officials found this explanation unsatisfactory, saying the North Koreans simply "lack good faith." Pyongyang also prevented the IAEA from performing gamma-ray scans which could have indicated the level of nuclear material around Yongbyon, and IAEA spokesman David Kyd noted that while the North insisted the Yongbyon reactor had been idle since August 1993, strangely, no dust had accumulated.

The United States immediately cancelled the meeting scheduled for March 21 and reiterated its two preconditions for a third round of U.S.-DPRK talks — satisfactory inspections of declared nuclear facilities and an exchange of envoys between North and South. On March 22, the United States announced it would proceed to deploy six batteries of recently upgraded *Patriot* PAC-2s to U.S. bases in South Korea in order to defend those bases. Each battery consists of eight launchers and four missiles per launcher; the total shipment thus includes 192 missiles. 800 U.S. troops would accompany the *Patriots* to guard and operate them. Some American observers noted that the United States sent the *Patriots* by sea and not by air, extending their time in transit from days to nearly a month and suggesting that the delay would provide time for developments to occur which would lead the United States to halt the deployment. Instead, the *Patriots* arrived at Pusan on April 18 as scheduled. The United States is also sending 30 *Apache* helicopters to South Korea in response to the failure of the inspection visit.

The resumption of *Team Spirit* remained uncertain while the *Patriots* were en route, because the United States and South Korea were to employ them in the exercise. By April 18, however, the rice planting season in South Korea was too close, and so *Team Spirit* is now scheduled for sometime in November.

On April 15, Kim Il-Sung's 82nd birthday, South Korea announced it would no longer press for an exchange of envoys with the North as a precondition for a third round of U.S.-DPRK talks at the assistant secretary/ vice-minister level. This change in policy followed a letter from DPRK Vice Foreign Minister Kang Sok-chu to Robert Gallucci indicating that if the exchange of envoys were dropped as a precondition for talks, North Korea would allow for "additional IAEA inspections." Secretary of State Christopher is reported to

have responded to the proposal by saying "acceptance [of the North Korean demand] is the only realistic method of breaking the current situation" and asked the ROK to consider it. Gallucci had, in fact, signalled as early as February that South Korea could "amend its position." The United States reacted to Seoul's announcement by reiterating that its second condition for a third round of talks, full and satisfactory IAEA inspections of declared DPRK facilities, still stands.

How Advanced Is The DPRK Nuclear Program?

Whether or how close the DPRK is to possession of a deliverable nuclear weapon is a matter of considerable speculation. As early as March 1992, CIA Director Robert Gates estimated that the North would have a nuclear bomb "in a few months," a view he reiterated in January 1993. His successor in the Clinton Administration, R. James Woolsey, testified before Congress in February 1993 that "there is a real possibility" that the North had enough plutonium "for at least one nuclear weapon and is hiding this from the IAEA." A South Korean researcher wrote in July 1992 that "the probability is high that North Korea has... three to six *Nagasaki* class nuclear warheads," and a July 1992 report to the U.S. Defense Nuclear Agency also suggested that North Korea would have five or six nuclear weapons by the end of 1992. Leonard Spector, a nonproliferation expert at the Carnegie Endowment for International Peace in Washington, however, stated in February 1993 that his "impression is that they're not so far along... there are still a number of years to go." In July 1993 a British estimate said the North had "virtually completed" four to six nuclear weapons at the "laboratory device" stage. A report by a group of Republican House Representatives in July 1993 cited Russian intelligence sources as finding that North Korea had nuclear weapons as early as 1990. By December 1993, "senior Pentagon and CIA officials," including Woolsey, were saying that the DPRK's nuclear program had the necessary technology and plutonium to make one or more nuclear devices, although doubts about the North's delivery capability remained. North Korea has, however, conducted over 70 test explosions on the Kuryong River not far from Yongbyon bearing all the earmarks of a nuclear trigger or detonator.

In contrast, however, on November 1, an unnamed official traveling with then-U.S. Defense Secretary Les Aspin to South Korea said "we know they are not... building bombs right now, or reprocessing plutonium," and Aspin later himself insisted on "Meet the Press" that the likelihood of war on the Korean peninsula had not grown and the North Koreans "are not building more bombs." President Clinton has also said "there is no cause for great alarm on the part of the American people." Into December, Aspin continued to insist that North Korean nuclear weapons remained only a "possibility." The State Department has disputed intelligence reports which claimed there was a "better than even chance" that North Korea has already constructed one or two nuclear devices. Finally, the Special National Intelligence Estimate of December 1993 assigns only a "low probability to the possibility North Korea [already has] one or two crude nuclear weapons or will complete one soon."

According to David Kyd of the IAEA, eight kilograms of plutonium are all that is needed to make a nuclear bomb. Current estimates of North Korea's plutonium holdings range from 98 grams to 40 or 50 kilograms. North Korea has scheduled a refueling of the 5MW Yongbyon reactor for early May 1994 on the basis of the age and erosion of the current rods. (See Figure 1—7 and for a description of North Korea's nuclear facilities.) U.S. Assistant Secretary of Defense for International Security Ashton Carter has said the removal of the rods would be "a leap forward" for the North's nuclear program on account of the plutonium it would harvest — 33 kg, enough for four to five nuclear bombs. North Korea could still delay a shut-down of Yongbyon, however, for up to twelve months, perhaps awaiting perfection of a

method of turning plutonium into usable bombs or missile warheads. Both IAEA Director Hans Blix and U.S. Defense Secretary William Perry have demanded Pyongyang allow the IAEA to monitor removal of the rods and refueling of the reactor and to take samples of the spent fuel. If not, the U.S. has threatened once again to have the UN impose economic sanctions on the North. Previous extractions of plutonium were from single rods removed from the reactor on the basis of claims they were damaged, but U.S. experts strongly suspect that a full refueling took place in 1989 when Yongbyon was shut down for 100 days and that the plutonium this effort yielded has served as material for the North's nuclear weapons program for the last five years. Sampling the spent fuel is essential for determining its history, specifically whether and how many of the rods have been individually refueled since 1986. Predictably, Pyongyang has offered to let the IAEA witness removal and replacement of the rods but is refusing to allow sampling.

Furthermore, between 1984 and 1987, construction began on another uranium-graphite reactor at Yongbyon with a capacity of 50MW. Due to be completed in late 1994 or early 1995, this reactor would be too large for research purposes and shows no sign of being connected to a power grid for purposes of generating and distributing electricity. This reactor would be capable of producing forty to sixty kilograms of plutonium per year, enough for up to seven weapons. A third reactor at Taechon, just north of Yongbyon, this one 200MW and due to be completed in late 1995, is estimated to be capable of producing enough plutonium for ten Hiroshima-sized bombs per year. By the year 2000, some experts estimate North Korea will possess three tons of plutonium.

Missile Capabilities

Complicating the nuclear issue is the ongoing North Korean ballistic and cruise missile program, which makes the potential nuclear threat, especially to Japan, even more disturbing. On May 29, 1993, the North Koreans successfully test-fired the 1000-1300 kilometer range, liquid fueled *Rodong*-1 missile over the Sea of Japan from a mobile launch pad.

NORTH KOREAN NUCLEAR FACILITIES*

Type	Location	Year	Plutonium Production	IAEA Status
Nuclear Reactor	Yongbyon	1965	heavy water?	Declared 1977
Nuclear Reactor	Yongbyon	1986	~30kg per complete refueling	Declared 1992*
Nuclear Reactor	Yongbyon	expected late 1994/ early 1995	40-60 kg/yr	Inspected 1992
Nuclear Reactor	Taechon	expected late 1995	160-200 kg/yr	Inspected 1992
3 Nuclear Reactors	Sinpo	planning stages	light water reactors planned?	
Plutonium Reprocessing/ "Radio-Chemistry Laboratory"	Yongbyon	currently operating; to be fully completed in 1996	capable of separating 200 kg/yr	Declared 1992
Waste Storage	Yongbyon	1976		subject of IAEA special inspection
Waste Storage/ "Building 500"	Yongbyon	early 1990s		subject of IAEA special inspection
Waste Storage	Yongbyon	1992		Declared 1992

*Other facilities declared by the DPRK to the IAEA for routine inspection under the 1992 Nuclear Safeguards Agreement are the fuel rod fabrication facility at Yongbyon, a subcritical research facility at Kim Il-Sung University in Pyongyang, and a critical assembly facility of 1.0 MWe at Nyonphon Institute of Nuclear Physics, supplied by the USSR in 1965.

FIGURE 1—7

The May test actually went only 500 km in an effort by Pyongyang to prevent intelligence agencies from assessing its true capabilities and to ensure safe recovery, but the full range of the missile was derived from the unusually high angle at which the test missiles were launched. A 1000 km range would place western Japan, including Osaka and U.S. military bases at Okinawa, within the range of North Korean missiles, while a 1300-range missile could hit virtually all of Japan, including all its major cities. A follow-on version, the *Rodong*-2, is already being developed with a range of 1500-2000 km. *Jane's Defence Weekly* reports that the circular error probable (CEP) of the *Rodong*-1 is 700 meters, as opposed to 450 meters for the *Scud*-B. Others, writing in *Defense News*, assert that the *Rodong* is only accurate to within 2 to 4 km, several times worse than the *Scud*-B, and that the presence of four engines on the *Rodong* compunds the chance of mechanical failure. South Korean analysts believe it could carry a 50 kiloton nuclear device or a viscous VX chemical warhead.

In October, Japanese Defense Agency Director General Keisuke Nakanishi told a Diet committee that North Korea had deployed *Rodong*-1s facing the Sea of Japan. His statement followed that of a North Korean soldier who defected to South Korea in 1993 and said that the North already has two operational underground missile sites for launching missiles at Japan and two more are under construction. U.S. General Robert RisCassi, former commander of U.S. forces in Korea, stated that the nature of certain characteristics of the May test firing indicated to him that the test was intended to demonstrate the missile to foreign buyers. "There was no telemetry with the shots... there was no close-down of the sea and air space in that direction, which is odd when you are making a missile that you have not tested before and are firing at extended ranges."

Sankei Shimbun has reported that an Iranian delegation to the DPRK signed a contract for 150 *Rodong*-1s during an April 1993 visit to Pyongyang. This deal followed an agreement between Pyongyang and Tehran for the bilateral exchange of missile technology signed during the Iran-Iraq war. North Korea sent Iran around 100 *Scud*-Bs in 1987-1988 which played a key role in the 1988 "War of the Cities." Iran, in turn, provided the DPRK with Iraqi *Al-Husayn* missiles which it used to develop the *Scud*-C. An Italian newspaper has reported that Iran has already paid about $50 million for the delivery of 10 *Rodongs* by April 1994 and has promised another $70 million to obtain the necessary technology to build a missile factory in Iran. Paul Beaver of *Jane's Defence Weekly* confirmed this story in April 1994 following a February visit to Iran by a 29-man DPRK delegation led by North Korea's air force commander. The Italian paper also reports that full range tests of the *Rodong* will be carried out in the Iranian desert, not over the Sea of Japan, in order to avoid diplomatic repercussions. Such tests have now been delayed twice, however, once in November 1993 and again in February 1994, possibly on account of intense U.S. spy surveillance, North Korean arrears to Iran for oil, or North Korea's inability to deliver the missiles. U.S. intelligence estimates that more than 800 North Korean military experts and officers are in Iran, while the Iranian military attache's section in Pyongyang numbers 53.

The range of the *Rodong*-1 would put all of Israel within Iranian missile range for the first time. Numerous reports from government and independent sources show strong evidence of *Scud*-B and *Scud*-C exports from North Korea to Libya, Syria, and Iran and that North Korea is helping Syria and Libya to build their own *Scud* production lines. For example, North Korea is reported to have sent $100 million worth of *Scud*-Cs to Syria via Iran in July 1992, and $500 million worth of *Scuds* to Iran since the mid-1980s. North Korea can currently produce 100 *Scuds* per year.

In March 1994, *Jane's Defence Weekly* reported that U.S. intelligence sources have found

NORTH KOREAN MISSILE CAPABILITIES

Missile	Payload(kg)	Range (km)	CEP (m)	Warhead	Status	Launcher	Number	Source
FROG-5	435-450	40-50		HE, CW	Deployed	Mobile	50	USSR
FROG-7	435-450	65-70	500-700	HE, CW	Deployed	Mobile	54	USSR
HY-2 *Silkworm*	500	80			Deployed	Cruise		China
DF-61	1000	600						Cooperation with China
Scud B R-17E	1000	280-300		HE, CW	Deployed			Cooperation with Egypt
Scud A	1000	280-300		HE, CW	Deployed			Indigenous Production
Scud B	1000	280-340	450-900	HE, CW	Deployed	Mobile	100s/year	Indigenous Production
Scud C/ *Scud* PIP	500-800	500-600	<900	HE, CW	Deployed	Mobile	30-160 deployed; 50-100 produced/ year	Cooperation with Iran
Scud D/ *Nodong* 1	800-1000	1000-1300	700-4000	?	2 Deployed ?	Fixed	Few	Indigenous Production
Taepo-Dong 1		1600-2000		?	Developing ?			Indigenous Production
Scud E/ *Scud* X/ *Nodong* 2	800-1000	1300-1600		?	Developing		Few	Indigenous Production

FIGURE 1—8

evidence of two new missiles under development by the DPRK. Dubbed the *Taepo-Dong* 1 and *Taepo-Dong* 2 after the site where they were observed, these are thought to be two-stage missiles with ranges of 1600-2400 km and 3200-3500 km respectively, whereas the *Rodongs* are basically stretched-out, single-stage Soviet *Scuds*. Thus the *Taepo-Dong* would signify an important technological breakthrough for Pyongyang. 3500 km would bring U.S. bases in Guam within the range of North Korean missiles; from the Middle East or North Africa, these missiles could reach the heart of western Europe. *Jane's* reports that the *Taepo-Dong* 1 consists of a *Rodong*-1 first stage and *Scud*-B or *Scud*-C second stage, while the *Taepo-Dong* 2 consists of a lower stage conspicuously similar in size and shape to the Chinese CSS-2/DF-3/*Dongfeng*-3 and an upper stage similar to the *Rodong*-1. *Sankei Shimbun* has reported that the new DPRK missile is indeed based on missile technology provided by China. The CIA, however, believes that the *Taepo-Dong* is indigenous, and the view that the Chinese assisted Pyongyang in this missile effort remains a minority one even within the U.S. Defense Intelligence Agency.

China has denied supplying North Korea with missile technology. If so, however, Beijing could face U.S. sanctions under the Missile Technology Control Regime. These U.S. sources as well as Defense Secretary Perry and non-governmental experts in the U.S. and Japan generally agree that the *Taepo-Dongs* will not be operational until the late 1990s; some non-government experts also question the *Taepo-Dong* 2's estimated range in the absence of a test flight. Whether North Korea can attach a nuclear, chemical, or biological warhead to either the *Taepo-Dong* 1 or 2 or even the *Rodong* 1 or 2 remain unanswered questions.

Others go so far as to suggest the *Taepo-Dong* is nothing but a big hoax and worry that it is achieving the desired affect in the United States and Asia. Designing a sequencing system for a two-stage rocket is alone a massive technological endeavor for a country such as North Korea. The *Taepo-Dong* would also require engines with greater thrust-to-weight ratios than *Scud* technology allows. North Korea would also have to produce a reliable high-speed turbo-pump with the capability to feed clustered engines. Airframe design, digital guidance systems, a re-entry vehicle staging mechanism, and new launching hardware will all have to be developed, consuming lots and lots of precious resources. Furthermore, North Korea elected to display these missiles out in the open and made no effort to conceal them from satellite surveillance. And all this for what? To be able to hit Guam? Surely being able to hit Japan and Pusan and well into the Pacific where U.S. reinforcements would be on

their way to Korea is enough to get Tokyo and Washington's attention. This argument concludes that the costs and benefits of the *Taepo-Dong* just do not add up to make it a worthwhile endeavor for the North.

DPRK Chemical and Biological Weapons

One analyst argues that with respect to "chemical and biological warfare (CBW), the DPRK presently has the capability to develop and employ weapons of mass destruction. The North Koreans have also, apparently, provided assistance to other Third World nations in their efforts to achieve similar capabilities." DPRK chemical weapons efforts began as soon as the "Fatherland Liberation War" was over, but development and production of chemical agents did not really take off until the 1960s. Beginning in the 1970s, defensive or protective CBW training appeared to be in full swing within the (North) Korean People's Army (KPA). Finally, in the 1980s, the DPRK began to develop and produce offensive chemical agents for use in war in bulk. Pyongyang in total is estimated to have stockpiled 1000 tons of CW and have the capacity to produce 4600 tons annually. From 1980 to 1991 over 630 CW exercises were conducted by North Korean armed forces, twice as many as took place in the 1970s, sometimes confining KPA soldiers in tunnels for up to ten days.

FIGURE 1—9

DPRK chemical weapons stockpiles are believed to include the sarin (GB) family of nerve gases, tabun (GA), phosgene (CX), adamsite (DM), mustard gas, and blood agents such as hydrogen cyanide. Chemical weapons production is reported at eight sites and CW storage is concentrated at six sites. North Korea must, however, import chemical precursors. The DPRK can place chemical agents on their large calibre mortars and artillery, FROG-5 and FROG-7 artillery rockets, *Scud*-B and *Scud*-C

ballistic missiles, on air-delivered ordnance, and possibly on the *Rodong*-1.

In May 1989 the KWP made the further development of the chemical industry a key national priority, and 1989 also marked the beginning of DPRK efforts to provide other Third World countries with chemical weapons assistance. There is strong evidence to suggest a North Korean role in chemical weapons development by Syria and Iran. (North Korea is not a signatory to the Chemical Weapons Convention.) *Jane's Intelligence Review* has concluded that out of "the belief that the ROK and US governments are willing to employ [weapons of mass destruction],... the KPA has developed a doctrine which includes the tactical first use of chemical weapons."

In general, offensive BW has not received the attention that CW has, probably due to the DPRK's limitations in biotechnology and the realization that, once employed, there will be almost no control over such weapons.

In contrast to CW, the USSR and PRC are not believed to have provided assistance to the DPRK's BW program; North Korea's biological warfare capabilities are believed to be entirely indigenous. According to Joseph Bermudez, North Korea is reported to possess limited quantities of yersinia pestsi, bacillus antracis, vibrio cholera 01, salmonella typhi and clostridium botulinum. A Russian intelligence report adds that North Korea has biological weapons capable of inducing bubonic plague and smallpox and has tested biological weapons on its island territories. South Korean sources suggest that Pyongyang has even conducted BW experiments on human subjects.

North Korean Internal Politics

Solid information about the economy, society, military, politics, and leadership of the DPRK is notoriously hard to come by, and solid analysis is even more rare. North Korea is one of, if not the most closed societies on earth today. News reports from the Korea Central News Agency (KCNA) are so loaded with dogma, ideology and almost religious reverence of the North Korean leadership that they are almost self-parodies. Information and analysis by third parties, especially from South Korea, can often be biased by predetermined agendas.

Most of all, DPRK internal politics are unique in that 82-year old president Kim Il-Sung, North Korea's leader since the Korean War, and his 52-year old son Kim Jong-Il are attempting to complete the first hereditary transfer of power in a Communist country in history. For the better part of forty years, the people, government officialdom and military leadership of North Korea have been taught nothing else than Kim Il-Sung thought, that Kim Il-Sung is their "Beloved and Great Leader, Ever-Victorious Captain of the Korean People, the Greatest Genius Mankind Has Ever Had, Outstanding Leader of the Revolution and Generalissimo," and that they must follow his every word without doubt or hesitation. Not surprisingly, after forty years, many people believe it, and so establishing the legitimacy and authority of a leader so he may rule after the inevitable demise of Kim Il-Sung is bound to be an elaborate, even all-consuming endeavor.

The Role of the Military

In contrast to Eastern Europe, the Soviet Union and China under communism, there is essentially no organized civil opposition to the Kims in North Korea. The only institution in North Korea remotely capable of posing as an organized opposition to the Kims is the military.

Realizing this, in 1969 Kim Il-Sung established a commissar-like system within the military: all Korean People's Army (KPA) orders require the signature of a political officer to be valid. The KPA, its name notwithstanding, is not defined in its charter as a People's Army (such as in China) but as an organization whose purpose is to protect the Korean Workers' Party (KWP) and it is subordinate, not to the Cabinet or President, but to the KWP Central Committee.

Kim Jong-Il is currently the supreme commander of the KPA. In order to further reduce the potential for the military to act as a unified force against the Kims, they do not normally allow the various branches of the military to train and exercise together and North Korea has the highest percentage of ranger and special forces of any army in the world (100,000 troops in 24 brigades), but their operations are not integrated into military plans. Instead, most of these branches report directly to Kim Jong-Il, bypassing the KPA general staff and thereby diluting the institutional power of the military. These sorts of policies may also have the unintended result of diluting the genuine military capability of the KPA and thereby contribute in no small way to perceptions of conventional inferiority on the part of North Korea.

Many of these special operations forces, such as the Third Generation Revolutionary Teams, the Mangyongdae Revolutionary Academy, and the KWP Operations Department, are loyal to Kim Jong-Il and their missions often involve the personal safety of the Kims. In exchange, the troops of the Operations Department, for example, receive food allowances two to three times that of regular soldiers. In January 1994, Kim Jong-Il shifted responsibility and authority for the Public Security Ministry to the National Defense Commission which he heads. Since April 1992, 664 generals of the KPA have been replaced by over 500 so-called "technocrats" loyal to Kim Jong-Il. Finally, another recent defector to South Korea said that the Kims have carved their own 50,000-man army out of the armed forces, equipped with tanks and missiles and charged solely with guarding their personal safety and defending against a military coup.

Despite these various measures to ensure control of the armed forces, the military has survived as the only institution in North Korea capable of preventing a smooth, uneventful transfer of power from the "Great Leader" to "Dear Leader" Kim Jong-Il. Sources of discontent within the military are manifold. There is a long term of service, with little opportunity for leaves or passes. Soldiers must often spend months at a time in dank underground tunnels and bunkers. Malnutrition and lack of food, according to the July 1993 defector Im Yong-sun, have even started to effect the military. An article in *Naewoe Tongsin* of Seoul estimates the average soldier's monthly food ration at less than 300 grams of rice and 200 grams of meat and fish. Military advancement often depends on one's standing within the party, which in turn depends on one's family background; whether one's parents and family are classified as "elite," "loyal," "waverers," or "hostile elements" can determine one's career. A bleak future awaits anyone who is discharged from the military for any reason. Bribery is commonly required to get anything done.

The North Korea Research Center in Seoul has detailed two separate instances of soldiers describing Kim Jong-Il as "Little Mother," perhaps referring to his diminutive stature and pompadour hair-style, testimony to the discontent among the rank-and-file with the leadership in Pyongyang. Another story tells of a KPA unit from the countryside sent to Pyongyang to construct new apartments which, upon seeing the enviable living standards of soldiers stationed in the capitol, entered Kim Il-Sung's palace to complain. Presidential Security Guards fired on the soldiers, a gun battle broke out, and Kim Il-Sung was forced to order all troops around Pyongyang to surrender their ammunition.

Two separate stories of military coup attempts arose in 1993. One told of a September 1992 plot by eighteen army officers to overthrow the Kim regime but which was betrayed, resulting in the summary execution of the eighteen plotters. The source for this story was a "cabinet-minister level North Korean official" according to Yonhap news agency in Seoul. A second story was reported by Im Yong-son, a soldier who defected to South Korea in July 1993. He told of a December 1992 plot by ten senior military officers, who were also subsequently betrayed and executed. In

September 1993, Kim Jong-Il reportedly moved three divisions with over 1700 armored vehicles from the area between Pyongyang and the DMZ to the Chinese border out of fear that these KPA units were plotting to take action in Pyongyang to deny Kim Jong-Il the succession.

Alongside the various "sticks" which the Kims wield over the KPA, the DPRK nuclear weapons program is viewed by many observers as a "carrot" or reward paid to the military for its support of Kim Il-Sung and of the succession of Kim Jong-Il. Why would the DPRK military seek nuclear weapons, and under what conditions would it contemplate the use of nuclear weapons? In a country like North Korea, secretive and insular to a debilitating degree, with no independent media or academia, a government where different factions and points of view are extremely murky, and leaders who flatly deny they are building nuclear weapons, it is well nigh impossible to establish what, if anything, the military has worthy of being called a "nuclear doctrine." There is no record of comments or literature by leaders of the KPA, either past or present, on why North Korea would want a nuclear weapon and under what conditions it would consider using one. Three obvious possible motives for any military to seek nuclear weapons come quickly to mind, however: deterrence against attack; coercion of an adversary; and bureaucratic or resource motives. The first two will be discussed further in the next part of this case study; the latter is discussed below (see *Economic Reformers Versus Hardliners*).

Paul Bracken of Yale University, however, disagrees with the suggestion that the military and its leaders are capable of independent action, in either domestic politics or in strategic planning.

> Strategy comes from the top and is virtually uncontested and untempered by conservative bureaucratic forces. Bureaucracy means... caution, hesitation, a tendency towards inertia in a crisis... staff reviews, planning and other activities which dampen extreme ideas and behavior. North Korea is not like this... Unlike other states, North Korea can change its strategic direction on a moment's notice by the simple will of its leadership. The military is [so] tied to the person of the leadership [that] it does not possess its own independent bureaucratic identity. Although this ensures the loyalty of the officer corps, it means that military staffs do not analyze problems or situations from a professional point of view.

Bracken's analysis also raises questions about the command and control capability of the DPRK for its nuclear weapons. As the efforts of the Kims to hobble the military's possible role in internal mattters illustrate, the North Korean state "was not designed to be efficient, but rather to allow different departments and cells to be played off against one another." The same could be said of the armed forces. North Korea has demonstrated time and again that it will undertake critically important projects, "without the staff review, technical expertise and management needed to achieve success." The results of this system have included great "agricultural debacles, industrial failures and botched nuclear deception campaigns." (For example, see *The Significance of Inspections*. Also, another defector tells of an explosion at a missile plant hidden underground in mountain tunnels which killed 200 in November 1991.) Bracken writes that the military may not be easily controlled in a crisis once activated beyond a certain level by the leadership. Alternatively, "it is possible that the North Korean military establishment might respond so poorly as to be almost inert in a crisis. Commanders might wait for orders that never arrive."

Key military leaders

Oh Jin U, 83 years of age, is North Korea's Minister of Defense, sometimes called the "Armed Forces Chief," as well as a Politburo member. He is sometimes said to be in the "third position in the political order" and his status alongside the two Kims is sometimes portrayed as some sort of triumvirate. Oh Jin U is said to be fiercely loyal to Kim Il-Sung but at the same time he is considered an ally of Kim

Jong-Il's within the military and he even has personal responsibility for the physical security of Kim Jong-Il. Second to him in the military is Choe Kwang, Politburo member and KPA Chief of Staff. He too is considered fiercely loyal to Kim Il-Sung and there is little evidence one way or another on whether he supports the succession of Kim Jong-Il. Given his position and such lack of evidence, however, it must be assumed that he will not stand in the way of Kim Jong-Il. Thirdly, O Kuk-yol, "Kim Jong-Il's right hand man" in the army, is being groomed to take over from Oh Jin U.

The State of the Succession

Three posts remain which stand in the way of Kim Jong-Il taking over fully from his father, be he alive or dead. They are chairman of the Central Military Commission (CMC), General Secretary of the KWP, and president of the DPRK as selected by the Supreme People's Assembly. All three titles are still held by Kim Il-Sung.

Kim Jong-Il's election as head of the CMC was strongly rumored (strongly expected by some) to take place in December 1992, but it did not come to pass. He was again expected to take over the CMC at the Ninth Supreme People's Assembly meeting of April 7-9, 1993, but instead Kim was elected Chairman of the National Defense Commission, a totally different body than the CMC.

NORTH KOREAN LEADERSHIP
May 1994

Name	Position	Comments
Kim Il-Sung, 82	President of DPRK General Secretary/ Chairman of the Politburo of the Korean Workers' Party (KWP) Chairman of the KWP Central Military Commission	"Great Leader"
Kim Jong-Il, 52	Chairman of the National Defense Commission Supreme Commander of the People's Armed Forces Chairman of the Social Safety Commission Chairman of the General Bureau of National Security Member of the KWP Politburo and Central Military Commission	"Dear Leader"; son of Kim Il-Sung
Kim Yong-chu, 72	Vice President of DPRK KWP Politburo member	Younger brother of Kim Il-Sung Internal exile, 1974-1993 Leading reformer
Kim Pyong-Il, 42	Ambassador to Finland	Son of Kim Il-Sung and half-brother of Kim Jong-Il
O Jin U, 83	Minister of Defense First Vice-Chairman of the National Defense Commission Member of the KWP Central Military Commission KWP Politburo member	
Choe Kwang, 76	Chief of the General Staff of the KPA since 02/88 KWP Politburo member	Internal Exile, 1969-1977
O Kuk-yol, 65	Chief of the General Staff of the KPA 1979-1988 Member of the KWP Central Military Commission	
Kang Song-San, 63	Premier of the State Administration Council, 1984-1986, and since 12/92 KWP Politburo member	Nephew or maternal cousin of Kim Il-Sung; Moderate reformer
Yon Hyong-muk, 82	Candidate member of the KWP Politburo Politburo member, 1974-1992 Premier of the State Administration Council prior to 12/92	
Hwang Chang-yop, 69	KWP Secretary for relations with Japan and special economic zones Chairman of the Foreign Affairs Committee of the Supreme People's Assembly	Husband of Kim Il-Sung's niece; Leading reformer; critical of Jong-Il for his lack of commitment to reform
Kim Tyal-Hon, 54	Candidate member of the KWP Politburo Deputy KWP leader for ROK and US affairs since 12/93 Vice-Premier of the State Administration Council and Chairman of the State Planning Committee of SAC (i.e. finance minister), 12/92-12/93	A cousin or husband of a cousin of Kim Il-Sung; Leading reformer
Kim Yong-nam, 69	Minister of Foreign Affairs KWP Politburo member	
Kim Yong-sun, 59	Candidate Politburo member and deputy KWP leader for ROK affairs, 12/92-12/93 Demoted to KWP Secretary for US affairs, 12/93	Leading reformer
Chang Song-taek, 49	Candidate Politburo member and head of KWP "Three-Revolution," Labor, and Youth Departments	Brother-in-law of Kim Jong-Il, son-in-law of Kim Il-Sung
Hong Sok-hyong	Chairman of the State Planning Committee of SAC (i.e. finance minister) since 12/93 Candidate member of the KWP Politburo	Moderate reformer

FIGURE 1—10

Having failed to take over the CMC, there was strong speculation that Kim Jong-Il would be named General Secretary of the KWP at the 21st Plenary of the Sixth Central Committee of the KWP, held in November 1993. Central Committee Plenaries are often occasions for important personnel changes, such as occurred in December 1992 at the 20th Plenary in favor of economic reformers (more on economic reform below). South Korean intelligence concluded, however, that "there is no indication at present that an epoch-making decision was made regarding the inheritance of power, including Kim Jong-Il's assumption of the post of general secretary of the party."

No sooner had the November plenary ended than speculation began anew that Kim Jong-Il would be named General Secretary during the 6th session of the 9th Supreme People's Assembly on December 9 but no such transfer took place. The seventh party congress of the KWP also took place in December not long after the Supreme People's Assembly session. The last party congress was held in October 1980 and congresses are typically occasions for important developments in DPRK politics. Yonhap news agency in Seoul reported that the senior Kim was likely to transfer the post of General Secretary to the younger Kim at the congress, but yet again, no such transfer took place.

Speculation about these final three positions continues, however. On January 3, 1994, a South Korean news report argued that 1994 would be a crucial year for Kim Jong-Il since it comes exactly twenty years after he was designated as Kim Il-Sung's successor and "cyclical years" have special significance in Korea. The article argued that all three key posts — Central Military Commission, General Secretary, and finally President of the DPRK — will be transferred to the younger Kim by 1995. But this spring, a markedly down-scaled celebration of Kim Jong-Il's 52nd birthday, the 7th Session of the 9th Supreme People's Assembly, a national conference of KWP cells, the first such congress in DPRK history, and the annual celebration of Kim Il-Sung's birthday all came and went with no new grand title or position for Kim Jong-Il. Other, less formalistic signs of Kim Jong-Il's ascendancy continue to appear, however. The badges featuring Kim Il-Sung which have graced the lapels of North Korean officials overseas for forty years have now disappeared, and the final spectacle of Kim Il-Sung's 82nd birthday celebrations was a "song of fidelity" to Kim Jong-Il as opposed to the Great Leader.

Despite the appearance of a prolonged, even agonizing effort to capture at least two of the final three positions for Kim Jong-Il, the preponderance of evidence suggests that Kim Jong-Il is already effectively in control of the DPRK and that he has successfully placed loyal followers in virtually all key positions in the party and bureaucracy. This further suggests that chaos will *not* break loose the moment Kim Il-Sung dies. Among Kim Jong-Il's loyal allies are:

Kang Song-Sam
Premier of the DPRK Administration Council since December 1992, Kim Il-Sung's cousin on his mother's side, Kang Song-Sam has called for "active economic exchanges with capitalist countries" and praised Chinese-style reforms and openness "within the socialist ideal," suggesting he is less reformist than Kim-Tyal Hon or Yon Hyong-muk (see below). Kang Song-Sam is often listed fourth in the DPRK's cabinet, below the two Kims and Oh Jin U.

Yon Hyong-muk
Premier until his resignation in December 1992, Yon Hyong-muk willingly played the fall guy for the failure of the Third Seven Year Plan (1987-1993) and the imminent resumption of *Team Spirit*. Kim Jong-Il had taken personal credit for the cancellation of *Team Spirit* in 1992 and was also a big booster of the Third Seven Year Plan. Some observers have attributed his demotion, however, to the fact he was too fiercely loyal to Kim Il-Sung, but as the case of Oh Jin U demonstrates, loyalty to both Kims is by no means a contradiction. Yon

Hyong-muk is still ranked sixth in the hierarchy of the DPRK.

Kim Yong-sun

Promoted to candidate member of the Politburo in December 1992 and placed in charge of relations with South Korea and reunification issues, Kim Yong-sun was dismissed from his Politburo position and South Korean portfolio in December 1993. He now sits in charge of relations with the United States. Kim Yong-sun was the official who told American analyst Peter Hayes in the autumn of 1993 that "if the light water reactor issue is solved successfully," the North would agree to full regular and special inspections.

Kim-Tyal Hon

The leading advocate of Chinese-style economic reform in North Korea, Kim-Tyal Hon was appointed as vice-premier of the Administration Council and Chairman of the State Planning Committee and External Economic Affairs Committee of the Council in December 1992. Twelve months later he was "released" from these posts to serve as the "general manager of the Suchon vinalon complex." Pyongyang also took the unusual step of explaining his dismissal, citing "poor job performance" and officially admitting to the people of North Korea that it had failed to fulfill the major targets of the Third Seven Year Plan. Barely a month later, however, on January 17, 1994, Yonhap reported that Kim-Tyal Hon had joined Kim Yong-Chu (more on him below) as deputy leader in charge of South Korean affairs.

Kim Jong-Il loyalists also include party secretaries Kye Ung-tae, Chon Pyong-ho, and Han Song-yong, candidate Politburo members Chang Song-taek and Pak Myong-chol, and most other key officials in both the party and government.

Besides some of the octogenarian leaders of the military, there are few officials in other positions in the party or government who are clearly identified as opponents of Kim Jong-Il's succession. They include the so-called "Susrov Trio" of party secretaries Kim Kuk-tae, Kim Ki-nam and Hwang Chang-yop in charge of ideology matters for the KWP. Hwang Chang-yop is also in charge of relations with Japan and the special economic zones. Although the majority of experts advise against visions of an immediate and apocalyptic succession struggle upon the death of Kim Il-Sung, the Chinese precedent of 1976-1979, when Deng Xiaoping wrested power from the late Mao Tse-tung's hand-picked group of successors, may be telling. In the words of Professor Ralph Clough of Johns Hopkins University, "when Mao [Tse-tung] died, the heir he himself named lost power. At a time when communism crumbles worldwide, it will be difficult to maintain the system that Kim Il-Sung perfected."

Kim Jong-Il, however, has two assets in the struggle for his succession which are unique to the politics of North Korea. First, to be president of the DPRK at this moment in its history — economically crippled, politically isolated, and strategically tense — is a job virtually nobody else wants. Although a minority of officials resist Kim Jong-Il's ascendancy to a greater or lesser degree, there is no realistic alternative leader to the younger Kim waiting in the wings.

Second, the North Korean society and polity, where propaganda and dogma have been injected into every facet of daily life non-stop for forty years, is an ideocracy based on the writings, thoughts, and personal mystique of Kim Il-Sung. To complete the leadership succession is less about occupying certain offices or holding certain titles per se than it is about establishing a certain level of mystique around the prospective successor. Kim Jong-Il already has authority over important day-to-day decisions, including on the nuclear issue, but to receive these three final posts while Kim Il-Sung remains alive would lend a strong boost to his campaign for popular mystique while he remains protected from opponents by the existence of his father. As the son of the "Great Leader," Kim Jong-Il is the only figure who can

even plausibly redefine Kim Il-Sung-ism and create such a mystique for himself without shattering the legacy of Kim Il-Sung which serves as the foundation of his rule. Even for the younger Kim, however, succeeding his father without dishonoring him is a delicate balancing act which consumes not only his time and energy but that of most of the party and state apparatus.

The Return of the Brother — and the Mother

A potentially significant event in North Korean politics this year was the return of Kim Yong-Chu on July 27, 1993, the 40th anniversary of the end of the Korean War. Kim Yong-Chu, age 71 or 72, is Kim Il-Sung's younger brother by ten years and was the original successor to the Great Leader until he disappeared in 1975 when Kim Jong-Il began his ascent. From 1975 until July 1993 Kim Yong-Chu was never heard from. The North Korean media at first gave no explanation for his return until five months later on December 8 it was announced that he had been appointed a member of the Central Committee Political Bureau (Politburo) of the KWP, "the kernel of power in North Korea." Two days later it was learned that he had been named Vice President, along with Kim Pyong-sik, joining the two previously appointed VPs, Yi Chong-ok and Pak Song-chol. Two reports have argued that the return of Kim Yong-Chu is a sign that Kim Jong-Il is so secure he can afford to act with "magnanimity" towards former foes and family members, whereas two other reports have argued Kim Yong-Chu is supposed to be a transitional figure who will "bridge the gap" between the generations, and that he will enjoy particular responsibility for South Korean affairs, replacing Kim Jong-Il ally Kim Yong-sun.

Also in December 1993, Kim Jong-Il's half-brother, Kim Pyong-Il, 42, was recalled as Ambassador to Bulgaria to take a Pyongyang post and Kim Song-ae, Kim Jong-Il's stepmother and known opponent of his succession, re-emerged to praise her stepson. Kim Song-ae disappeared ten years ago after a clash with Kim Jong-Il and her return is also viewed more as a sign of Kim Jong-Il's strength and confidence than a sign of weakness. Kim Pyong-Il's subsequent appointment as ambassador to Finland is taken by these same analysts as a sign that Kim Jong-Il remains "wary" of his grip on power in Pyongyang.

Another report called Kim Yong-Chu an "insurance policy" in case Kim Jong-Il commits some incredible gaffe or suffers some debilitating injury. A major obstacle to Kim Yong-Chu replacing Kim Il-Sung instead of Kim Jong-Il, if that were his purpose, is the lack of personal writings and other instruments for creating the kind of personal mystique that seems to be the key basis for leadership in North Korea, mystique which Kim Jong-Il has promoted assiduously for himself for over ten years.

Economic Reformers Versus Hardliners

The research and academic community, as well as policy makers, seem undecided on the question of whether meaningful reform factions exist within the North Korean leadership or whether everyone in power is genuinely committed to *juche* and Kim Il-Sung-thought. Experts also differ on how isolated the Kims are from real life in North Korea. Some argue that they receive accurate news about North Korea and the world while others contend that they are insulated from reality and bad news by officials scared of repercussions. A DPRK diplomat who recently defected to ROK supports the latter view.

At the same time, however, there is fairly strong agreement that Pyongyang understands it must pursue some sort of Chinese-style economic reform or its survival will be threatened by worsening economic and living conditions. A version of Chinese-style reform, limited by Pyongyang's fear of political change, seems likely if North Korea and the international community can reach a *modus vivendi* over the North's nuclear program. This

vision is supported by the December 1992 promotion of reformers Kim-Tyal Hon, Kang Song-san, Kim Young-sun, and Hwang Chang-yop to higher political and economic positions while party ideology and propaganda remained in the hands of hard-liners Kim Kuk-tae and Kim Ki-nam. According to the *Financial Times*, reformers "carried the day" after the November plenary and the December session of the Supreme People's Assembly because they were given two to three years to promote foreign trade, light industry and agriculture at the expense of heavy industry. North Korea has also announced that foreign banks may operate in the DPRK for the first time, that foreigners and foreign banks are now allowed to lease land and visit "Special Economic Zones" akin to those established in China in the early 1980s without visas, and there are new tax incentives for joint ventures, although most restrictions on repatriation of profits remain.

Interestingly, the question of reform and of succession usually seem to be treated separately. Most observers do not write as if Kim Jong-il and his supporters necessarily represent reform or that his succession spells progress, nor that they necessarily resist reform. This view suggests that all the various players realize that the issue is not reform or no reform, but the survival of the Kim regime and that, for better or for worse, the survival of the entire regime depends on the succession of Kim Jong-Il. This view would also suggest that the military realizes that it would not have the legitimacy to rule North Korea without Kim Il-Sung's legacy intact, and so after Kim Il-Sung's death, military leaders will at the most seek to rule and make decisions from behind the scenes while Kim Jong-Il remains formally head of government but has only limited actual power. This reinforces the view that Kim Jong-Il, despite the opposition of some in Pyongyang, is the only person in a position to succeed Kim Il-Sung as the leader of the North Korean ideocracy and that North Korean leaders understand this fully.

Selig Harrison of the Carnegie Endowment for International Peace, however, sees tension bristling beneath the surface of Kim Jong-Il's stewardship between well-defined groups of reformers (variously called "technocrats" or "pragmatists") and hardliners, "a powerful old guard centered in the armed forces and military-industrial complex that includes the nuclear establishment." Unlike in the Soviet Union under Gorbachev, where many military leaders supported economic *perestroika* in the belief that a healthier economy would eventually bear fruit for the armed forces, North Korean hardliners have no stomach for reform due to a combination of fear for DPRK security and bureaucratic and resource motives. In an economy so crippled as North Korea's, any movement in favor of light industry or exports is bound to force significant material sacrifice on the military-industrial complex. The nuclear weapons program alone is a major part of the DPRK military's resource pie, $10 billion over the next three to five years in a $23 billion annual economy, and the military is committed to protecting it from the reformers who want to find some formula to drop it in order to establish economic ties with the west.

Harrison's analysis raises disturbing questions. Might the military "hard-liners" go so far as to stage an international crisis to protect their bureaucratic resource privileges? Under siege by reformers, given the nuclear coercion they have witnessed in 1945, 1953, and 1956 (the Taiwan Straits crisis), and the recent record of the United States, South Korea, and Japan of scrupulous avoidance of measures which might provoke North Korea, might the DPRK military feel confident that they could justify their nuclear program by threatening to use nuclear weapons against South Korea or Japan unless North Korea receives concessions they know South Korea or Japan will be only too happy to give? Will Kim Jong-Il go along with such a scheme, convinced that he needs the KPA's support for his succession? After Kim Il-Sung dies, will he only feel more dependent on the KPA for his survival in power and hence more willing to countenance such schemes?

According to Selig Harrison, Kim Jong-Il manipulates this reform-vs-hardline debate from above, playing the two sides off against one another, his only intrinsic interest being his own survival and succession in power. This lack of commitment by Kim Jong-Il to reform may yet produce pretenders to the North Korean presidency, however. Kim Yong-chu, Kim Il-Sung's younger brother, is a key leader of the reformist camp according to Harrison and there have been reports of indications by China that it would prefer he take over from the "Great Leader" while Kim Jong-Il remain a "crown prince." Reformers' impatience with Kim Jong-Il is also evidenced by the fact Hwang Chang-yop, commonly identified as a personal opponent of the "Dear Leader's" succession, is also one of North Korea's biggest boosters of Chinese-style economic reforms.

Some, however, believe that Kim Jong-Il is a true reformer and that his accession will herald significant Chinese-style reform in North Korea. Kim Jong-Il's long rise to power began on August 7, 1984 (the day he was officially identified as "heir"), just four days after he launched the "August 3 Movement." The Movement was named after Kim Jong-Il's August 3, 1984 visit to a factory where he issued directives to improve productivity and to diversify production. "We must hold on firmly to the central task of the light industry revolution and bring about a new turnaround in the production of consumer goods for the people" e.g. clothes, shoes, housewares and furniture. But in contrast to Harrison's view, the ascendancy of Kim Jong-Il, the dedicated reformer, need not lead to a decision to scrap nuclear weapons according to these analysts. They argue that it is possession of nuclear weapons that makes Pyongyang secure enough to experiment with economic reform and openness and confident enough that it will be able to resist pressure to open up in ways which promise to threaten Kim's regime.

Dr. James Cotton, however, argues that a successful accession by Kim Jong-Il will only ensure that any Chinese-style reform by North Korea will be minute. "Kim Jong-Il is the one leader who cannot repudiate his father's policies except at the price of undermining his own legitimacy... even modest reform would amount to a betrayal of the existing system. Without very careful management, opening would be fatal to the pretensions and ultimately the monopoly of power of the Kim dynasty."

North Korean Motives For Acquiring Nuclear Weapons

Why is North Korea pursuing a nuclear weapon and what purpose does Pyongyang expect a nuclear weapon to serve? Numerous possible answers to these questions have been offered.

Insecurity

A purely (or perhaps narrowly) military explanation for the DPRK's nuclear ambitions is that they fear attack from a South Korea perceived to be militarily superior and only seek nuclear weapons to deter such an attack. Pyongyang's insecurity is fed by the robust economic growth in South Korea, which stands in stark contrast with economic contraction in the North estimated at -4% in 1990, -5% in 1991, -8% in 1992, and -11% in 1993 by the Bank of Korea. Russia and the PRC have abandoned their longstanding policy of refusing to recognize South Korea unless the U.S. recognized the North simultaneously and have established relations with Seoul. Pyongyang has seen trade between its former allies and South Korea grow by leaps and bounds while they let trade with North Korea fall precipitously by demanding hard currency. Seoul's alliance with the United States, the most formidable military power in the world, appears firm, despite the reduction in U.S. troops on the peninsula and withdrawal of tactical nuclear weapons from South Korea. In most categories, North Korean forces are double the size of South Korean, but the technology, level of training, and logistic capability of the latter could be seen in Pyongyang to be able to overwhelm the North in any Second Korean War. While Seoul remains vulnerable due to its proximity to the DMZ, South Korea seems sure to be able to

defend itself capably now and in the future while spending less than 4% of GNP on defense, in contrast to 22-25% by the North. This motive implies that Pyongyang would likely consider threatening to use nuclear weapons to stave off defeat in a second Korean War.

The insecurity hypothesis would seem to have two significant flaws or shortcomings, however. First, while current North Korean perceptions of conventional inferiority and fear of attack may justify their nuclear program today, they do not address Pyongyang's earlier decisions to pursue nuclear weapons development when both the political and military situations were more positive. Throughout the late 1950s and 1960s North Korea sought help from both the USSR and PRC in adapting its nuclear energy facilities for weapons purposes, North Korea built some of the Yongbyon facilities which are the focus of current international inspection demands in the 1970s, and North Korea's nuclear weapons program made several key steps forward in the 1980s, all well before the fall of the USSR, turn in Chinese policy, and rapid economic growth and democratization in South Korea.

Second, Pyongyang is only militarily inferior if the test of superiority is which side would eventually win a Second Korean War and see the other state extinguished from the map. If instead the test of superiority is which side can coerce the other short of war, North Korea may be viewed as militarily superior without nuclear weapons because of the severe proximity and vulnerability of Seoul to surprise attack by DPRK forces deployed close to the DMZ. Seoul alone constitutes over 25% of South Korea's population and nearly 50% of its economic output. South Korea cannot sanguinely assume that it will eventually prevail in a war while a city of such immense demographic and economic value is destroyed, and this gives North Korea huge leverage, perhaps even military superiority, over the South.

Kim Jong-Il's Succession

Another hypothesis is that the North Korean nuclear gambit is a symptom of the struggle by Kim Jong-Il to succeed his father as President of the DPRK. As noted earlier, Kim Jong-Il has encountered some resistance to his succession within the DPRK military. This resistance would seem to stem from little more than distrust by military leaders of anyone other than Kim Il-Sung, whom they are taught fought so heroically to establish the DPRK and from whom they have learned military strategy and tactics for over forty years. According to this hypothesis, Kim Jong-Il has responded to opposition to his succession within the armed forces by endeavoring to prove his mettle as commander-in-chief in various ways. The younger Kim is reported to have been behind the Rangoon plane crash in 1983 that killed much of the South Korean cabinet, he took very public and personal credit for the cancellation of *Team Spirit* in 1992 (and hence was forced to respond when *Team Spirit* took place in 1993), the latest declaration of a "semi-war footing" in North Korea was proclaimed in Kim Jong-Il's name, and in May 1993 Kim Jong-Il personally and publicly decorated three North Korean soldiers shot dead infiltrating South Korea. He has also appointed over 500 officers to the rank of general in recent years. Strong support for the development of nuclear weapons is viewed in this light as another way to satisfy the North Korean military and persuade it to support Kim Jong-Il's succession. As mentioned earlier, the military's particular interest in nuclear weapons may stem from fears of attack by a conventionally superior foe in South Korea, a desire to coerce the South or other countries in the region, or bureaucratic and resource motives.

Support for the succession explanation can be found in several pieces of evidence which suggest that the withdrawal from the NPT, and possibly the entire nuclear program, are policies being pushed, not by North Korea's 82-year old "Great Leader," but by his son and heir apparent. During a September 1993 visit to

Beijing, Kim Il-Sung reportedly told Chinese officials "it is useless to make a couple of nuclear bombs" and that the DPRK had neither the capability, technology, nor funds to develop nuclear weapons. These comments echo an April 1992 interview with the *Washington Post* in which he said "we don't need nuclear weapons ... and we don't have a delivery system either." Kim Il-Sung reiterated these denials in an April 1994 interview with western journalists. According to one South Korean government official, the light water reactor initiative, which has some of the appearance of a deal-maker and a way to save face for North Korea, was the "will of President Kim Il-Sung." It was Kim Jong-Il who declared the "semi-war footing" in North Korea on March 8 at the start of the 1993 *Team Spirit* exercises. A Japanese professor of North Korean affairs has stated that "Kim Jong-Il took a political gamble to display his boldness" by withdrawing from the NPT. South Korea's Research Institute for National Unification has concluded that "Kim Jong-Il decided to use this crisis to show that he can make decisions on both domestic and foreign affairs," and even the South Korean foreign minister has commented publicly "this has all been Kim Jong-Il's game." Yevgeny Primakov, head of the Russian Intelligence Service, has stated that Kim Il-Sung only found out about North Korea's withdrawal from the NPT after Kim Jong-Il made the decision. A Russian newspaper reported in June 1993 that Kim Il-Sung had reprimanded Kim Jong-Il for withdrawing from the NPT and failing to obtain concessions from the U.S. in the first round of talks in New York. Finally, throughout all 1992 and 1993, all major DPRK statements and announcements regarding the nuclear inspection issue have been made by Kim Jong-Il or in his name, not that of Kim Il-Sung. Washington is reported to regard the younger Kim as "the key decision maker on most of his government's policies, including its nuclear program."

Given the state of the succession process, and in particular Kim Jong-il's position as commander of North Korea's armed forces, perhaps this pattern should be expected. Perhaps Kim Il-Sung's statements disparaging nuclear weapons are merely efforts to please his foreign hosts or foreign journalists. Moreover, despite this body of evidence, explanations of DPRK nuclear policy which appeal to the internal politics of North Korea have limited utility for U.S. and other policy makers. If one assumes the military is demanding nuclear weapons from Kim Jong-Il as the price of support for his leadership, one immediately begs the questions "why do the military seek nuclear weapons?" and "if this effort by Kim Jong-Il fails and the military denies him its support, causing his downfall, what would the KPA see as the proper use of nuclear weapons?" At least two intuitively plausible answers simply hark back to the security situation in northeast Asia — fear for North Korean survival and security, or a desire to coerce South Korea and other countries in the region.

Concessions

The concessions argument posits that North Korea is threatening to develop nuclear weapons in order to extract an economic and political price from the outside world, including diplomatic relations and economic aid from Japan and the United States on terms defined by Pyongyang so the threat to the Kim regime posed by greater openness and contact with the outside world is minimized.

Although *Team Spirit* was indeed cancelled in 1992 and the September 1991 Bush Administration announcement regarding U.S. tactical nuclear weapons worldwide allowed North Korea to claim satisfaction on another front, North Korea too made concessions in the course of 1991 and 1992 leading up to the inspections agreement with the IAEA and the bilateral Korean Denuclearization Declaration in the hope of further progress towards diplomatic relations and economic aid from Japan and the United States in later stages. It gave up its long-standing demands for 1) a "legal guarantee" from the U.S. that it would never use nuclear weapons against the North, 2) U.S. involvement in nuclear arms and

inspections negotiations, 3) visits to nuclear-armed ships and aircraft in the South under the bilateral declaration, 4) a ban on *Team Spirit* as part of the bilateral declaration, and 5) North Korea had revealed the existence of thirteen nuclear facilities previously unknown to the IAEA and had provided the IAEA with more information than was strictly required on its declared nuclear facilities.

In exchange, however, from the time of the agreement between the IAEA and North Korea in 1992 and March 12, 1993, North Korea had seen its requests to inspect U.S. bases in South Korea refused, seen nothing of U.S. and Japanese pledges in terms of trade or diplomatic relations, no progress on the Japanese reparations issue, a highly publicized crackdown by Seoul on a North Korea spy ring, resumption of *Team Spirit*, establishment of ROK-PRC relations, and new demands for inspections by the IAEA that went well beyond usual IAEA practice. The lesson Pyongyang took from all these events was that only by further refusing to comply with international norms would it net the concessions it felt it deserved for signing the inspection agreement. Jon Wolfsthal in *Arms Control Today* sums up the argument, "North Korean leaders may have thought their best negotiating chip — their nuclear potential — was being dismantled piece by piece by the IAEA without Pyongyang receiving any tangible benefits in return."

One key problem with this explanation is that if concessions were the sole motive and North Korea was not building a nuclear weapon before the disappointing events of 1992 and 1993, then the IAEA would not have found North Korea's plutonium extraction to have been occurring since at least 1989. Moreover, while the concessions argument may have seemed promising in March just after the DPRK announced its withdrawal from the NPT, every day that goes by without apparent progress in negotiations weakens this hypothesis. After all, what good is a nuclear "card" that the holder refuses to play? At the bilateral talks in New York and Geneva, the United States has agreed to discuss every issue raised by the North Koreans and strongly indicated U.S. willingness to compromise over issues such as *Team Spirit*; inspections of facilities and bases which used to house U.S. tactical nuclear weapons (in consultation with the IAEA); economic aid, including the light water reactor issue; diplomatic recognition of the DPRK by the United States; and even extension of a "negative security guarantee" for North Korea. At the same time, the United States has been abundantly clear that it expects, in return, for North Korea to rejoin the NPT, allow IAEA special inspections as mandated in the NPT, and implement the bilateral Korean Denuclearization Agreement with Seoul, and that the United States will neither rescind its nuclear umbrella over South Korea nor remove its troops from the peninsula. Despite these clear positions, the North Koreans have failed to use the bilateral talks with the United States to accomplish what the concessions argument would predict.

The implication of the concessions motive would seem to be that if North Korea fails to get what it wants out of the United States, Japan, South Korea and the IAEA prior to actually developing nuclear weapons, North Korea might try to threaten to *use* nuclear weapons, not just develop them, in order to receive diplomatic recognition and economic ties on Pyongyang's terms from these countries.

Korean Reunification

A slightly different angle on the concessions argument suggests that North Korea is looking less for concessions now from the United States and Japan, but more towards concessions from the South several years down the road in the inevitable unification talks. According to this hypothesis, nuclear weapons will give Pyongyang a stronger negotiating position and enable it to negotiate an economic opening with the South on terms more favorable to the North than otherwise would be the case. This motive would imply that Pyongyang will routinely threaten to use nuclear weapons if it feels the

unification negotiations are not going its way or are causing excessive strain on the North Korean system.

Distraction from misery at home

This hypothesis also tends to fold into the concessions argument, for if the economic misery of the North Korean people is the source of the Kims' problems and fears for their survival in power, economic aid and opening on Pyongyang's terms is the solution, not nuclear weapons. Nuclear weapons are the means, not the end, according to the distraction hypothesis, but the DPRK's negotiating posture fails to provide evidence in support of it. Moreover, the nuclear program costs the DPRK an enormous amount of money, estimated by ROK intelligence at $3 billion so far and $10 billion over the next three to five years in a $23 billion economy. That kind of money could make a real impact on the standard of living for many North Koreans if it were used for proper economic, industrial and nutritional needs, not nuclear arms. If one believes this motive, however, it would seem to imply that if economic and food conditions deteriorate sufficiently in the North, Pyongyang will threaten to use nuclear weapons in order to distract the population from its misery. In contrast to threats born of other motives, however, Pyongyang would hopefully realize that *making* the threat may distract the population from misery, but *carrying it out* will not. The United States, Japan and South Korea would hopefully realize the same.

Previous violations of IAEA rules

According to this hypothesis, North Korea violated the rules of the IAEA regarding plutonium between 1985 and 1991 and since then has been seeking to cover up those violations in order to remain an NPT member in good standing. But when IAEA inspection methods proved sufficient to uncover these misdeeds, North Korea recoiled and refused further inspections until they could clean up their facilities. This explanation raises the immediate questions "why would North Korea have extracted plutonium from its reactors between 1985 and 1991 unless it was to develop a nuclear weapon? And what made them change their minds?" Michael Mazarr in *Arms Control Today* tries to provide an answer by arguing that Pyongyang pursued a nuclear program beginning in the 1970s in response to Seoul's hints that South Korea would seek to develop nuclear weapons and that the North Korean program continued (perhaps either due to bureaucratic inertia or as an insurance policy) even after Seoul renounced the idea. Supporting this hypothesis is the fact that of the two waste storage facilities the DPRK is thought to be using to stockpile plutonium and which are the targets of the IAEA special inspection demand, one was built in 1976 around the time Seoul was hinting it might seek to develop nuclear weapons, and the other, "Building 500," was only built in 1992. Moreover, recent evidence indicates that Seoul was actively pursuing a covert nuclear development program as late as 1991 at Deaduk, although there is no evidence Pyongyang had any knowledge of this. This argument seems to presume, however, that North Korea has learned nothing from the more recent experience of South Africa, which "came clean" about its nuclear weapons program and past violations of IAEA norms, but has been commended, not condemned, by the international community for its change in policy.

Whatever potential validity this hopeful theory may have held in February 1994, it is surely gone with the events of March. Pyongyang perpetrated new violations of IAEA norms and rules between August 1993 and March 1994, namely the numerous broken seals on rods at Yongbyon, and Pyongyang had a straightforward means of rebutting the conclusion that the rods had been removed for purposes of plutonium extraction, namely allowing the IAEA to inspect the glove box where plutonium would have been removed by hand. Instead Pyongyang refused, in violation of IAEA norms and in direct contravention of

the written agreement of February 1994 between the IAEA and DPRK.

Coercion

This last hypothesis argues for the pessimistic conclusion that North Korea is simply an aggressive regime that has not reconciled itself to either the success or mere existence of South Korea, and that it is unalterably committed to acquiring nuclear weapons in order to coerce South Korea. The first counter to this argument is, of course, that regardless of North Korean intentions, the DPRK cannot attack South Korea, conventionally or otherwise, and not expect to be conquered and reformed once South Korean and U.S. forces recover from the initial offensive. Exhausting a small stockpile of nuclear weapons will not place North Korea in any better a position in such a scenario. The first counter counter-argument is that North Korea is so bankrupt, its leaders are so committed to their own survival, and meaningful openness or economic reform would pose such a threat to the Kims' legitimacy that economic and political stagnation will continue in the North until such time as the utter collapse of North Korea seems so certain and imminent that the Kims lash out and make the South join in their downfall. The reluctance in many quarters in South Korea, Japan, and even in the United States to impose economic sanctions on North Korea and thereby push it into a corner for fear of Pyongyang "lashing out" would seem to lend support to this latter argument, most importantly in the minds of the North Koreans.

Short of straightforward coercive threats to use nuclear weapons, whether out of desperation or pure aggressiveness, North Korea may feel nuclear weapons will enable it to carry out with impunity a terror campaign which destabilizes the South. In the past Pyongyang has been behind the ax-murders of U.S. officers in the DMZ, the 1983 bombing of a plane over Rangoon, Burma (now Myanmar), killing most of the South Korean cabinet, and the sabotage of a South Korean civilian airliner in 1987, killing 115 people. Some would also argue that North Korean nuclear weapons will weaken the Seoul government, even without an accompanying terror campaign, by creating divisions in South Korean politics and society over how to react to North Korean proliferation, whether to increase military spending, and over the overall future of the peninsula.

A number of these motives could also be attributed to DPRK possession of chemical and biological weapons, but in each case the pursuit of nuclear weapons would seem to have overtaken them. North Korea has possessed chemical and biological weapons for the better part of twenty years. These weapons of mass destruction can also, in the right circumstances, provide some compensation for insecurity born of conventional inferiority, be used as instruments of coercion, earn the support of the armed forces for political succession, or be used to extract concessions from those countries interested in preserving the CW and BW non-proliferation regimes. Whatever the original purpose of CBW in the minds of North Korea's leaders, they clearly were not satisfied with the results, and the pursuit of nuclear weapons can be seen as the next step towards that goal.

Policies and Positions of Regional Actors

Japan

In 1876, a fleet of Japanese warships anchored off Inchon forced Korea to agree to a series of unequal treaties, "opening" Korean ports to Japanese trade in a move clearly modeled on what the Japanese had learned twenty-three years earlier from U.S. Commodore Matthew Perry. This event touched off an intense struggle between China and Japan for influence over Korea which culminated in the Sino-Japanese War of 1895. Although numerically superior, Chinese forces were insufficiently modernized compared to Japan's and Japan seized the entire peninsula, as well as the Kwangtung Peninsula of Manchuria.

Russia tried its hand against the Japanese in northeast Asia in 1904 but the Japanese army

went through Korea again and drove the Russians back north while Admiral Togo intercepted and annihilated the Russian navy. The Russians in turn ceded Korea and the Kwangtung Peninsula to Japan. In 1910, Japan annexed Korea as a full fledged colony, imposed strict limits on political and individual freedoms and forced resettlement of Korean workers to Japan, Manchuria, Sakhalin and elsewhere. With Tokyo's surrender in 1945, the Japanese occupiers were replaced by Soviets in the north and Americans in the south, but both their armies had withdrawn by 1948. During the Korean War of 1950-1953, Japan served as a base for U.S forces to attack the North Korean army on the peninsula and the U.S. military presence in Japan provided a strong spark to the recovery and reindustrialization of Japan after its defeat in World War Two. Japan and the DPRK did not establish diplomatic relations after the Korean War, instead remaining fierce adversaries in their respective Cold War camps for four decades.

Japan and North Korea began normalization talks in January 1991 with an agenda calling for a resolution of the war crimes and reparations issues before discussing the establishment of diplomatic relations. North Korea broke off the talks after the eighth round in November 1992 when Japan asked North Korea for the real identity of Yi Un-hye, a Japanese teacher of Kim Hyon-hui, the woman responsible for the bombing of a Korean Air Lines plane in 1987. Japan proposed resuming normalization talks on many occasions but the North Koreans rejected each proposal.

As mentioned earlier, in January 1994 the United States and North Korea announced a deal whereby the DPRK would allow inspections of the seven declared nuclear sites in order to ensure the "continuity of safeguards" and in exchange there would be a third round of talks between the United States and North Korea at the assistant secretary/vice-minister level. In addition, the United States and South Korea would call off *Team Spirit* for 1994 as soon as North-South talks resumed. Japan quickly took this development as an opportunity to reopen normalization talks, and on January 9, 1994, in Seoul then-Japanese Foreign Minister Hata issued a public invitation to North Korea to resume bilateral negotiations. One report, however, alleged that Japan had actually offered to reopen normalization talks in the autumn of 1993, long before the recent progress occurred. In any case, North Korea has yet to respond to Hata's invitation.

In fact, there has been some confusion in Japan's policy towards the resumption of normalization talks ever since North Korea announced its decision to withdraw from the NPT in March 1993. On March 12, Foreign Ministry Spokesman Masamichi Hanabusa said "our negotiations with North Korea to normalize our relations is a separate issue" from that of North Korea's nuclear program and policy. Then-Prime Minister Miyazawa, however, said that "normalization talks between the two countries would not make progress without settlement of the issue of international inspections of North Korea's nuclear facilities." Miyazawa reiterated his position after Pyongyang "suspended" its withdrawal from the NPT in June. Another LDP government official reacted to the suspension by saying "the suspension of its withdrawal [by] the DPRK is totally worthless unless North Korea accepts nuclear inspections."

Confusion resurfaced under the coalition of reformist parties which took over from the LDP in July. Japan's Social Democratic Party (SDP), the largest single party in the coalition, has been actively pro-Pyongyang for over forty years and several SDP Diet members have visited the DPRK since the announcement of North Korea's withdrawal from the NPT. Whereas Prime Minister Hosokawa and government spokesmen always linked resumption of normalization talks with progress on the nuclear issue, SDP representatives remain prone to unconditional statements such as "the channel for dialogue is always open." Even then-Foreign Minister Hata (of the Japan Renewal Party) at times neglected to emphasize the need

for progress on the nuclear issue before resuming normalization talks; he stated, on December 1 for example, "if North Korea is willing to engage in dialogue, we are ready to talk at any time." SDP Party Chairman Tomiichi Murayama has called for normalized relations in exchange for the mere establishment of dialogue with Pyongyang, urged the Diet to do more to show the Japanese "repentance" for the invasion and occupation of Korea, and said that Japan owes the North compensation for "comfort women" and draftees, two aspects of the Japanese occupation that were not covered by previous treaties. Prime Minister Hosokawa stated that his 1993 apology for the war, and for "comfort women" in particular, which was addressed to "Koreans" in general and went further than any LDP apology in the past, closed the "repentance" issue.

This dissonance in Japanese policy may yet become a cause of confusion or anger on the Korean peninsula. One South Korean analyst charged that "most of the Hosokawa regime's members are pro-North Korea," quoting a Japanese source, while several other reports have said that Pyongyang sees Hata's Japan Renewal Party, a party of reformers who broke from the LDP and the second largest party in the coalition, as "a lackey of the United States" and was very unhappy with the alliance between the Renewal Party and the SDP. These reports quoted sources as saying "the Hosokawa government is worse than the LDP... the SDP has failed to establish its independence within the coalition.. and can no longer be considered friendly to the KWP... Relations with Japan [are] below zero." An unnamed "North Korean leader" has been quoted as saying "Pyongyang expects nothing from... Hata. We do not think he can do anything in defiance of [Japan Renewal Party Secretary General Ichiro] Ozawa." The United States considers Ozawa the "behind-the-scenes strongman in the present Japanese coalition" but some in the U.S. government have expressed concern that Ozawa "plans to introduce an independent line for Japan's long-term security; he will eventually oppose the U.S. line." Ozawa has stated clearly his position that "without resolution to the nuclear issue, negotiations for establishment of diplomatic relations between the two countries cannot be held" and his personal belief that North Korea already has nuclear weapons. Ozawa has even proposed legislation to deal with possible emergencies stemming from the North Korean situation, including preparations for a naval blockade.

North Korea pursues a two-track policy in its overall relations with Japan. On one track, Pyongyang and its news agencies spout bitter vitriol at Tokyo for the occupation of Korea earlier this century, Japanese policy towards the North during the Cold War, and for the betrayal felt towards the Japanese SDP for joining a government that did not make cozying up to Pyongyang its number one priority. The DPRK reserves particular animosity for Japan's plutonium stockpiling, insisting Japan's nuclear policies are the proliferation issue in northeast Asia, not North Korea's withdrawal from the NPT and refusal to allow IAEA inspections of its facilities. On the second track, the North Korean leadership seeks improved relations with Japan, marked by diplomatic normalization and a program of economic aid on Pyongyang's terms, goals for which it may or may not be willing to forego nuclear weapons. North Korea pursues this two-track policy most of all because it believes it will work to squeeze yen out of Tokyo; historically since 1945, the DPRK and other countries in Asia have routinely succeeded in getting what they want out of Tokyo by invoking its guilt for actions committed during World War II.

In its formal policy statements, the Japanese government has generally spoken less of inducements and carrots than the South Koreans, insisting that they cannot tolerate living next to a country with nuclear arms and missiles capable of hitting major Japanese cities. Some in Japan have even argued that the ROK's position is driven by a secret desire to inherit the North's nuclear weapons upon reunification and have raised the specter of

"historical vengeance" by a unified, nuclear armed Korea against their former enemy and occupier. A June broadcast by the Pyongyang government Korean Central News Agency (KCNA), for example, urged that "Japan should not forget its historical lesson as a nuclear victim." Alternatively, a very narrow geopolitical logic might even have persuaded the Japanese to support North Korean nuclear weapons as a means of prolonging the division of the Korean peninsula, and Pyongyang may have found an ally in Tokyo and sought to play Tokyo off against Seoul. Instead, Japan has strongly opposed the North Korean nuclear weapons program and policy towards the NPT, thereby preserving its relations with the United States and the U.S. commitment to Japanese security.

Although Japan has stated it would support an embargo on oil, gas, and other raw materials, Japan's most important task in any economic sanctions against the North would be to cut off the flow of hard currency from the pro-Pyongyang Chongnyon or Chosen Soren group of Korean residents in Japan. The Korean community began in Japan between 1910 and 1945 in which the Japanese controlled the Korean peninsula and shipped Koreans to Japan to work at low-wage jobs. In the 1952 treaty whereby Japan renounced any claims on Korea, Japan allowed these workers and their descendants to remain in Japan as "permanent residents" but did not allow them to apply for citizenship. Few Koreans would have sought citizenship anyway, especially since Tokyo demanded they adopt Japanese names, but this history created a fertile ground for cultivation of sympathizers of the DPRK.

Twice a month, a ferry runs from the western Japanese port of Niigata carrying suitcases and plastic sacks stuffed with millions of yen donated by the Korean community in Japan to North Korea. The estimated $600 million total annual transfer is a vital source of hard currency for the crippled DPRK economy and constitutes some 40% of North Korea's annual foreign currency earnings. There are strong indications that the flow of Chongnyon money has risen significantly in recent years as Pyongyang's isolation has increased. In February 1994 the Japanese Ministry of Finance officially estimated the flow of hard currency from the Chongnyon to North Korea for 1993 at 200 billion yen or $1.8 billion. Automobiles and industrial machinery are also sent to North Korea via this ferry, and a DPRK soldier who defected to South Korea in August 1993 has also alleged that the Chongnyon have systematically shipped high-technology equipment to North Korea in violation of COCOM regulations.

Relations between Pyongyang and the Chongnyon may have deteriorated somewhat in 1993 because of North Korea's decision in March during the 'semi-war footing' prompted by *Team Spirit* to stop issuing entry visas to foreigners and to bar all entry into the country by air. Furthermore, North Korea refused to accept any visitors from Japan and suspended of the ferry from Niigata to Wonsan between late May and late August. In December, Kim Pyong-sik, former Vice-Chair of Chongnyon, was appointed Vice President of the DPRK in an effort by Pyongyang to compensate for any deterioration in relations.

Japanese officials say they fear an eruption of terrorism by the 150,000-260,000 DPRK sympathizers within the 800,000-strong Korean community in their country if Tokyo tries to cut off the flow of money, either unilaterally or as part of UN-authorized economic sanctions. The possibility of a terrorist campaign by the Chongnyon is but one of the fears driving Tokyo's policy towards Pyongyang's nuclear program. Some experts have suggested that Tokyo fears a more confrontational policy towards Pyongyang, such as economic sanctions, may provoke Pyongyang into firing its new *Rodong*-1 missile at Japan, possibly with WMD, or that the relations between center-reformist parties and the leftist, pro-Pyongyang SDP will be shattered over the North Korean issue. SDP Chairman Tomiichi Murayama reiterated on March 25, 1994, his

position that Japan should not go along with UN sanctions on North Korea and an SDP member of Japan's upper house met secretly with North Korean officials in Beijing on April 4 in an effort to arrange a visit by a high-profile party delegation to Pyongyang later this spring.

The Chongnyon also reportedly has compromising information on the illicit funding of many leading politicians in both the ruling coalition and the opposition LDP by Japanese Koreans who operate illegal pinball parlours. This factor could pose an obstacle to a stronger policy on the part of even an LDP or LDP-center/reform government. Moreover, an influential backroom power broker within the LDP, Shin Kanemaru, has led parliamentary delegations to North Korea and is considered by some observers to be pro-Pyongyang.

Enforcement of sanctions by Japan would also be intrinsically costly and very difficult. For Japan to enforce an embargo by blockading North Korea is a *casus belli* and virtually out of the question. Japanese officials have also noted their constitution's effective ban on participating in a naval blockade. Patrolling every inch of Japan's coastline and policing every fishing vessel that heads into the Sea of Japan would be enormously costly and Japanese officials have speculated publicly on the difficulty of physically prohibiting these remittances. Finally, the Chongnyon may argue that their cash flow to the DPRK is composed of "gifts" to "family relatives" and thus should be exempt from UN sanctions on humanitarian or human rights grounds — or Tokyo may take this line to excuse their decision to leave the Chongnyon alone. Prime Minister Hata has already raised this line of argument publicly as Foreign Minister. Another Foreign Ministry source has said that "remittances can not be stopped if they go through China or another third coutry."

Some experts have argued that the Japanese know North Korea is at least two years away from fitting the *Rodong* with a nuclear warhead and hence can afford to be more patient than the United States, whose policy goals towards the DPRK are somewhat different and for whom time is of the essence. Paul Beaver of *Jane's Defence Weekly* told a Japanese newspaper in March 1993 that North Korea had only then started "to conduct research on reducing the size of nuclear bombs and turning them into nuclear warheads so that they can be installed on ballistic missiles. It should take three to four years to complete this development project."

Should the North Koreans succeed in fitting the *Rodong*-1 missile with a nuclear warhead and a range of 1300 km, it would place all of Japan's major urban centers within the range of DPRK nuclear weapons. This possibility has raised the concern in some quarters that Japan may acquire nuclear weapons of its own in response. There have been numerous reports of plutonium stockpiling by Japan, possibly with just such an eventuality in mind. Japan currently possesses 11,341 pounds of fissile plutonium reprocessed in Britain and France, the majority of it slated for use in Japanese breeder reactors, but 3,586 pounds remains unattributed. In April 1993, one month after the North Korean decision to withdraw from the NPT, Japan Atomic Fuel began construction on the world's largest nuclear fuel reprocessing plant with an annual capacity of five tons of plutonium, due to be completed sometime between the year 2000 and 2010. Japan has ordered thirty tons of plutonium to be shipped from Britain and France over the next ten years, ostensibly to serve as fuel for Japan's breeder reactors. But in a telling development, Japan's Atomic Energy Commission announced in May that its long-term national plutonium policy would not be completed in the near future as planned, attributing the delay to "the rapidly changing international situation." The Japanese government also reacted hesitantly at the 1993 Tokyo G-7 summit to the U.S. proposal for summit leaders to endorse the indefinite renewal of the NPT at the 1995 NPT review conference, although Japan agreed soon thereafter.

The current political climate in Japan still overwhelmingly favors the pacifists and defenders of the post-war constitution on the issue of nuclear weapons in general and especially on the prospect of Japanese development of nuclear weapons — so much so, in fact, that there really is no public debate yet over whether Japan should acquire nuclear weapons. If anything, Japanese politics for the foreseeable future will, like in the United States, be fully concentrated on domestic issues, in Japan's case political and electoral reform and economic restructuring. Defense Agency Chief Keisuke Nakanishi was sacked in early December for merely suggesting that Article 9 of the post-war constitution renouncing war may need to be revised (he was not specific about how he would revise it.) Japan reacted quickly and vigorously to a story in the *Sunday Times* of London on January 30, 1994, that Japan might be reconsidering its non-nuclear policy, issuing categorical statements such as "[nuclear weapons] are out of the question" and "we totally exclude the possibility of Japan becoming a nuclear power, not only in the near future, but in the distant future."

Perceptions and charges from abroad that Japan is preserving a nuclear weapons option are supported mostly by the character of the Japanese nuclear power program. Tokyo is constructing a series of multi-billion dollar fast breeder reactors. As the name "breeder" indicates, once an initial mass of plutonium is applied, these reactors breed more plutonium as they generate energy, supplying the fuel for the next period of power generation, and so on. Japan explains its preference for breeder reactors by noting its utter lack of indigenous oil, uranium, or plutonium; breeder reactors promise to virtually eliminate Japanese dependence on foreign resources for a large part of its energy needs. Although these projects were planned many years ago when plutonium was relatively cheaper, plutonium today costs four to eight times as much as uranium, but it is much more suitable for a nuclear weapons, lending credence to those who would argue the Japanese breeder program hides a nuclear weapons program.

In February, Japan reportedly decided to postpone for up to twenty-five years the schedules for those breeder reactors now under construction in order to blunt perceptions abroad that Japan was preserving the nuclear weapons option. One report said the decision was made "because of international disapproval;" another said that Japanese officials were "shocked by the scope of international protests generated by the first plutonium shipment" from Europe last year. On April 6, 1994, however, the Monju reactor (which was already completed) became self-sustaining and is now capable of producing excess plutonium for dozens of nuclear weapons annually. The very next day, the DPRK's ambassador to India said that North Korea would aim its nuclear weapons at Japan, not South Korea, and his statement was met by silence from Tokyo.

One U.S. expert on security in East Asia has gone so far as to accuse the research and academic community in the United States of "projecting" when it raises the specter of Japanese nuclear proliferation. He cites the wrenching and prolonged debate over deploying Japanese troops abroad under UN auspices from which Japan has just emerged as evidence of how un-imperialistic the Japanese remain after the Cold War. Another analyst argues that for Japan to decide to become a nuclear weapons state would require several more provocations such as North Korea's missile test over the Sea of Japan, that North Korea fit the *Rodong*-1 with a nuclear warhead, and that the United States drop entirely its security commitments to Japan. Even then it would require a fierce national debate over at least three years before Japan went nuclear, a debate pro-nuclear groups in Japan may not necessarily win.

Finally, assuming U.S. security guarantees to Japan remain firm, the question must be asked: why *would* Japan proliferate in response to North Korea when it declined to do so in

response to the Soviet Union or, more importantly, China? During the Cold War, the most common argument which raised doubts about the U.S nuclear umbrella over Western Europe was that the United States could not be expected to use nuclear weapons in defense of, say, Bonn, in full knowledge that New York City would be hit in retaliation by the USSR. But North Korea does not now possess, nor is it likely to ever possess, missiles which can hit the United States mainland or even Hawaii, and hence neither North Korea nor Japan has such a reason to doubt the credibility of the U.S. nuclear umbrella over Japan. This argument only addresses one type of threat to Japanese security, however. Were North Korea to launch a campaign of unrest and terrorism in Japan, as some fear it plans against South Korea, with the confidence that Japanese retaliation would be deterred by Pyongyang's possession of nuclear weapons, Japan can hardly expect the U.S. nuclear umbrella to put a stop to North Korean subversion.

Alternatively, some have suggested that Japan is so industrially, economically, and technologically advanced that Japan could build a bomb in a matter of days or weeks and hence will never actually have to build a nuclear weapons stockpile in the manner of other nuclear powers. In other words, Japan is already so close to having nuclear weapons that adversaries like North Korea will face Japan as if it were a nuclear power.

There is, however, an ongoing and vigorous public debate in Japan over deploying more advanced theater missile defense systems in response to the development of the *Rodong*-1 and of nuclear weapons by the DPRK. According to *Jane's Defence Weekly*, North Korea's nuclear weapons ambitions have led Japan to "change the axis of its security threat... to North Korea. Theater missile defense has become the top priority of Japan Defense Agency planners, increasingly concerned that the performance of the [*Rodong*-1] missile will render its *Patriot* PAC-2 anti-missile defense ineffective." Japan's current missile defense rests largely on first-generation *Patriot* SAMs deployed at Hokkaido, Tohoku, Kanto, Chukei, and Kansai and *Aegis* destroyers with SM2 Block IV *Standard* missiles. Japan plans to deploy *Patriot* PAC-2s by 1995, but already there are indications Japan may seek to replace or supplement the PAC-2s with more advanced Extended Range Interceptor (ERINT) interceptors. Japan also plans to purchase two more AWACS aircraft from the United States (Japan already has two AWACS), a move opposed until just recently by the SDP, and Tokyo is now rumored to be seeking deployment of the Theater High Altitude Air Defense system (THAAD) in 1996, the year the *Rodong*-1 is expected to become fully operational. The latest "Outline of the Defense Program" by the Japan Defense Agency specifically calls for interceptor missile systems like the THAAD. Japan also threatened Iran on November 30, 1993, with a suspension of yen loans (38.6 billion yen last year from Japan) if it allowed North Korea to test the *Rodong*-1 over the Iranian desert. Significantly, Iran had scheduled a test launching for "sometime in November" but it has been postponed indefinitely. Following the change in policy of Tehran, nine major Japanese trading firms agreed to defer until 1996 to 1999 repayment by Iran of $2 billion in trade debts originally due in December 1993.

Not everyone in Japan, however, either inside or outside of the government, favors deployment of TMD systems. In addition to the usual arguments found in the American debate over the feasibility of missile defenses, their genuine effectiveness at shooting down incoming missiles, and the issue of compliance with the ABM Treaty, there are at least four points of contention unique to the Japanese debate. Firstly, many Japanese argue that effective TMD systems would require use of satellite technology, thereby contravening the Diet resolution calling for the peaceful use of space. Secondly, many argue that TMD cooperation with the United States will inevitably extend to cooperation with South Korea, thereby contravening the post-war

Constitution which bars "the right of collective defense" except with the United States. Thirdly, some argue that American proposals for TMD collaboration are attempts to obtain Japanese technology. Undersecretary of Defense for Acquisition John Deutch and U.S. Ambassador to Japan Walter Mondale have both pushed the technological collaboration angle, raising fears in Tokyo. Former Defense Secretary Les Aspin tried to calm those fears, insisting cooperation with the United States in TMD does not require high technology transfers. Finally, many fear the United States will end up making Japan pay more than its fair share for TMD, with estimates as high as one trillion yen a year.

Defense Agency Director General Keisuke Nakanishi was without a doubt Japan's biggest booster of TMD until his abrupt departure in December, nor did he shy away from urging cooperation in TMD with the United States and South Korea. His successor, Kazuo Aichi, has been much less visible in supporting TMD, preferring to leave the issue to the internal workings of the committee charged with producing a new national defense plan for 1995 and beyond. Even Defense Agency Vice-Minister Shigeru Hatakeyama has expressed reservations about the technology transfer aspect of TMD with the United States. Meanwhile, Political Reform Minister Sadao Yamahana and SDP Party Chairman Tomiichi Murayama have come out against TMD. Internal differences over TMD also exist within the opposition LDP, with LDP party president Yohei Kono warning about the potential cost of TMD, while the LDP's foreign policy critic in the Diet, Ryutaro Hashimoto, strongly supports TMD.

China

Kim Il-Sung was reportedy so furious with Beijing for recognizing Seoul in 1992 that North Korean gunboats fired on a fleet of Chinese fishing boats, causing considerable casualties. Then, in December 1992 China announced an end to "friendship prices" and declared that all exports to North Korea would thenceforth have to be paid for in cash. In March, Kim Jong-Il canceled a scheduled visit to China, complaining that he was not scheduled to meet with top leaders, and North Korea sealed its border with China for two weeks. In the meantime, North Korea announced its withdrawal from the NPT, and the DPRK's Ambassador in Beijing said his country did not consult with China over the decision. There have also been reports of North Korean guards opening fire on Chinese citizens spotted on the Chinese side of the border.

In the past, China lent assistance to North Korea for its nuclear program, but it appears that the Chinese have now drawn the line and North Korea is undertaking its nuclear weapons program entirely independently. China does, however, continue to send military aid to North Korea, reportedly 7.5 billion won annually ($9.3 million). Overall, North Korea's trade dependence on China cannot be overstated; it is perhaps *the* most dependent trade relationship in the world today. The demise of "friendship prices" has mainly resulted in the reclassification of many deliveries to North Korea as aid or assistance. Food assistance from China has risen to about 15 billion won ($18-$19 million) annually. Total grain imports from China for the first three months of 1993 were $74 million, versus $68 million for all of 1992, and China was the source of 72% of North Korea's total food imports in 1993. Total oil imports by North Korea have fallen in recent years from 4 million tons annually in the 1980s to 1.5-1.75 million tons in 1993, but the volume of oil imported from China has remained steady to the point where China was the source of 75% of North Korean oil imports in 1993. China also supplied 88% of the DPRK's coking coal imports in 1993. Total Chinese-North Korean trade rose 40% over 1992 in the first six months of 1993 alone to about $1.5 billion. North Korea's total trade with the outside world in all 1992 was little over $2 billion.

Chinese President Jiang Zemin has pledged, however, that Beijing will not increase the amount of oil or food which it currently

"furnishes" to Pyongyang and a U.S. official has confirmed that China recently actually refused to sell several million dollars worth of oil to North Korea, despite an offer of hard cash, lest the oil be used as tank fuel. Other reports indicate, however, that Chinese intermediaries in Okinawa have supplied 240,000 tons of jet fuel for North Korean combat fighters.

A Japanese non-governmental expert on the Korean situation identifies three unique factors which he argues determine Chinese policy towards the prospect of North Korean nuclear weapons. Firstly, China feels from its own experience in the 1960s that it takes at least 3,000 scientists to develop the bomb over many years, whereas North Korea's scientists are said to number only 300. China thus concludes that "it is a 50-50 bet whether or not North Korea is developing [will develop?] nuclear bombs."

Secondly, because of *juche* ideology, China thinks its "influence is not great enough to curb [Pyongyang's] desire for nuclear development." Chinese officials reiterated this line throughout March 1994 and most recently on April 14. Chinese Foreign Minister Qian Qichan was quoted at a Seoul press conference in 1993 as saying "China believes it cannot play mediator. It believes its influence on North Korea is limited." Another signal in support of this theory is that it was largely at China's behest that the United States agreed in April to enter talks with the DPRK at the assistant secretary/vice-minister level, China having reached the conclusion it could not influence the DPRK sufficiently alone. In contrast, Guocang Huan of the Atlantic Council of the United States argues that despite *juche* ideology and despite the resentment felt in Pyongyang towards China for its growing diplomatic and trade relationship with Seoul, North Korea has no one else other than China to turn to and North Korea knows it. North Korea can no longer play the Soviet Union/Russia and China off against one another, and of those two powers, only China remains strongly engaged in Northeast Asia. As a result, Chinese influence over North Korea is in fact higher than ever. Indeed, Chinese officials were quoted in March as saying that Kim Il-Sung has refused to visit China until the nuclear issue is resolved for fear of appearing to give in to Chinese pressure. China reacted by sending a delegation to Pyongyang for the Great Leader's annual birthday celebration.

Thirdly, China simply does not view the prospect of North Korean nuclear weapons as such a dire threat because friendly relations still endure between the two countries and the Chinese population is so large it could absorb a nuclear strike the size of the likely North Korean arsenal. If so, then China and the United States may truly share the same goals of a non-nuclear Korean peninsula free from war, but their differences are over more than tactics; China places a far lower value on these goals — non-proliferation and keeping Asia free of war — despite its geographical proximity to the peninsula because it feels it can withstand the consequences better than the United States may feel it or its allies can.

Other experts go further to suggest that China and the United States have entirely different goals on the Korean peninsula. In particular, China has a strong interest in the survival of the North Korean state for a variety of reasons. It remains a land buffer between Japan and China and the increasingly powerful ROK and China. Personal, sentimental ties between the two countries' leaders remain strong forty years after the Korean War and despite warming relations between Seoul and Beijing. But most importantly, the continuing survival of communist Chinese leaders depends in no small way on their ability to persuade the Chinese people and foreign leaders that China is not simply another capitalist society that must therefore adopt democratic rule and abide by Western human rights norms. A North Korea, however small and isolated it may seem from North America, which adopts Chinese-style reform policies gives a significant boost to the Chinese case that there is a third way to run a modern society apart from either a command

economy or a capitalist one. In contrast, a united, liberal democratic Korea promises to further isolate China politically and undermine the legitimacy of the Chinese Communist Party ruling in Beijing. A united and dynamic Korea may also serve as a magnet to Koreans living on the Chinese side of the Yalu, creating instability in China's northeast. If nuclear weapons are felt to be needed for the survival of North Korea and for North Korea to resist unification on South Korea's terms for as long as possible, then according to this view China should be expected to support the North Korean quest for nuclear weapons.

At the same time, however, China should be expected to downplay areas of disagreement with the United States and to emphasize to the American audience where its interests and policies dovetail with those of the United States, such as the mutual desire to avoid war or "instability" on the Korean peninsula. By presenting itself as a constructive contributor to stability on the Korean peninsula, China maximizes its influence with both North Korea and the United States and further weakens the position of those in the United States who would seek to deny China most-favored-nation trading status.

If the key Chinese interest in the survival of North Korea is that it serve as another example of a modern society, not communist or capitalist, but organized on the basis of post-Mao Chinese-style reforms, China would presumably match its level of tolerance towards North Korean nuclear weapons ambitions to the perceived level of Pyongyang's commitment to a Chinese-style reform program. Chinese diplomatic support for North Korea may also be tuned to how much confidence China has that the future leadership of North Korea will adopt Chinese reforms. Although such reforms may be intrinsically well suited to a state in North Korea's situation, the need to please Beijing in order to preserve trade relations with China and Chinese political support while North Korea develops nuclear weapons may well be a key factor in Pyongyang's — and Kim Jong-Il's — calculus.

In December 1991 North Korea opened the Songbong-Najin-Chongjin "special economic zone" modeled on the extremely successful Chinese SEZ experiments which began in the 1980s. Sometimes called the Tumen River project and sponsored in part by China, Russia, and the UN Development Program, this is a free trade zone where foreign investors may enjoy a five-year tax holiday, a 14% tax rate thereafter, and may enter the zone without visas. China has been by far the largest investor in the North Korean SEZ to date and Chinese investment has continued throughout the past year despite the high international concern over North Korea's nuclear program. On January 25, 1994, a consortium in China's Jilin province announced it would invest $425 million to develop ports, railroads, and a hotel in the Tumen River SEZ. Throughout 1993 various high North Korean officials visited China for the express purpose of inspecting China's special economic zones and privately-run factories. *Chungang Ilbo* of Seoul reports that Pyongyang will further designate the entire coast from Sinuiju to Nampo as a special economic zone in September to celebrate the 46th anniversary of the founding of the DPRK. The article quotes a Chinese source on North Korean affairs as saying "China has played a great role in leading North Korea to openness." Despite Beijing's mantra of "not interfering in or commenting on the domestic affairs of any other nation," Chinese officials and the official news agency Xinhua have publicly welcomed North Korean reform measures and regularly praise Pyongyang's efforts "to improve the national economy and living standards of its people." Chinese, North Korean, and South Korean sources have also been quoted as saying that North Korea is now moving towards a policy of limited rights of independent cultivation for farmers modeled on China's "first modernization" born in the late 1970s.

China also has a very material interest in the Tumen River project and other efforts by the

DPRK to develop its coastal areas. Some 85% of China's external trade is transported by sea, and yet China has only two deep water ports anywhere close to its northeastern provinces. Tianjin in the Gulf of Chihli serves Beijing mostly, and Dalian in Korea Bay reserves priority for goods to and from Liaoyang and Shenyang. The result is that it is becoming very costly for Jilin and other provinces in China's northeast, including such cities as Changchun, Jilin, Harbin, Qiqihar and Daqing, to import and export goods efficiently and at low cost and thereby share in the Chinese economic boom of the 1990s. But North Korea's entire eastern coastline on the Sea of Japan is deep water. At first, during the mid 1980s, North Korea was reluctant to let China develop the ports of Najing and Chongjin on Chinese terms, at which point China turned and reached an agreement with the Russian far eastern port of Zarubino. North Korea immediately caved in to Chinese demands, including that all foreign vessels, Japanese and South Korean alike, using these ports for purposes of trade with China be allowed to do so regardless of the ship's or cargo's origin, and the Tumen River economic zone was born with the blessing of the UNDP. Just this January, another deal was signed for Chinese companies to develop and expand the deep water port at Sinuiju at the western end of the Chinese-DPRK border, in addition to road and railway construction between Chongjin, Najing, and Sinuiju/Nampo and northeast China. And on April 18, a South Korean ship with 1400 tons of construction equipment set sail from Pusan to Chongjin, where it will be transported by truck to Yanji, China. The entire journey through Chongjin will take seven days; the previous route of Pusan-Dalian-Yanji took 40-45 days. With minimal pressure, Pyongyang has proven itself a easy negotiating partner in the development of ports for Chinese trade on the coast of the Sea of Japan. A united Korea under the strong and wealthy tutelage of Seoul may not be so malleable.

China has consistently opposed UN economic sanctions against North Korea, at various times indicating it would use its veto to prevent passage of any Security Council resolution authorizing, imposing, or even contemplating the threat of sanctions, most recently and clearly in March during the Security Council deliberations over how to react to the events of March 1-15. There are several reasons for the Chinese position, including the long-standing friendship between the two countries, Chinese desire to maintain influence in Pyongyang, and the overarching Chinese foreign policy opposing international interference in what they define as sovereign, internal affairs of a U.N member state. The FY1993 report on all government activities by Premier Li Peng stated that "China is consistently opposed to intervention by other countries in domestic affairs on grounds of arms control or weapons exports." As this report's analysis of the PRC has stated, "China wants no part of pressure tactics, being convinced of its own susceptibility thereto." At the same time, however, Jiang Zemin has reportedly warned North Korean Foreign Minister Kim Yong-nam that it would be difficult for China to exercise its veto power if the Security Council decided to take further action against North Korea. Here may be an example of China seeking to maximize its influence with all the various players on the Korean nuclear issue.

Moreover, the North Korean border with China is extremely porous, and enforcement of economic sanctions on North Korea would be very costly for China, not in terms of last trade with the DPRK so much as the manpower and resources that would have to be dedicated to the task of patrolling the border. Private individuals and corporations in China, especially ethnic Koreans in China's northeastm would surely try to evade and ignore any trade embargo and Beijing's ability to enforce its decisions on local authorities, especially in the northeast, is questionable. The defiance of local authorities may also serve as an excuse for China to allow UN sanctions to pass but fail to enforce them. China may also argue that food, oil, and coking coal sent to North Korea should be exempt from any embargo on humanitarian grounds.

China may also fear an influx of refugees due to the pressure of economic sanctions or in the event of war. Twice in 1993 the DPRK had to deploy forces into areas close to China to quell domestic unrest. In April, North Korea deployed three army divisions and 1700 armored cars in three northern cities where 30,000 people were rioting over food shortages. The two army corps already deployed in the Yalu river region were reportedly considered too close to China to deal adequately with the situation. Then again in September, North Korea ordered a combat mobilization in North Hamgyong province to prevent people from defecting to China. Two recent North Korean defectors, Kim Myong-chol and Chung Ki-hae, who told of North Korean food shortages and riots, nuclear accidents, the Kims' private security force, and the total control of public thought and opinion by Pyongyang, had defected via China. After the order was lifted, the 11th Corps stationed in North Hamgyong was increased from four to seven brigades; the 11th Corps was further augmented in spring 1994 on account of illegal migration into China and now stands at 30,000 to 40,000 troops.

The Chinese position almost certainly explains the rather tepid response to the IAEA's first appeal to the Security Council in April 1993 after North Korea's refusal to allow the special inspections. The April resolution stated only that the Security Council was "concerned at the situation." A May resolution urged North Korea to "honor its non-proliferation obligations under the [Nuclear Non-Proliferation] Treaty and comply with its safeguards agreement with the IAEA," but made no specific mention of the two Yongbyon sites.

At the same time, China has clearly stated its preference for a Korean peninsula free of nuclear weapons, partly because proliferation by the North could lead South Korea and Japan to develop their own nuclear weapons. China would almost certainly increase its pressure on North Korea if Japan and/or South Korea, but especially the former, sent strong signals that they would seek to develop nuclear weapons in response to proliferation by North Korea. During Hosokawa's late March visit to Beijing, a spokesman warned of the "domino effect" of DPRK nuclear weapons, pleading "we have to be able to defend ourselves." The fact this statement was made *in China* during Hosokawa's visit gives it greater weight, but until their actions show otherwise, the Chinese appear unpersuaded that the prospect of Japanese nuclear weapons is strong enough to change Beijing's policy.

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Russia

With the collapse of the Soviet Union, Moscow's leverage with North Korea is limited. This reflects, in part, measures taken by Moscow to recast their relationship. In February 1993 Moscow served Pyongyang notice that it would no longer honor the military alliance it

had maintained with North Korea since 1961 whereby Russia pledged to assist North Korea automatically if it were attacked. Moscow has also cut off subsidized arms sales to Pyongyang, and since 1991 Russia has only allowed trade with North Korea on a barter or hard currency basis. Under Communist era prices, North Korea imported 800,000 tons of oil annually from the Soviet Union; in 1992, that figure fell to 25,000 tons. Overall two-way trade has fallen by 70% in three years to about $600 million. A Russian Defense Ministry official has vowed that Russia would not extend support for North Korea's nuclear energy program anytime in the future, even if the NPT and inspection issues were resolved peacefully. At the same time, however, there are strong indications of significant "off-the-books" transfers of weapons, including submarines, and oil from the Russian Far East to Pyongyang. In 1991 Seoul agreed to provide $3 billion in loans to the former USSR but shelved the agreement in September 1993 after paying less than half that amount, complaining of Russia's failure to pay overdue interest. Some have speculated that Moscow is using the prospect of arms transfers to get more aid and investment out of Seoul by reminding South Korea of the *potential* role Russia could play on the Korean peninsula.

North Korea has responded to these changes in Russian policy by claiming a 50-mile "military protection zone" in the Sea of Japan, and warning Moscow that it may prevent the construction of a gas pipeline from Sakhalin to the DPRK and ROK and refuse to pay back its $4 billion debt to Russia. Either of these moves would result in significant losses of precious hard currency for Moscow, and so Russia is not especially enthusiastic about economic sanctions against North Korea, although it is highly doubtful that Russia would let this issue create a rift between itself and the United States or the West generally. Overall, the Russian government and foreign ministry have largely echoed U.S. and Western policy on the North Korean nuclear situation, expressing opposition to nuclear proliferation and demanding that North Korea allow the IAEA to perform inspections. Even Russian foreign policy hardliners do not treat North Korea as a *cause célèbre* for restoring Russia to its former glory.

A Korean doctoral student at the Russian Academy of Social Sciences recently conducted a confidential survey of government and non-government Russian experts on Korean affairs. Among the findings were: a strong consensus that the transfer of power to the younger Kim will be smooth until 1996, with only a slight chance of a military coup; between 1996 and 1998, social unrest and demonstrations will grow; DPRK-PRC relations will improve greatly after Kim Il-Sung's death; DPRK-Japan normalization and compensation talks will resume and succeed in 1994; the North Korean army will fall further and further behind South Korea's forces due to differences in economic growth, leading to a softening of DPRK policy after 1996; and North Korea will seek a summit with South Korea to consolidate Kim Jong-Il's prestige and power base. Interestingly, there was little discussion, much less consensus, among the Russian experts on why North Korea is building a bomb, how close it is to a bomb, whether it will succeed, the status of the North Korean missile program, the possibility of war on the Korean peninsula, or how other regional actors will respond to North Korea's nuclear ambitions.

Of potentially far greater importance is Russia's role as a warehouse of nuclear and missile expertise on which North Korea is attempting to draw. In October and November of 1992, North Korea reportedly arranged for 64 rocket manufacturing specialists and nuclear scientists from the top secret Makeyev research center outside Moscow to fly to North Korea and work on its nuclear and missile programs for $4,000 to $5,000 per month. These personnel are suspected of having been recruited to address DPRK weaknesses in multi-staging for the *Taepo-Dong* missile. The Russian Security Ministry uncovered the plot, however, and prevented the scientists from departing. Two of the scientists detained said that a number of

Russian scientists had already made their way to North Korea to work on Pyongyang's missile program. Russian representatives in Pyongyang soon identified eight scientists who had gone to North Korea and "reminded them of their commitment to guard state secrets" and all eight returned to Russia in May. Russia is also the reported source for 56 kilograms of plutonium smuggled into North Korea in 1992. In January of 1994, the Russian government acknowledged in an internal report leaked to a Japanese newspaper that nine Russian nuclear physicists and seventeen missile technology experts continue to work in North Korea. In total, the report said that almost 160 Russian scientists and technicians had contributed to the North Korean nuclear weapons program since the mid-1980s. Currently, Pyongyang is seeking in particular to develop solid-fuel technology for its missiles with the aid of the Russian scientists still in North Korea.

South Korea

"We never want North Korea to be isolated internationally, nor do we want to inflict suffering on them" were the first official words of ROK President Kim Young Sam after the DPRK's March 12 withdrawal from the NPT. At the same time, however, South Korea announced a halt to all investment in North Korea's economy until Pyongyang reversed its withdrawal. The investment ban was not lifted with the "suspension" of North Korea's withdrawal on June 12.

On March 29, while the United States was still talking only of the penalties North Korea might face for its defiance of the NPT, Seoul became the first government to speak publicly of "inducements" or "carrots" to entice the DPRK to rejoin the NPT and permit special inspections by the IAEA. More than any other country in the region, South Korea fears economic sanctions and/or diplomatic isolation will provoke North Korea into a military attack on the South, destroying Seoul. Alternatively, Seoul fears the fragile rule by the Kims will crumble under the pressure of international sanctions or continued isolation and North Korea will implode, leaving 23 million starving, brainwashed people on their hands. Sometimes called the "German model" of national unification, such a sudden transformation is estimated to cost Seoul almost a trillion dollars, virtually bankrupting the South.

The ongoing investment ban calls into question South Korea's professed opposition to UN economic sanctions. However, ROK officials have strongly stated they understand the importance of China in any proposed economic embargo of the North. "The key is the Chinese border, [since that is] where the goods flow. If the Chinese cut them off, they could survive six months, maybe a year," was the opinion of one analyst in South Korea's Foreign Ministry. On February 11, in anticipation of the IAEA Board of Governors annual meeting, South Korean Foreign Minister Han Sung Joo stated that Seoul would support sanctions against North Korea if the UN Security Council so decided. At the same time, however, Han did not call for sanctions and expressed a preference for gradual imposition of sanctions, should they become necessary. During Security Council deliberations in March 1994, the ROK made it known that they supported a 30-day deadline for an IAEA report, but only in the context of a "statement," not a resolution. South Korean President Kim took up the mantle of "dialogue" over confrontation during his visit to China in late March. Before the Security Council decided in favor of a "statement," ROK foreign minister Han Sun Joo called a Chinese veto of a sanctions resolution "highly unlikely;" unfortunately his predication was not really put to the test. After the "statement" passed, Han assured a press conference that China will support "stronger measures... soon enough." Han has been the most dogged opponent within the South Korean administration of both *Patriot* deployment and the *Team Spirit* exercise.

Predicting the likely response by Seoul to nuclear weapons in the hands of Pyongyang hinges on many factors, including one's

evaluation of the motives for the North Korean program. Publicly, South Korea officials consistently appeal to the concessions argument to explain North Korea's policies and behavior. But according to the coercion hypothesis, were North Korea to succeed in building nuclear weapons before a deal is reached, nuclear proliferation will lead to coercion against South Korea, either in the form of a conventional attack followed by the threat of a nuclear attack if the South does not surrender, perhaps in the form of a demonstration detonation in the ocean to lend credibility to the compellent threat. Or perhaps North Korea will be somewhat more subtle and orchestrate a terrorist campaign against the Seoul government aimed at weakening it slowly and painfully but providing no clear provocation that could result in attack on the North.

Whether one chooses to believe this or any other motive, however, a nuclear-armed North Korea will surely prove a more robust adversary in negotiations over unification with the South and over economic opening to the West, should the West decide to make any moves towards North Korea after it develops nuclear weapons. Pyongyang's strengthened negotiating position should lengthen the period of time required for opening and unification to produce real change in the North. To minimize this advantage, or perhaps to guard against the possibility of North Korean aggression, South Korea may decide to develop its own nuclear weapons. The perceived strength of the U.S. commitment, nuclear and conventional, to South Korea's security, will play a crucial role in such a decision; in 1975 Seoul began a nuclear weapons program in response to plans by the U.S. to withdraw American forces from Korea, but in 1979 Seoul announced it had dropped the program and acceded to the NPT after heavy U.S. pressure and the Carter Administration's reaffirmation of its commitment to the South by leaving 40,000 troops on the peninsula.

In June, South Korea requested to purchase 300 AIM-9S *Sidewinder* air-to-air missiles from the United States at a cost of $34 million. As was mentioned earlier, during a November visit to Washington by ROK President Kim Young Sam, the United States announced the sale of 190 medium range air-to-air missiles and 127 short range air-to-ground *Maverick* missiles. And in January, the United States announced it would send 48 *Patriot* PAC-2 missile defense launchers with 192 missiles to South Korea. Although South Korea did request the *Patriots*, it was in no hurry to deploy them immediately, while the United States wanted quick deployment of the missiles once Seoul made its request. In the end they settled on late March or April, but in response to North Korea's apparent agreement to IAEA demands on Februay 15, South Korea announced it was delaying or even cancelling deployment of the *Patriots*. Deployment resumed on March 22 and the *Patriots* arrived on April 18. The United States and South Korea have also agreed to transfer operational command of the U.S. 7th Fleet to the U.S.-ROK Combined Forces Command in the event of war.

Talks between Pyongyang and Seoul remain seriously stalled over the implementation of the December 1991 Denuclearization Declaration. The North interprets a clause in the declaration that both sides must agree on those sites which may be inspected as prohibiting special inspections of any sort. Hence, proposals by the South that include provisions for special inspections are breaches of the declaration. The North also argues that the mere fact the IAEA has visited sites in North Korea gives it the stamp of approval. As a result, it argues that the only sites on the Korean peninsula in urgent need of inspection are U.S. military bases in the South. As a gesture of good faith and generosity, the DPRK has suggested ROK inspectors might be able to visit the 5MW reactor at Yongbyon already inspected three times by the IAEA, but only after five days notice, while the ROK has suggested 24 to 48 hours notice for regular inspections. Pyongyang also rejects the principle of reciprocity, i.e., equal numbers of inspections by both sides, arguing that its only facility that needs

inspection is Yongbyon, while all U.S. bases in South Korea should be inspected. North Korea has also demanded inspection teams of "several thousand" be allowed to enter the U.S. bases. Finally, the two sides differ over the very purpose of the Denuclearization Declaration. To the South (and to the United States), the declaration is another means to pressure the North into allowing inspections of its nuclear facilities. To the North, the declaration is a means to verify that there are no U.S. nuclear weapons in Korea.

While the government's official policy remains unequivocal that South Korea has no plans or intention to develop nuclear weapons, Foreign Minister Han Sung Joo has publicly raised the possibility of South Korean nuclear weapons in response to proliferation in northeast Asia. "While North Korea is getting the bomb, and Japan has all the nuclear materials it needs and then some...[there] is something of a clamor to reconsider... our nuclear sovereignty." One analyst at the Korea Institute for Defense Analyses has more explicitly linked the prospect of South Korean nuclear proliferation to the question of Japanese nuclear weapons. He claimed Japan will use the DPRK nuclear program, whether successful or not, "as an excuse to develop its own nuclear weapons." Others, particularly in Japan, have suggested that South Korea plans to inherit the North's nuclear weapons upon reunification.

A final, somewhat intangible factor in South Korean policy towards the North is the "subtle sympathy of the ROK public opinion with [regard to] North Korea." Indeed, the North Korean nuclear situation seems to raise fewer alarms in Seoul, within both the government and the public at large, than it does in Washington, and news stories about Kim Young-sam's political reforms or about international trade talks often relegate news about the North Korean nuclear situation to the back pages. Sanguine sentiments about the North's nuclear program are not hard to find on the streets of Seoul. "I don't think people's worries have changed much in recent days. North Koreans are still the Korean people. I don't feel they're making this weapon to bomb us" said one young businessman. "We don't think there's going to be war. It's just media hype" shrugs a Seoul shopkeeper. "Who would use a nuclear bomb to attack their own countrymen?" asks South Korea's former ambassador to the United States. Even after the failed IAEA inspections of mid-March 1994 and the threat by the North Korean official at the North-South talks to turn Seoul into a "sea of fire," there has been no marked change in Seoul's stock exchange and no marked rise in flight bookings out of South Korea or in bulk-food shopping.

South Korean officials, experts, and media frequently express concern that the United States government and press are too alarmist about the North. The overwhelming consensus in the South views Kim Il-Sung and Kim Jong-Il as "canny" or "clever," unlike in the United States where the Kims are often portrayed as lunatics divorced from reality. Foreign Minister Han has privately protested to Washington about sensational reporting in the *New York Times*, and the South Korean media often view American policy as driven by hardliners who want to raise tensions on the Korean peninsula in order to sell more weapons, such as the *Patriot*.

For its part, North Korea does not appear to see the current democratic and civilian South Korean government as any less of an avowed threat to its existence than any of the previous military and military-dominated regimes in Seoul. If anything, North Korea views the character of Kim Yong Sam's government as posing even more of a threat to its legitimacy and survival. Previous military regimes in Seoul offered easy targets for Pyongyang's propaganda and enabled the North to stoke the flames of civil unrest in South Korea. Kim Yong-sam's popularly elected civilian government has made significant progress in cleaning up political corruption while the GNP and standard of living in South Korea continue to rise (5.6% GNP growth in 1993) and South

Korea's defense industries, armed forces and defense doctrine continue to adapt and modernize. Such a successful experiment in democracy and capitalism can only make the price of exposing North Korean society to South Korea and of moves toward unification all the more costly for Pyongyang's legitimacy among its own people.

U.S. Policy

U.S. leaders have sent a variety of signals over the North Korean nuclear situation. During a trip to the demilitarized zone separating North and South Korea in July 1993, U.S. President Clinton vowed "we would quickly and overwhelmingly retaliate... [and] it would mean the end of their country as they know it" were North Korea to use a nuclear weapon against the South. On August 5, 1993, Washington and Seoul agreed to halt U.S. troop withdrawals from South Korea. (U.S. forces in the Korean theater include two tank brigades, four fight squadrons and an aircraft carrier battle group and currently number 35,700 troops. 6,500 were to have been withdrawn by 1995 under a Bush Administration plan which it too had put on hold in 1992. 7,000 U.S. troops left Korea between 1990 and 1992.) On November 7 Clinton said "North Korea cannot be allowed to develop a nuclear bomb." During a November 23 visit by South Korean President Kim Young-sam to Washington, the U.S. announced the sale of 190 medium-range air-to-air missiles and 127 short range air-to-ground *Maverick* missiles. Finally, on December 1, the Clinton Administration initiated a high-level review of so-called "flexible deterrence" options for strengthening U.S. forces in Korea and on April 18, 1994, *Patriot* PAC-2 missile defense launchers arrived at Pusan to be deployed at U.S. bases around South Korea. Thirty U.S. *Apache* helicopters are also being deployed in the ROK.

Although there has been no meaningful wavering in the U.S. commitment to defend South Korea if it were attacked, threats to prevent North Korean weapons development or to retaliate for North Korean nuclear proliferation (such as President Clinton's pledge that "North Korea can not be allowed to develop nuclear weapons") seem to lack credible statements about the means to do so short of full scale war. Only Defense Secretary William Perry has explicitly raised the possibility of launching a preventive war against North Korea in order to stop its nuclear program before it attains a "significant number of nuclear weapons." "I'd rather face the risk [of provoking a war now] than face the risk of even greater catastrophe two or three years from now." Perry gave diplomacy a six-month horizon (April to September 1994) in which to achieve substantial progress before the United States would shift its emphasis entirely towards preparations and readiness for war on the peninsula, perhaps beginning with the *Team Spirit* exercise scheduled for November.

More importantly, the United States has shown itself to be rather accommodating at the negotiating table, evidenced most recently by Christopher and Gallucci's complicity in dropping an exchange of envoys as a precondition for a third round of U.S.-North Korean talks. The March 31 UN Security Council "statement" was a thorough cave-in by the U.S. to the PRC position on three key points — the legal weight of the Council's action, the threat of further action should the DPRK persist in refusing inspections, and the lack of a specific deadline for further action by either the IAEA or the Council (see below). The January deal announced with considerable pride by Undersecretary of State Davis also included several major diplomatic concessions to the North, such as the legal basis of the March inspections and their scope. The conflicting views within the Administration over the likelihood that North Korea already possesses a nuclear device, the clear lack of U.S. human intelligence in North Korea, and the perceived lack of resolve allegedly demonstrated in various other aspects of U.S. foreign policy recently (eg. Bosnia, Haiti, Somalia) may send further encouraging signals to Pyongyang.

The Significance of Inspections

The emphasis in American policy on inspections deserves further examination. Many analysts and observers have questioned whether inspections can do anything beyond merely reporting just how much fissionable material a suspected proliferator possesses. Although this may provide a useful window into a nuclear weapons program, they ask how inspections are supposed to actually *prevent* a proliferator from successfully completing a nuclear device.

Inspectors (even on short-notice, special missions) can, of course, be deceived, but even inspections which neither reveal the exact state of nor actually stop a nuclear weapons program can serve the goals of non-proliferation. Inspections make proliferators pursue their weapons programs in roundabout ways so that they can continue to deny their nuclear ambitions plausibly and possibly avoid outright economic and political sanctions. These extra measures can dramatically increase the cost of nuclear weapons development, and this extra cost may deter some proliferators. Forcing these extra steps on proliferators also creates "speed bumps" on the road to nuclear weapons, providing the international community with extra time to negotiate an end to the program altogether, or making the critical difference in a crisis situation. Finally, the extra measures forced by inspections can cause proliferators to suffer accidents, causing casualties and environmental damage on their own side which dissuade them from continuing with the program.

This last impact of inspections may prove especially true in the North Korean case. A DPRK soldier who defected to South Korea this summer said that hundreds of people had died recently in a nuclear accident when North Korean workers attempted to move nuclear equipment and material from one building at Yongbyon to another site in an effort to evade IAEA inspectors. His story confirms observations by a U.S. *Keyhole* reconnaissance satellite in the summer of 1992 showing North Korean workers constructing a second nuclear waste storage site at Yongbyon, known to the CIA as "Building 500," across from the one completed in 1976 and then, in the autumn, showing the old site being buried under dirt and hastily planted shrubs and trees. Within days, most of the trees were dead.

These consequences of international inspections may persist even after a country has actually developed deliverable nuclear weapons if it insists on maintaining the pretense that it does not possess nuclear weapons. In such a case, the IAEA may demand to carry out special inspections of sites which are suspected of housing nuclear weapons and the country in question would have to choose between the economic and diplomatic consequences of refusing special inspections, or removing all traces of nuclear weapons so that the sites are fit for inspection. The latter option may cause accidents or setbacks in the country's efforts to maintain its nuclear arsenal and the readiness of that arsenal. Command and control arrangements may also be upset by having to move nuclear weapons about the country. By getting the DPRK to agree to inspections now, the United States may be laying the groundwork for maintaining the threat of IAEA inspections as a means of undermining the utility of any future North Korean nuclear arsenal.

Sanctions

Although the U.S. has regularly raised the possibility of asking the United Nations Security Council to impose sanctions on North Korea, neither Seoul, Beijing, nor Tokyo has expressed enthusiasm for such action. China in particular has the power to veto such a resolution, and for the United States to force China to do so publicly could seriously impair diplomacy at the Security Council level on other issues and generally set back the recent effectiveness of the world's top geopolitical forum. Belated realization of this on the part of Warren Christopher resulted in the UN Security Council "statement" of March 31, 1994. As a

"statement" and not a resolution as the U.S. originally sought, the UN action carries no binding legal weight. The statement threatens only "further consideration" of the North Korea matter and there is no mention of the prospect of sanctions as the U.S. sought. The statement also sets no deadline for the IAEA report which the statement says will prompt the "further consideration" by the Security Council. The U.S. had sought an explicit four-week time frame for the IAEA to report. In reality, the IAEA will likely issue a report within the usual time frame of six weeks after the conclusion of the inspection visit — early May — and this report will undoubtedly serve to prompt further Security Council deliberations. North Korea is also expected to shut down the 5MW Yongbyon reactor in May and remove all the rods for refueling, possibly yielding up to 33 kg of plutonium, enough for four to five nuclear bombs.

Short of military force, sanctions appear the only means available for the international community to express its disapproval of North Korea's nuclear gambit in an undeniable, tangible way. Past experience with Rhodesia, South Africa, Iraq and Libya suggests, however, that economic sanctions, even assuming they are firmly imposed by all key parties concerned, take several years to produce changes in the policies of the target state. In the North Korean situation, time is certainly a salient factor, since every day without IAEA inspections means the North's nuclear program progresses unfettered. Despite the seemingly slow pace of current diplomatic negotiations over this issue, economic sanctions promise no quick solution.

Another factor in the sanctions debate is the relative vulnerability of the target country, and especially its leadership, to privation caused by economic sanctions. Whereas South Africa had a broad and politically empowered middle class, and Iraq had virtually no coastline and a limited number of oil pipelines, most of which traveled under the territory of Iraqi adversaries Turkey, Syria, and Saudi Arabia, North Korea's economic and political structure and geography promise to blunt the impact of economic sanctions. North Korea has always striven, in accordance with *juche* or self-reliance ideology, to be as self-sufficient as possible and foreign trade is little more than $1 billion a year, less than 4% of GNP, and much of that consists of arms sales. Despite years of economic contraction which have reportedly produced numerous but isolated food riots and forced the North Korean people down to two meals a day, often consisting of only 20% rice and 80% other grains and cereals, (and even to change their daily work schedule to 6 am to 2 pm so as to maximize time awake during daylight), there remains essentially no organized civil opposition in North Korea. The only institution remotely capable of posing an organized opposition to the Kims leadership is the military. But whatever hardships sanctions may cause are sure to be lost on the political elite personally, and the Kims will undoubtedly work to ensure the military is immunized to every extent possible from the possible effects of sanctions in recognition of the power they hold.

Moreover, economic sanctions have serious potential downsides which would seem to outweigh their unlikely effects on DPRK nuclear policy. Economic sanctions will surely spell an end to negotiations with the IAEA, ROK and United States and make it very difficult for either side to come back to the table without losing face. In the meantime, North Korea's nuclear program would continue to progress. Secondly, many experts have argued that economic sanctions will merely provoke the North into possibly going so far as to launch an invasion of the South. [redacted]

An economic embargo — enforced and effective — on North Korea would have a direct and significant impact on North Korean security in due time, but the North's response is unlikely to be to yield to the West. [redacted]

(b)(5)

North Korea needs 6.6 million tonnes of grain per year to feed its people and 52 million tonnes of coal per year to operate its factories. In 1993, North Korea produced only 3.9 million tonnes or grain and 29 million tonnes of coal. Pyongyang must look to imports to make up the difference. But if sanctions cut off these imports completely, before long Pyongyang would have to resort to its wartime reserves of food and fuel.

(b)(5)

Little really need be said about the advisability of some sort of pre-emptive military strike by the United States on North Korea's nuclear facilities. No military leader, past or present, of either the United States or South Korea, has come out in favor of such a plan of action. Most of the important facilities suspected of producing and storing plutonium are hidden deep underground (unlike Osiraq in 1981), immune from air attack, and the likelihood is strong that Pyongyang has by now removed large parts of its bomb-making materials and technology to other facilities as yet unknown. The Yongbyon complex has long been rumored to be awash in surface-to-air missiles and anti-aircraft guns for its defense, and French SPOT-2 satellite photos released in April 1994 confirm that impression. (b)(5)

Light Water Reactors

Power shortages are a key element in the breakdown of the North Korean economy over the past several years. In 1991 Russia began to insist on hard currency or barter for oil sent to the DPRK. Overall oil consumption has declined rapidly to the point where even many military vehicles cannot operate for lack of fuel. In December 1993 Kim Il-Sung announced a program to emphasize charcoal production and convert vehicles and machines to charcoal fuel.

Pyongyang's fears of oil dependency initially prompted the nuclear reactor program in part, but that program suffered a serious setback in 1989 with the suspension of Soviet assistance for the Sinpo nuclear power plant project. Sinpo was to have included four light-water reactors of 440MW, supplying 15% of the DPRK's power needs. The end of Soviet assistance was a "serious blow" to Sinpo, not only technologically but financially.

Light water reactors are significantly cleaner and more efficient than the graphite moderated reactors currently operated by the North Koreans and, more importantly perhaps, are much less suited to producing plutonium which can be diverted to nuclear weapons development. Moreover, LWR fuel is not reprocessed for additional periods of use in nuclear reactors once it is spent, thus eliminating the need for plutonium reprocessing facilities at all in North Korea. LWRs are in fact so ill-suited for weapons purposes that even during the Cold War the West did not closely scrutinize or restrict LWR sales to Communist states.

Seoul initially proposed giving Pyongyang light water reactor technology to replace its current reactors in April 1993, and the North immediately expressed interest, but since June, the DPRK has pursued the issue only within the context of the U.S.-DPRK bilateral talks in New York and Geneva. On July 19 in Geneva, the United States said it was "prepared to support the introduction of LWRs and to explore with

the DPRK ways in which LWRs could be obtained." On October 16, American Peter Hayes of the Nautilus Pacific Research Institute quoted Kim Yong Sun of the DPRK as saying "if the light water reactor issue is solved successfully," the North would be prepared to accept routine and special inspections and would retract its withdrawal from the NPT. Hayes writes that Pyongyang does not necessarily want American light water reactor technology (in fact, no U.S. firms even make LWRs anymore) but will insist that the United States be involved in the technology transfer (be it from ROK, or Russia, or China) so that the United States is forced to amend its Trading With The Enemy Act and other political and legal barriers to allow broader U.S. investment in North Korea beyond the LWR transfer.

Other reports confirm the importance of light water reactor technology to the North Koreans. The North Korean delegate to the U.S.-DPRK talks in New York and Geneva told U.S. delegate Gallucci that "if the United States offers light water atomic reactor technology to North Korea, North Korea will 'melt down' its nuclear reprocessing facilities in Yongbyon." In an April 1992 interview with the *Washington Times*, Kim Il-Sung said that "if the United States offers technology on the light-water atomic reactor, North Korea will completely remove nuclear suspicions that the United States harbors." It would take at least $2 billion and six years to complete LWRs with sufficient power to replace all of the DPRK's moderated graphite reactors, and in the meantime Pyongyang would likely insist on keeping some or most of its older reactors operating. However that should not prevent North Korea from allowing IAEA inspections of its operating reactors or shutting down those suspect reactors at Yongbyon which are not even connected to a power grid.

There is also a strong possibility that any supplier of LWR technology to North Korea could successfully demand a provision that Pyongyang return the spent fuel from the LWR to the country of origin upon each refueling. For North Korea to break such a provision at any given time would capture little plutonium, since the LWR produces little plutonium out of each load of fuel, and at the same time clearly signal a violation of its obligations to the LWR supplier and alert the international community to the renewed danger of nuclear proliferation on the peninsula. Light water reactors would seem to present a uniquely effective and critical component of a possible package deal from the perspective of all sides — North Korea, the United States, the IAEA, and other regional actors.

Conclusions

Assuming North Korea eventually does develop a small stockpile of deliverable nuclear weapons, in the event of a second Korean War the United States and South Korea would face the dangerous task of attempting to conquer the homeland of a nuclear weapons state. The numerically larger arsenal of the United States and its own invulnerability to North Korean nuclear weapons will probably matter less than the strong credibility of a threat to use nuclear weapons by a state whose homeland is under attack, especially a state whose leaders have shown themselves to care so little for the welfare of their own people and so much for their own survival. North Korea's leaders are also believed to have built elaborate underground and undersea bunkers which may encourage them to believe they can escape the impact of nuclear weapons falling on the DPRK. (b)(5)

[redacted]

~~northeast Asia cannot be ruled out.~~

CASE STUDY
WMD IN THE INDIA-PAKISTAN CONTEXT

South Asian Overview

After three wars over a forty year timespan and continued disturbances in Kashmir, the Siachen Glacier, and Punjab, India — Pakistani tensions remain high. India enjoys dominance in South Asia, including in its relationship with Pakistan, highlighted by the wrenching of East Pakistan from Islamabad's control in 1971, and by maintaining control over the disputed state of Jammu and Kashmir. In 1974, India further demonstrated its military superiority over Pakistan by testing a "peaceful nuclear explosive." Attempting to improve its economic, military, and diplomatic situation, Pakistan secured a pivotal role as the United States' main anti-Soviet ally in the war in Afghanistan during the 1980s. During this period, U.S.-backed Pakistan and USSR-supported India, rigorously developed and improved their capabilities to produce nuclear weapons and deliver these warheads with ballistic and cruise missiles. With the end of the Cold War, India and Pakistan lost their most important allies and were forced to rethink their positions in a rapidly changing strategic environment.

Although the Cold War has disappeared, the Indo-Pakistani conflict continues. According to a disputed 1993 *New Yorker* article, during a period of heightened tension with India in 1990, Pakistan deployed nuclear weapons aboard F-16s. Whether or not this account is accurate, the possibility of a nuclear exchange remains as violence between the two countries continues. More recently, Hindu-Muslim violence in India peaked in December, 1992, when the Ayodhya mosque was razed by militant Hindus. Violent riots ensued and resentment continues to run high on both sides.

Each country has nuclear weapons technology and is developing or acquiring the ballistic missile capability to deliver these warheads. Significantly, neither country has chosen to build or deploy nuclear weapons, though the 1990 "nuclear crisis," if true, suggests that little time or effort is required for either country to assemble nuclear weapons. For the moment, both countries apparently rely on fixed-wing aircraft that can be modified to carry nuclear weapons. According to one source, India and Pakistan lack any semblance of nuclear weapons doctrine or command and control systems, and top military officials in both countries show little interest in nuclear wargaming, deterrence issues extending across a range of conventional and nuclear scenarios, or consideration of worst-case analyses. Moreover, either country's deployment of ballistic missiles represents a threat to the other's nuclear facilities.

Until at least the end of the 1990s, the India-Pakistan conflict appears intractable. From India's perspective, there is no reason to reconcile with Pakistan since it is weaker, interfering in India's internal affairs (Kashmir), and is questionable as a nation-state. Instead of Pakistan, China is perceived as the greater security threat to India due to Beijing's expanding military, the deployment of nuclear weapons in Tibet, Beijing's closer military relations with Burma and Pakistan, and the unresolved Sino-Indian border dispute. As South Asian experts focus on the dynamics of Indo-Pakistani relations, New Delhi insists that India should be compared with great powers such as China. Thus, nonproliferation efforts linking India and Pakistan without any mention of China are viewed as unacceptable by New Delhi. Pakistan, on the other hand, remains fixated on India. Islamabad views New Delhi as hegemonic, anti-Muslim, and intent on Pakistan's destruction and absorption. As one South Asian analyst noted, it has not been lost on the Pakistanis that their *raison d'etre* — formation of a Muslim state separate from Hindu control — "has been overtaken by events, with India now having a larger Muslim population than Pakistan."

India

Indian great power ambitions are rooted in a self-image as one of the world's oldest and

largest civilizations, entitled to global status second to none and to a regional sphere of influence centered in, but not necessarily restricted to, South Asia and the western Indian Ocean and its island states. The psychological compulsion to demonstrate a military reach consistent with this self-image can be seen by the growth of Indian naval power while the most striking symbol of India's military muscle is the domestically produced *Agni* missile.

One of the world's largest nations in size, population, economic potential, and military capability, India views itself as the sixth major power along with the United States, Russia, Japan, Europe, and China. Working from this framework, India's aspirations are not regional, but international, extending westward into the Middle East, northward to Central Asia, eastward towards China, and southward into the Indian Ocean. New Delhi wants not only to be the dominant power in South Asia, but a major player to rival China in all of Asia. Indian military planners view the deployment of a nuclear-capable *Agni* missile as the only deterrent against Beijing. Indian security concerns related to China are understandable following two wars along the Indian-Chinese border. India is also concerned by Pakistan's increasingly close relations with China and the newly independent countries of central Asia. There is a fear that the emergence of Islamic republics within the region may further encourage the Muslim majority in Kashmir to seek independence from India — an unacceptable option to Indian leaders. In many ways, Indian leaders envisioned nuclear weapons as the panacea for many of their country's political and military concerns. Their view was that with nuclear weapons, Indian security would be greatly strengthened, especially against more powerful adversaries, such as China. In addition, it was believed that nuclear weapons would elevate India to its rightful place among the world's great powers, thereby bolstering domestic pride while securing the stability of the government and the nation.

Weapons

Nuclear Warheads

India initiated nuclear research in the 1940s and by the 1960s nuclear weapons options were being seriously considered. In 1974, India detonated its first nuclear device — denoted by the Indians as a peaceful nuclear explosion (PNE). Since that time there have been no other recorded peaceful nuclear explosions. However, India's nuclear bureaucracy continues to expand. Comprised of 20,000 scientific and technical personnel at sixteen locations, the Indian nuclear program includes an advanced breeder-type reactor, two heavy-water reactors, and a plutonium separation plant at the Bhabha Atomic Research Center near Bombay. Although Indian officials tend to highlight the civilian side of their nuclear industry while dismissing the military possibilities of nuclear technology, the distinction is misleading. For instance, the Indian civilian program provides the plutonium used in India's weapons programs. According to several sources, these facilities have produced enough weapons-grade plutonium to build between 40 and 60 nuclear warheads. The CIA estimated in 1992 that India could assemble 25 nuclear weapons within several days. Until ballistic missiles are deployed, the Indian Air Force is tasked with delivering nuclear warheads aboard *Jaguar* strike aircraft, *Mirage* fighter-bombers, and MiG-29s.

Chemical Weapons (CW)

India has a long history of supporting conventions against the production, stockpiling, and use of CW. India is a party to the Geneva Protocol banning the use of CW except for retaliation in kind and has argued that the Protocol should be applied to non-lethal agents such as tear gas. India also signed the Chemical Weapons Convention in 1993.

New Delhi consistently has denied any reports of a chemical weapons capability. In 1979, the Indian ambassador to the Geneva disarmament committee explained that "India does not have chemical weapons in its stock and...we do not have any intention of going in for such stocks." Similar statements have been made by Indian officials in 1988 and 1989. Significantly, neither India nor Pakistan has made many CW allegations about the other.

According to 1989 Congressional testimony by the director of Naval Intelligence, India was one of several countries that were "developing or have achieved (CW) capability," an allegation

that was reiterated by then-CIA Director Robert Gates in 1991. According to a Russian Foreign Intelligence Service Report in 1993, India's armed forces are armed with chemical weapons and furnished with modern means of protection against them and they undergo training in combat operations under the conditions of the use of chemical weapons.

Despite these allegations, there is considerable debate about whether India has any offensive CW capability. While there are some reports that India has American-supplied CW intended for China during World War II and others alleging that India inherited a British built CW testing station to assess jungle environments at Cannanore, there is no indication that these CW were used or that subsequent CW facilities were constructed. As chemical weapons experts Gordon Burck and Charles Floweree suggest, India probably only has a moderate CW defensive capability and an ability to produce CW agents only after a period of a few years.

Although India's interest in CW appears minimal, New Delhi's attitude could change drastically if neighboring countries choose to produce chemical munitions. Countries along India's borders, including China, Pakistan, and Burma, are all identified as possibly having CW programs. India is especially concerned by China's close relations with Pakistan and its growing influence with the military dictatorship in Burma. One report commenting on the 1983 Special National Intelligence Estimate noted that, "Burma has been seeking since at least 1981 to produce mustard gas. The CIA estimated that Burma should be 'self-sufficient' in chemical weapons by the spring of 1984, most likely for use against internal insurgents."

Despite possible CW threats along its borders, India probably will not develop a CW capability. Chemical weapons production would provide little, if any, immediate gains for the Indian military in relation to Pakistan or China, and it might further jeopardize New Delhi's international standing. There is the possibility that CW would provide India with a deterrent capability below the nuclear threshold, but thus far there is no indication that Indian defense planners view this as necessary.

Biological Weapons (BW)

India is a signatory to both the 1925 Geneva Protocol banning the use of chemical and biological weapons, and the 1972 Biological Weapons Convention banning BW development and production.

All available sources conclude that India does not possess biological weapons. Nonetheless, New Delhi has considerable biotechnology expertise which could be used for BW if deemed necessary. According to Russian intelligence estimates in 1993, at least five Indian military centers "are involved" in the military-biological area, although it is presumed that these efforts are defensive in nature. No western sources have confirmed this allegation.

Ballistic Missiles (see Figure 1—11)

From New Delhi's perspective, India's ballistic missile program is a means of establishing India's aspirations as a major actor in the broader Asia/Pacific region. India's missile program employs 400 scientists, most of whom studied in the West, working in fifteen laboratories and 60 other work centers. If successful, India's two ballistic missile systems would provide it with a regional and out-of-region capability, perhaps as early as the mid-1990s. The 250 km-range *Prithvi*, already in production at Bharat Dynamics, Hyderabad, and the 2,500 km-range *Agni* (undergoing testing since 1989), could provide India with the ability to hit all of Pakistan and China along with large portions of the former Soviet Union (FSU), and the Persian Gulf countries. After the first test of the *Agni*, V.S. Arunachalam, scientific adviser to the Indian defense ministry maintained that India is convinced that missiles provide an optimum option as weapons and their improved accuracy over long ranges make even nuclear warheads unnecessary.

Although information on the *Agni* is classified, most defense analysts believe the long range Indian missile lacks the necessary accuracy to deliver a conventional warhead with precision. A more cost-effective means of conventional strike would include strike aircraft which could carry roughly four to five times the payload of one missile. Therefore, the *Agni* missile seems ideally suited to carry a nuclear warhead.

INDIAN MISSILE AND SPACE LAUNCH CAPABILITIES

Designation	Type	Weight (kg)	Range (km)	Payload (kg)	Propulsion	Status
Rohini Series	sounding rocket	varies	varies	varies	solid	in service
Prithvi	ballistic missile	4,000	150-25	500-1,000	liquid	early production
Agni	ballistic missile	14,000	1,500-2,000	1,000 +	solid/liquid	in development
ASLV	space launch vehicle	39,000	4,000	—	solid	in service
PSLV	space launch vehicle	137,000	8,000	—	solid/liquid	in development
GSLV	space launch vehicle	333,000	14,000	—	solid/cryo	in development
SS-N-2B *Styx*	ship-launched cruise missile	2,300	45	400	liquid/solid	in service
SS-N-2C *Styx*	ship-launched cruise missile	2,500	80	500	liquid/solid	in service
SS-N-7 *Starbright*	sub-launched cruise missile	2,800	500	100	—	in service
Exocet AM 39	air-launched cruise missile	652	50	165	—	in service
Sea Eagle	air-launched cruise missile	600	110	—	solid	in service
*Akash**	surface-to-air missile	—	—	—	—	in service

* India claims the *Akash* has both anti-aircraft and tactical missile defense capabilities.
** Unclassified sources estimate that India possesses 12 SS-N-2B *Styx* and 6^ SS-N-2C *Styx*.

FIGURE 1—11

Cruise Missiles

India has purchased a variety of Russian-made cruise missiles, including the ship-launched SS-N-2 *Styx* in 1959, SS-N-7 *Starbright* in 1971, along with the AS-12 *Kegler* and the AS-9 *Kyle*. Other Indian cruise missiles include the French-made air-launched *Exocet* AM 38 and the British-made air-launched *Sea Eagle* procured in 1985. New Delhi could attempt to obtain the highly advanced SS-N-22 *Sunburn* cruise missile either from Russia or Ukraine within the year. With a range of 400 km, and capable of carrying 250kg conventional or nuclear warheads, these highly capable missiles represent an entirely new level of cruise missile technology now available to developing countries. The *Sunburn* can travel to its target at supersonic speeds, and combined with its large warhead, low radar signature, and passive sensors, represents a significant threat to the US carrier force.

In addition to purchasing cruise missiles and available related technology, New Delhi is intent on developing its own cruise missile production capability, especially following the success of the U.S. *Tomahawk* during Operation *Desert Storm*. To this end, in August 1993, India reported that it had made a major breakthrough in missile technology known as the "Missile Aerodynamic Design Manual," which will allow it to design "large" ballistic missiles and cruise missiles. Thus far, there has been no outside appraisal of India's new manual. According to Russian intelligence, New Delhi is focusing primarily on air-launched cruise missiles.

Space Launch Vehicles (SLVs)

New Delhi has spent $1.27 billion on its 20 year-old space program. India began developing sounding rockets in 1967, and by 1980, New Delhi launched its first satellite using a SLV-3 rocket. India has three space launch vehicles (SLVs), including the ASLV, the Polar Satellite Launch Vehicle (PSLV), and the Geosynchronous Satellite Launch Vehicle (GSLV). The latter two systems are under development.

To improve its SLV capabilities and its ballistic missile program, India has attempted to purchase advanced SLV technology from Russia. Since 1992, the Russian rocket company *Glavkosmos* has attempted to sell rocket technology to India. Thus far, U.S.

protests have successfully blocked the sale. Yet according to the Deputy Director General of the Russian Space Agency, Valeriy Alaverdov, Moscow will ship seven ready-made cryogenic rocket engines, but not production technologies, to India. Angered by the U.S. intervention, the Indian Space Research Organization (ISRO) responded by stating that even with sanctions imposed against New Delhi, an Indian-made cryogenic rocket engine will be ready by 1997. Furthermore, the Indian government accused the U.S. of using the Missile Technology Control Regime (MTCR) as an excuse for commercial protectionism. According to New Delhi, India's growing space capabilities threaten to compete with U.S. firms in the future, and the MTCR is therefore nothing more than a protectionist ploy to ensure U.S. dominance in space.

Despite assertions to the contrary, India successfully has used SLV technology and systems to improve its ballistic missile capability. For example, the SLV-3 was modified into the first-stage of the two-stage *Agni* ballistic missile in spite of ISRO chairman U.R. Rao's comment that "the entire space program is for peaceful purposes, completely delineated from India's defense program." Some missile experts, such as Thomas Mahnken disagreed, noting that India's space and satellite program has "potential military applications for reconnaissance and surveillance." It is likely that India's space program encompasses both civilian and military goals. Similar to its work on nuclear technology, New Delhi views a robust space program as a further indication of India's scientific prowess, as well as a potential money-making venture. There is no question that India has viewed China's emerging space-launch capabilities with jealousy and alarm. Beijing has begun to challenge the SLV "superpowers" by offering cheap and fairly dependable satellite launches. On the military side, Indian defense planners view indigenous satellite launch capabilities for deploying military satellites as indispensable. Once again, Indian defense planners noted the value of U.S. satellite capabilities used during the war with Iraq and seek a similar capability for New Delhi.

Indian Rationale for and Perceptions of Nuclear Weapons

The rationale for developing nuclear weapons can be divided into three distinct areas: military, political, and economic. In examining India's nuclear weapons debate there are several military reasons to explain why these particular weapons of mass destruction are attractive to Indian defense planners. First, many western analysts are wrong in assuming that New Delhi's quest for a nuclear bomb is primarily a response to India's tense relationship with Pakistan. In purely military terms, India first envisioned nuclear weapons as a deterrent against a more powerful regional adversary that already possessed nuclear weapons — China. With a history of border wars and competition for leadership throughout the Third World, China's decision to deploy nuclear weapons openly was the single greatest factor in India's decision to develop a nuclear capability. In fact, Prime Minister Lal Bahadur Shastri is believed to have ordered work to begin on an Indian nuclear weapons capability immediately following the 1964 Chinese nuclear test at Lop Nor. Pakistan did not factor into India's nuclear weapons calculus until the 1970s.

Unlike Israel and Pakistan, there is little indication that India views nuclear weapons as a weapon of last resort. With an enormous population and a large geographic land mass, India does not face the prospect of annihilation from regional powers. Nuclear weapons, however, do offer New Delhi an increased opportunity to establish an independent security posture from former allies, such as the former Soviet Union (FSU). It is interesting to note that despite the military rationale, no effort appears to have been made to integrate a nuclear dimension into Indian military thinking. Instead, India's nuclear weapons capability has been viewed as sufficient to guarantee deterrence so long as Pakistan does not cross the nuclear threshold. Moreover, the rapidity with which India can assemble a nuclear weapon also is seen as a deterrent against any Chinese incursion into Indian-held territory.

India's decision to develop a nuclear weapons capability may also have been influenced by President Nixon's willingness to send the aircraft carrier *Enterprise* into the Bay of

Bengal during the 1971 war with Pakistan as a signal to New Delhi of U.S. support for Islamabad. By establishing a nuclear weapons capability, India may feel it can deter U.S. action in the Indian Ocean in time of war. Even if India cannot deter a large power with its nuclear capability, there is no question that New Delhi's nuclear option raises serious warfighting problems for its adversaries.

Politically, a nuclear weapons capability clearly boosts Indian pride and prestige. New Delhi's sense of independence — a critical and often underestimated incentive — is closely linked to its nuclear capabilities. High-level nuclear expertise including advances in nuclear science and technology are viewed as a sign of national power and modernization. According to polls in India, the government's decision to develop a nuclear weapons capability has received widespread support. For instance, one article remarked that, "Even though it was conceived and pursued in secrecy by the technocracy, with blessings from the highest levels of democratically elected governments, its results were approved by the electorate, almost without exception." It should be noted that the reaction of the Indian public towards developing a nuclear weapons capability may not mirror its opinion on deploying these weapons. As one American analyst suggested, Indian (and Pakistani) public opinion was decidedly anti-nuclear in the 1960s and 1970s. This consensus, however, appeared to reverse itself in both countries during the 1980s and into the 1990s. This may be explained by a growing fear in each country that one country would gain an unfair advantage through unilateral deployment of nuclear weapons.

Nuclear weapons can also be used as an instrument in domestic politics. According to at least one analyst, the order to test a nuclear device was given in 1973 during a period of extreme political instability for Prime Minister Indira Gandhi. By detonating a PNE, some analysts contend the Prime Minister was able to restore some public support for her troubled government.

Economically, Indian nuclear weapons proponents have argued that investment in nuclear technology will benefit society as a whole by improving the overall technological base of the nation. Military applications can also result in civilian dual-use technologies and some of these technologies can be sold abroad.

Actors' Perceptions

A synergism of hawkish scientists, bureaucrats, and strategists have persistently encouraged India's pro-nuclear political leadership to develop the capability to construct a nuclear device. Through their encouragement, political leaders have funded numerous research and development programs related to nuclear weapons without definitive policy decisions about their consequences. The result, since the 1960s, has been a "nuclear weapons option" which has continued as the current policy of choice.

Political Actors. Indian prime ministers have been intimately involved in developing a nuclear weapons capability since Indian independence in 1947. In the late 1940s, Prime Minister Jawaharlal Nehru established the Indian Atomic Energy Commission with the prime minister overseeing the efforts of India's leading nuclear scientist, Homi Bhaba. As Indian curiosity over nuclear weapons increased, Nehru commissioned Indian scientists in 1954 to study the effects of nuclear weapons. Since Nehru, successive Indian prime ministers, including Nehru's daughter and grandson, the Gandhis, and now Narasimha Rao, have controlled the decisions to develop, construct, test, deploy, and use nuclear weapons.

Recently, Indian leaders have indirectly commented that to defend India against more powerful adversaries, particularly China, or menacing small powers such as Pakistan, a nuclear weapons option was necessary. A typical Indian government remark on nuclear weapons came on 8 February 1992, when Minister of External Affairs Madhavsinh Solanki indicated that India is prepared to meet the Pakistani nuclear threat although New Delhi does not have, nor does it intend to produce, a nuclear bomb. Annoyed by western nuclear nonproliferation demands embodied in the Nuclear Nonproliferation Treaty (NPT), New Delhi has argued that it is inherently unfair to constrain India's nuclear weapons option when other countries, such as the United States, Russia, and China, are allowed to maintain,

upgrade, and expand their nuclear forces. Indian prime ministers have been particularly upset by efforts to link Indian nuclear programs with similar Pakistani efforts without acknowledging that India shares a common border with China. Moreover, India's size and importance in the international system, they argue, is on the great power level. Linking India to Pakistan is an insult.

The Rise of Hindu Nationalism: The BJP. The Congress Party's more moderate policy towards nuclear weapons, however, faces growing criticism from powerful opposition parties, including the Hindu-nationalist Bharatiya Janata Party (BJP). The BJP's rise from political obscurity to the status of main opposition group is alarming and indicates that Indian voters may be becoming less tolerant of their sizeable Muslim minority. Although the BJP held only two seats in Parliament (Lok Sabha) in 1984, the rise of Sikh violence in Punjab and Muslim rioting in Kashmir have allowed the BJP to gain much more power over the last ten years. For instance, in the 1989 elections, the BJP captured 88 seats, and in 1991 this figure rose to 119 seats (273 is necessary for a clear majority), as the BJP used the Ayodhya mosque as a rallying symbol for Hindu nationalism. The BJP played a pivotal role in the November 1989 elections by joining Vishwanath Pratap Singh's Janata Kal coalition in order to defeat Rajiv Gandhi. More pro-nuclear weapons than his predecessor, Singh warned Islamabad in 1990 that India would not allow Pakistan to achieve nuclear superiority. The BJP's power was evident once again when the party's leadership distanced itself from Singh's coalition thereby contributing to the collapse of his government on 7 November 1990. In 1991, the BJP not only won control of a major state legislature for the first time, it also took over the pivotal state government of Uttar Pradesh.

The BJP's leadership profited from its involvement in encouraging anti-Muslim sentiment and actions. Recognizing the political value of Hindu nationalism, Lal Krishan Advani, parliamentary leader of the BJP, and Murli Manphar Joshi, BJP President, were present when the Ayodhya mosque was destroyed in December 1992 and have been charged with inciting violence. Although Prime Minister Rao, leader of the Congress Party, sacked the BJP-controlled governments in four states, one of India's High Courts in Madhya Pradesh ruled that Rao's actions were illegal. The Prime Minister appealed to the Indian Supreme Court which ruled in Rao's favor.

The ascendancy of the BJP is worrisome. The BJP's interest in encouraging and capitalizing on Hindu nationalism contrasts sharply with the secular Indian Constitution designed to include all of India's various peoples within a democratic system. The BJP is anti-Muslim and extremely hardline towards Pakistan. As *The Economist* warned, to attain ostensibly secular goals, it adopts vicious communal means. Its call for Hindu unity takes the form of a hate-campaign against Muslims, which has over the years led to riots and murder.

In terms of military policy, the BJP's increasing power could have significant ramifications for South Asia. There are indications that the most conservative elements within the BJP believe an increasingly militant policy will gain more widespread appeal. On 25 February 1993, 25,000 BJP supporters including the party leader, Lal Krishan Advani, were arrested as the BJP attempted to hold a mass rally to demand early federal elections (not due to be held until 1996) and to protest the central government's dismissal of BJP-run state governments.

As part of the BJP's militant policies, several leaders of the BJP have insisted that India should assemble and deploy nuclear weapons. In 1990, one BJP member announced to members of Parliament that in case of war with Islamabad, "Pakistan ceases to exist." In April 1993, Lal Krishna Advani clearly stated that India should have nuclear weapons, "I think that we have no option in this regard. Pakistan having become nuclear, China having been nuclear for many years now, India simply in order to have its dealing with these two neighbors on a level ground must be nuclear."

Some BJP members have been more discrete, for instance, BJP member Jaswant Singh insisted that India not sign the NPT because it "should not and could not renounce the right to develop the nuclear option." However, Singh pledged that India would not weaponize and

would allow intrusive inspections of all Indian nuclear sites.

Given its pro-nuclear stance, the future political power of the BJP is a key issue. As the November 1993 state-government elections approached, the BJP seemed poised to unseat Prime Minister Rao. However, results from state elections held between November 6 and November 30, 1993, indicated that the BJP suffered an unexpected setback. Three out of the four formerly BJP-controlled states rejected the BJP's continued rule. The loss of political control in Madyha Pradesh, Himachal Pradesh and Uttar Pradesh — India's most populous state — significantly diminishes the BJP's hopes for victory in the next general election.

Although trends are still under examination, some political analysts suggest that the BJP's poor electoral showing was a result of bad timing and a lack of vision. The BJP's Hindu-nationalist theme peaked long before the elections were held, thus leaving the BJP without a new unifying theme. Moreover, the BJP's tacit endorsement of violence in the name of Hindu causes appears to have been rejected by the Indian public. The defeat in Uttar Pradesh also signaled the importance the electorate attached to economic security over religion. For instance, the smaller political parties that eventually won focused on the economic problems associated with the poor, lower castes, Muslims, and untouchables, thereby diluting the appeal of BJP's Hindu-nationalist theme. However, in spite of this electoral disappointment, the BJP remains a potent political force. In actual seat numbers, the BJP's defeat was not nearly as significant — of the 1,083 seats it captured in 1991, the party lost 147. In addition, the BJP won an outright majority in Delhi.

Military Actors

Of all the groups concerned, Indian military officials appear most dubious about the value of nuclear weapons. Similar to debates in Israel during the 1950s and 1960s over the Dimona nuclear complex, many Indian military officials are concerned that the expensive nuclear weapons program will reduce critical funding for conventional forces while simultaneously injecting more civilian control over military affairs.

Despite these concerns over the expense of a nuclear weapons program, several leading Indian military officials have been quick to point out that Pakistan would not be allowed to achieve any strategic advantages from possessing or using nuclear weapons. On 23 April 1988, Defense Minister K.C. Pant stated in the Lok Sabha that there was no "vulnerable window" in India's defense preparedness and Indian defense forces would not be at a disadvantage in the event of a nuclear attack from Pakistan. While Pant did not elaborate on how India would respond to such an attack, the defense minister could be interpreted as demonstrating New Delhi's willingness to respond with a nuclear counterattack. Subsequent public remarks from other high ranking Indian military officials continue to reflect Pant's ambiguous nuclear weapons stance. For instance, former Air Chief Marshal N.C. Suri stated in 30 April 1993 that India had "total preparedness to face any eventuality." However, not all high ranking military officials agree with this analysis. Former Chief of the Army Staff General V.N. Sharma wrote: "With the declared Pakistani bomb, nuclear weapon asymmetry has developed across our land borders in the plains, forcing India to face a dilemma for future policy goals. Our challenging environment over the last three years, lack of strategic perceptions and our political infancy place us in a poor position to face this challenge, while we endlessly debate whether we should or should not "go nuclear."

Viewing the changing Indo-Pakistani strategic situation with growing alarm, some military figures have been more outspoken about the need for nuclear weapons. For example, retired Indian Army Chief of Staff Lieutenant General Krishnaswami Sundarji advocates open deployment of nuclear weapons. He believes that a nuclear force will deter China and Pakistan thereby creating more stability. According to one analyst, Sundarji is the first military figure to discuss Indo-Pakistan nuclear warfare scenarios.

Scientific Actors

Although prime ministers have the final word on India's nuclear weapons program, scientific leaders have and will continue to play a major role in influencing nuclear weapons policy. With a vested interest in the program, scientific

elites may have presented technical options which served their bureaucratic needs.

Raja Ramanna, the former director of India's entire nuclear complex who was present at the 1974 nuclear test, and former Defense Minister in 1990, is a model of Indian pride and intense determination to develop a nuclear weapons capability. According to Ramanna, nuclear weapons are a status symbol that demonstrates to the entire world that India is a self-reliant and highly advanced nation. He reasoned that India's nuclear program preserves "protection from unilateral safeguards, freedom from dependence on fuel, spare parts and so on." In the summer of 1992, Ramanna explained that the logic of deterrence, namely that neither country possessing nuclear weapons will start a war, depends on many assumptions. For example, the fear that the user nation will suffer as much damage as the attacked nation.

Ramanna acknowledged that the uncertainties associated with nuclear weapons, such as inaccurate delivery systems, could mean catastrophic results for the attacking country, but this fact does not dampen his interest in obtaining nuclear weapons.

Strategists

According to one source, K. Subramanyam, a leading Indian nuclear strategist, is adamant that India should develop an overt nuclear weapons capability. In more open sources, however, his opinion appears more mainstream. In an article in 1993, Subramanyam expressed the need for India to keep open a nuclear option as long as China holds nuclear weapons.

Jasjit Singh, Director of the Institute for Defense Studies and Analyses, views the world as polycentric in which India joins the United States, China, Russia and Europe as the primary international powers. Since all these great powers hold nuclear weapons, Singh reasons India should also have nuclear weapons capability. Singh stated:

> At one level we have an interest to see a non-nuclear environment. It's not just an issue of morality, it's a matter of national interest. On the other hand, there is the issue of national security. Two of our neighbors have nuclear weapons and I'm afraid they're not terribly responsible.

On March 27, 1993, Singh wrote, "...Indian security concerns relate to larger issues and areas where Pakistan is only a lesser factor. China's growing military and nuclear might, nuclear proliferation consequent to Soviet disintegration, and a host of other factors impinge on the subject."

Indian View of the NPT

As one of the most vocal critics of the NPT, India argues that the treaty divides the world into two camps — the nuclear "haves" and "have nots." Well aware that nuclear deterrence during the Cold War was seen by western analysts as contributing to a lack of war in Europe, Indian defense planners contend that a non-deployed nuclear-capability provides a similar deterrence structure in Asia. Moreover, the western assertion that horizontal proliferation — nuclear proliferation in many countries — is more dangerous than vertical proliferation — the growing nuclear arsenals in a few developing countries — understandably upsets many in India. New Delhi sees more hypocrisy both in Washington's willingness to look the other way instead of confronting Israel's nuclear weapons capability and in its tolerance of Pakistan's nuclear activities during the war in Afghanistan.

The sentiment in India might best be summarized by K. Subramanyam's remark in 1990 that, "Our (India's) efforts should now be concentrated not on nonproliferation, but on steps toward avoiding the risks of nuclear war." Subramanyam also has written that a world that expands from five nuclear weapons states to eight "is not that much more unstable than a world of five."

Following his meeting with President Bush in 1992, Indian Foreign Secretary J.N. Dixit reaffirmed New Delhi's unwillingness to join the NPT. Rejecting a Pakistani-proposed South Asian Nuclear Free Zone, India advocates a South Asian Nuclear Safe Zone since the NPT would not necessarily remove the ability of Pakistan secretly to construct nuclear weapons nor would it remove Chinese nuclear weapons already aimed at India.

Missile Proliferation

As Jasjit Singh reasons, India's missile programs are a reaction to China's missile

programs, and Beijing's sales of missiles to Saudi Arabia, Pakistan, Iran, and Syria. Thus, Singh explains that India has no option "but to try and create a defense capability through deterrence."

India's Integrated Guided Missile Development Program to develop the *Prithvi* and *Agni* ballistic missiles, and *Nag* anti-tank missile, cost $280 million. When compared to air force costs that include training pilots, acquiring and maintaining advanced aircraft, and airport construction and defense, however, some developing countries may view ballistic missiles as a cheaper alternative. This does not seem to be the case in India. Instead, the development of an indigenous missile production capability may be partially a reaction to India's quest for greater military independence from the Soviet Union, and later Russia. For instance, sixty to seventy percent of all Indian military equipment was made in the USSR, and with the dissolution of the communist superpower essential military items are no longer guaranteed. Moreover, the Indian Air Force (IAF) faces major problems including old fighter aircraft, high accident rates, and delays on its Light Combat Aircraft (LCA) program.

In addition, Sharad Pawar, India's defense minister, stated in 1992 that "India will not give up its pursuit of advanced space and missile technology," which it considers necessary to attain "self-sufficiency in national security." Like its nuclear program, India's ballistic missile program has been a source of national pride. Following the first test of the *Agni*, Dr. Kalam noted: "*Agni* is a technological strength. Strength respects strength. Weaklings are not honored. So we should be strong."

New Delhi has consistently rejected U.S. nonproliferation regimes designed to deprive India of missiles and related technology. As a blatant signal of its resolve, India tested the *Agni* missile on 29 May 1992, the same day as the first Indo-U.S. naval exercise. In 1993, India reacted strongly to U.S. efforts to halt an Indo-Russian deal for cryogenic rocket engines. To many Indians, the MTCR is a vehicle for the U.S. to deny New Delhi a successful civilian space program. Another Indian commentary noted, "For India, it is a question of development of science and technology. Anyone with a knowledge of India's policies and actions would not seriously doubt the peaceful nature of (India's rocket engine) development."

Another article in the Indian press expressed regret that New Delhi's GSLV program would be delayed at least ten years due to the blocked sale, although ISRO chairman U.R. Rao stated that India will be able to develop its own cryogenic engine in five years.

Threats to Indian Security

China

Sino-Indian animosity stems partially from a common historical experience. Each country is the center of an ancient civilization, both of which influenced not only Asia, but the entire world. After centuries as regional powers, both countries emerged in the nineteenth and twentieth centuries as weak giants unable to match the military and technological power of the West. After longstanding battles for independence, both China and India viewed nuclear weapons as a means of reinforcing their independence and self-reliance. Yet as both countries have emerged more powerful in the late twentieth century, China and India have found themselves in an unfriendly competition. In discussing the Sino-Indian rift, one analyst explained that:

> India and China...will always tend toward a rival relationship...Both India and China want to avoid war and concentrate on development..(yet) strength and size carry with them their own rationale for status and influence, and both India and China may well find themselves drawn into future regional conflicts or possibly intervening in neighboring countries because of some instability or action that is perceived as threatening.

Sino-Indian competition, as described above, remains one of the paramount concerns for Indian security planners. With a mutual history of border disputes, wars in 1959 and 1962, failed border resolution discussions in 1981, and nearly another major war in 1987, India continues to view China as a major threat. In addition, New Delhi views Beijing as a destabilizing actor due to China's continued arms sales to Pakistan, Iran, and Saudi Arabia,

the continued strife in Chinese occupied Tibet, China's unwillingness to recognize Sikkim as part of India, and the ongoing rivalry over leadership of the developing world. As one Chinese writer noted, India will remain "one of its most likely foes over the next couple of decades."

China was not always seen as an adversary. To the contrary, Nehru's interest in developing a neutralist bloc included the goal of improving relations with China during the late 1950s. Unfortunately, a series of warnings from China went unheeded by New Delhi resulting in war and defeat for the Indians. Relations have remained strained since 1962. Some analysts, however, suggest that the war with China is increasingly seen as a "marginal affair." Not everyone agrees. According to one scholar on South Asia, "India's humiliating rout in the 1962 war with China is deeply embedded in the Indian psyche." The defeat was a watershed in Indian strategic thinking, negating India's pacifist policy elucidated under Nehru.

New Delhi claims that land in southwestern Xinjiang and western Tibet along the Kashmir border belongs to India while China claims sovereignty over territory in northeastern India. Although border talks have failed to resolve the ongoing dispute, the likelihood of war over this area appears remote for the time being. In 1987, however, New Delhi attempted to demonstrate its power by conducting large-scale military exercises along the border. At the height of the conflict, a total of 400,000 Chinese and Indian troops were massed along Indo-Chinese border near Arunachal Pradesh in northeastern India. Although war was averted, border differences continue. Following Rajiv Gandhi's trip to China in 1988, a Sino-Indian joint working group on the boundary issue was established to help alleviate tensions. The group has met six times as of June 1993. Some progress has been made including regular meetings between military personnel and the establishment of a "hotline" between military commanders of both nations.

While U.S. sanctions may have contributed to China's defiant underground nuclear test in October 1993 — the first in over a year following an informal moratorium on nuclear tests, the nuclear test disappointed many in the West and alarmed regional countries. Indian officials, however, remained conspicuously quiet about Beijing's test. One editorial appearing in an Indian newspaper seemed cautiously sympathetic to China's decision. The editorial noted that:

> The other thing which China has now underlined is that it will not meekly accept, as an example worth following, any *ad hoc* measure on disarmament which the US might deem vital. Beijing insists that every step towards universal denuclearization must be negotiated between all the nuclear weapons states.

This line of reasoning reflects India's perspective that any efforts to link nuclear nonproliferation to specific states without including all nuclear powers is unfair.

Despite upholding the right of developing countries to develop, test, and deploy nuclear weapons, India remains wary of China. With the USSR no longer the focus of Chinese defense planning, Beijing is redirecting its military capabilities towards other regional concerns, such as the South China Sea, South Asia, and the Indian Ocean. At the same time, China has invested in advanced Russian military equipment, including the purchase of *Backfire* bombers with a range of 4,000 miles, along with the potential for refueling technology which will extend this capability. In addition, naval modernization is among the highest Chinese defense priorities. Beyond the most vital concerns involving the South China Sea, China seeks to extend its blue water capabilities through the procurement of submarines and perhaps even aircraft carriers in the early twenty-first century. The Chinese have expressed interest in purchasing the Russian Type-877 *Kilo*-class submarines which have a 6,000 mile cruising range and 45 day endurance. Continuing this blue-water capability, China's National People's Congress approved the construction of two 48,000 ton *Kiev*-class carriers for deployment by 2005. High costs, support ship requirements, limited naval aviation experience, and requirements for anti-submarine protection, however, may result in delays, significant cost overruns, and perhaps even cancellation of this ambitious plan.

Indian leaders are concerned by expanding Chinese encroachment into the Indian Ocean.

As a response to Beijing's sea-launched ballistic missile capability and its naval port calls in Sri Lanka, Pakistan, and Bangladesh during 1985-86, New Delhi invested heavily in its navy during the 1980s and moved to limit Chinese access to Sri Lankan ports. In September 1993, Indian Chief of the Naval Staff, Admiral L. Ramdas declared that India had to replace its aging aircraft carrier, the *Vikrant*, in order to improve India's naval capabilities. Moreover, India seeks to prevent Chinese expansion into the Indian Ocean by establishing a permanent naval presence in the Andaman Islands and controlling chokepoints in the Malacca Straits. Burma's increased alignment with China alarms India as relations between New Delhi and the Burmese military dictatorship are already strained. Traditionally neutral in the Sino-Indian dispute, Burma signed a $1 billion arms deal with Beijing in 1990. Indian officials are also worried that closer relations between Burma and China will result in opportunities for the Chinese navy to assert itself in the Indian Ocean as well as opportunity to establish intelligence and military operations in Burmese territories.

Because of this continuing tension between New Delhi and Beijing, Indian strategists do not focus solely, or even primarily, on Pakistan. As one analyst explained, "it was no coincidence when India's intermediate-range *Agni* missile test took place only a few days after China detonated its largest ever nuclear explosion." As one Indian Major General wrote in 1993,

> India's latent security concerns about China are a major obstacle to gaining New Delhi's support for any regional discussion in view of India's belief that Chinese nuclear and missiles programs also must be taken into consideration.

It is important to note, however, that while India views itself as in competition with China, Beijing does not entertain the same thoughts. Traditionally, Beijing has viewed New Delhi as a surrogate threat of the USSR's, but never as a strategic danger to the country. With the end of the Cold War, however, India's actions may prove to be less predictable and potentially more likely to clash with Chinese interests.

Despite this perceived discord, Sino-Indian relations have improved in the late 1980s and early 1990s. Along with expansion of trade along the Sino-Indian border beginning in 1991, Beijing and New Delhi have sought more high level contact than at any previous time. Reciprocal visits by India's premier Rajiv Gandhi to Beijing, in 1988, and China's premier Li Peng, to New Delhi, in 1991 (the first by a Chinese premier in 31 years) have helped to diminish tensions. In May 1992, Indian President Ramaswami Venkataraman visited China — the first trip by an Indian president in over thirty years. An India-China Joint Working Group met for the fourth time in February 1992 where it was agreed that military personnel from both countries would hold regular meetings in June and October. In August 1992, Sharad Pawar became the first Indian Defense Minister to travel to China. Along with other senior Indian military officials, Pawar visited Beijing in an attempt to improve military openness and mutual confidence. On 6 September 1993, Prime Minister Rao travelled to Beijing where he signed an agreement which seeks to reduce border troops (India has approximately 150,000 on the Chinese border and claims China has double this number in Tibet alone), and to keep each other informed of military exercises along the 3,500 km long line of actual control (LAC) which separates their troops and includes promises not to resort to force or threats of force. In addition, India accepted the first port visit by a Chinese naval ship, *Zhenghe* — a training ship — on 15 November 1993. During its four day visit, China's Dalian Naval Academy Rear Admiral Chen Qingji met with flag officer Commander-in-Chief of India's Western Naval Command Vice Admiral K.A. Raju and later with Chief of the Indian Navy Staff Admiral V.S. Shekhawat where future cooperation and reciprocal naval visits were discussed.

In the fields of science and technology, Sino-Indian cooperation continues to expand. Currently the two countries are involved in over 100 scientific and technology exchange projects including space technology. Future cooperative efforts are planned in such areas as laser science, material and earth sciences, space and remote sensing technology, biotechnology, and electronics.

Even with these signs of better relations, it appears implausible that Sino-Indian relations will become friendly. As one Indian expert noted:

> The underlying power rivalry between the two Asian giants, and their self-images as natural great powers and centers of civilization and culture, will continue to drive them to support different countries and causes. India will strive to emerge, not only as an independent power center in the multipolar world, but as a counterweight to Chinese power and influence.

Indeed, India's response to potential Chinese and Pakistani threats has been to spend more on defense. According to recent reports, India's 1994-1995 defense budget will rise in real terms for the first time since 1987.

Sino-Pakistani Cooperation

The long-term Sino-Pakistani relationship is a major source of concern for Indian defense planners. However improbable, India is most concerned about a worst-case scenario in which New Delhi would have to prepare for a two-front war against both neighbors. Indian forces apparently are deployed equally between the two borders. This is partially due to geography where the Himalayas provide a much more secure border dividing China and India, than the easily traversed plains, deserts, and swamps between India and Pakistan.

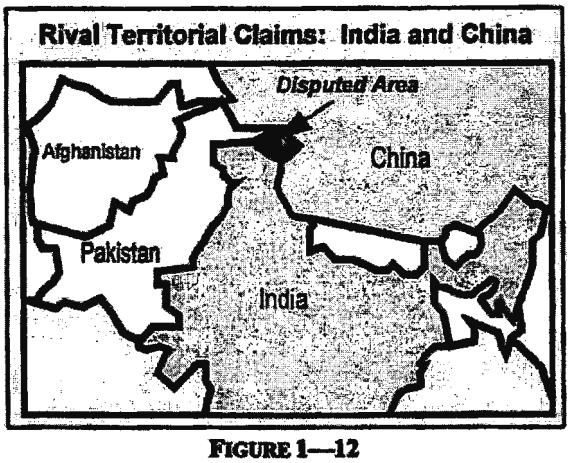

FIGURE 1—12

The January 1990 signing of a ten year memorandum of understanding on military cooperation between China and Pakistan has generated considerable anxiety in New Delhi. As part of the agreement, the PRC agreed to cooperate in the areas of research and development, coproduction, and technology. This cooperative venture led to the sale of approximately 275 T-69 main battle tanks during 1990-1991, and the 1992 Pakistani announcement that three S-20 missile armed submarines would be supplied by China — one of which would be built in Pakistan. In addition, Sino-Pakistani missile cooperation includes M-11 missile sales.

Continuing Chinese military assistance has rapidly increased Pakistan's indigenous weapons production capabilities across a broad range of systems. For instance, with Chinese support Pakistan's Kamra Aeronautical Complex will soon be able to repair and modernize Chinese-made F-6, F-7, A-F *Fantan* jets and French *Mirage* aircraft as well as produce *Karakoram*-8 advanced jet trainers and F-7 fighters. In addition, Pakistan's first tank production facility built with Chinese assistance and fully functioning in 1991, can produce updated versions of the Chinese T-69 and is expected to produce a prototype of the most advanced Chinese tank, the T-85, by the beginning of 1995. Pakistan's Defense Minister Mir Shahban Mirani claims, not surprisingly, that the T-85 — the Pakistani produced version to be called the *al-Khalid* — will be superior to the Indian produced *Arjun* tank. Furthermore, Chinese nuclear assistance appears to have made a considerable difference in the speed with which Pakistan was able to develop a nuclear weapons capability. This Sino-Pakistani nuclear cooperation continues. In 1992, the PRC began a joint project to construct a 300 megawatt nuclear reactor. As evidence of the continuing close relations, Chinese Army General Zhang Wannian, chief of the general staff of China's People's Liberation Army, met with General Shamim Alam Khan, Chairman of Pakistan's Joint Chief of Staff Committee, during six days of meetings in December 1993, marking the first-ever visit to Pakistan by the Chinese chief of the general staff.

Fearing a Sino-Pakistani "axis," India has rejected Chinese overtures to convert the present Line-of-Control into an international boundary between the two countries. At the

Chinese-Indian border negotiations, China proposed cementing the Chinese annexation of Aksai Chin, Demchok and Shaksgam in the Kashmir region in return for Beijing giving up its claim on India's northeastern Arunachal Pradesh state (see Figure 1—12). New Delhi has been reluctant to surrender its claim over Aksai Chin because of its immense strategic importance, even though India does not have the military might to recover lost territories. Similarly, New Delhi wants to deny any opportunity for Pakistan to acquire a larger common border with China. As part of this Indian strategy, the ongoing battle between Pakistan and India over the Siachen glacier is important. As one Pakistani Army chief noted in 1989, "India has no strategic advantage in Siachen over Pakistan, only a political advantage of denying us 70 kilometers of common border with China."

The Kashmir Dispute:India and Pakistan

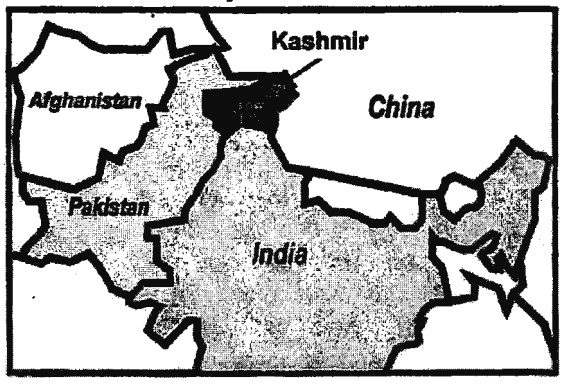

FIGURE 1—13

Kashmir and Pakistani Intervention

The only state not allowed to vote for self determination in South Asia in 1947, Kashmir remains the critical hotspot between India and Pakistan (see Figure 1—13). The Kashmir princely state consisted of the Muslim-populated Valley, the Buddhist Ladakh, the Hindu-majority area of Jammu, and significant portions of north Pakistan. With the departure of the British, the Hindu Maharaja of Kashmir agreed to join India in return for Indian Army protection against raiders from Pakistan who were interested in taking the Muslim-majority territory into their new Islamic republic. Soon after, rioting between Hindus and Muslims erupted as the fate of Kashmir under Indian control remained in question.

In 1948, the UN brokered a cease-fire in which two-thirds of Kashmir would become a self-governing state within the Indian Union while Pakistan would nominally control the remaining third. Kashmiris were promised a plebiscite to decide their own fate under the UN mandate, but India rejected this election option pending a Pakistani withdrawal from Kashmir. Islamabad refused. Pakistan also remained quiet about a Kashmir plebiscite due to its fear that Kashmiris might choose independence instead of a union with Pakistan. To date, the UN continues to categorize Kashmir as an occupied territory — similar to the West Bank.

Beyond its symbolic value to India as the birthplace of Nehru, Kashmir is of central concern for Indian leaders. To maintain India as a unified, secular state, New Delhi's leaders view Kashmir as a test case: to fail in Kashmir risks the balkanization of the entire country. In addition, the liberation of the predominantly Muslim Kashmir is seen by New Delhi as a jihad, a holy war of Islam, which would justify the threat of using an Islamic bomb against India. As D.K. Palit, a retired Indian major general commented, a Pakistani nuclear bomb would discredit India's conventional deterrent against a preemptive Pakistani strike on Kashmir.

New Delhi remains convinced that Pakistan seeks to dismember India through its arming and training of Kashmiri militants. In 1990, Muslim-led demonstrations included more than 100,000 people in Srinagar, Kashmir's capital, to protest Indian rule. New Delhi accused Pakistan of inciting rebellion and stepped up police and military presence in Kashmir. Pakistan responded by placing the Pakistani Strike Corps within fifty miles of the Kashmir border. Recognizing the potential dire political consequences of appearing "weak" on the Kashmir issue, then Prime Minister V. P. Singh warned his country to be prepared for war with Pakistan. To combat the growing discontent, Girish Chandra Saxena, the former director of India's external intelligence service and a prime ministerial security adviser, was appointed

governor of Jammu and Kashmir state in May 1990. Saxena accused Pakistan of conducting a "proxy war" by sending in trained and armed militants across the Line of Control to join an estimated 4,000-5,000 militants in the valley, along with a simultaneous disinformation and propaganda program designed to make Kashmir an international issue.

In March 1993, Saxena was replaced by General K.V. Rao, a former governor of Jammu and Kashmir. It was hoped that Rao would bring an element of military order to the sometimes out-of-control Indian security forces. As Rajesh Pilot, India's internal security minister stated, New Delhi's goal is to bring Kashmir "back into the political mainstream" through appointments of respected civil servants, including Indian Kashmiri politicians, many of whom were imprisoned in 1990. India also plans to give $283 million in economic aid to the troubled region to alleviate chronic unemployment and lure young Kashmiri men away from militant opposition to the government.

Tensions between Pakistan and India have remained high over Kashmir despite New Delhi's efforts to calm the area. In August 1993, Prime Minister Rao became the first Indian prime minister to accuse Islamabad directly of encouraging separation of the Jammu-Kashmir area. He warned: "Let Pakistan do anything. Kashmir is a part of India. Nothing can take it away from us." India also is concerned by the presence of approximately 200-400 Afghan mujahedin warriors fighting in Kashmir. In October 1993, Kashmir erupted once again with violent clashes between government troops and Kashmiri protesters in Srinagar due to a standoff at the Hazratbal mosque, Kashmir's holiest site. On October 28, Indian news releases claimed that a major in the Pakistan Inter Services Intelligence (ISI) along with Afghan mercenaries were involved.

In addition to the potential impact on India's future caused by the Kashmiri problem, New Delhi is also wary of a strategic Islamic bloc, led by Islamabad, in which Pakistan, Iran, Turkey, Afghanistan, and some of the central Asian republics, align against Hindu India. At a seminar in New Delhi attended by many of India's military elite, Rutgers University's Professor Maya Chadda expressed her concern that a more unified Islamic movement across Asia could provide the Kashmir issue with "a new ideological and strategic depth." New Delhi insists that Pakistan has no *locus standi* in the Kashmir question. Therefore, any efforts to destabilize or interfere in the region by Islamabad, or the United Nations, are seen by India as violations of Article II (7) of the UN Charter — interfering in the domestic affairs of a sovereign state.

Punjab

Punjab represents another area of potential disintegration for India although recent events suggest that the chances of this happening are increasingly remote. Unlike Kashmir, Punjab does not have support for independence among the public. Despite 62% of the population being Sikhs, the cities contain a majority of Hindus. In 1984, Sikh militants occupied the Golden Temple at Amritsar. Making a critical error, New Delhi's forces stormed the shrine resulting in large-scale resentment towards the Indian government culminating with Indira Gandhi's assassination that same year. Having learned its lesson, the government reacted differently when, in 1988, Sikh militants occupied the Golden Temple again. This time the Indian government used police to surround the shrine for nine days until the militants surrendered, thereby reducing the militants' support. In addition, the Indian army has limited arms supplies from crossing the border from Pakistan — something that India has had little success with in the more mountainous Kashmir area.

Even with these significant improvements from India's perspective, Punjab persists as a trouble spot. It is estimated that 5,000 people (mostly Sikhs) died in Punjab — most of them at the hands of Sikh extremists — during 1990. The following year, election polls were postponed following Sikh terrorist assassinations of 23 candidates during the Indian general election. In 1992, an average of 200 people were killed by Sikh terrorists every month in Punjab. Newspapers were censored, voters and candidates for offices were threatened with death, the police force was demoralized, and thousands fled the area causing land prices to fall precipitously. Recently, however, things

have changed in favor of India. Beant Singh, Congress Chief Minister, and K.P.S. Gill, his police chief, increased the police force from 35,000 to 60,000 over the last five years. Instead of seeking a political settlement, the police were allowed ruthlessly to hunt down Sikh terrorists. Many of the most feared militants were shot and 700 of them surrendered. The combination of prudent anti-terrorist responses by the police along with aggressive arrests and prosecutions of terrorists has greatly diminished the power and support of the Sikhs within Punjab.

Secondary Regional Security Concerns

Beyond China, Pakistan, and issues such as Kashmir and Punjab, other smaller neighboring countries create a plethora of lower intensity problems for New Delhi. Although none of these countries threaten the survival of India, they nevertheless generate problems that can reverberate throughout Indian government and society. In many cases, and to the alarm of Indian defense planners, regional instability could be exacerbated by a growing presence of Chinese military assistance and cooperation with South Asian countries other than Pakistan. However, because India possesses overwhelming conventional military superiority over any combination of its smaller neighbors, the chances of New Delhi employing WMD during a conflict with one of its smaller neighbors appears extremely remote.

Sri Lanka

Sri Lanka, the teardrop-shaped country located only sixty kilometers across the Palk Strait off India's southern coastline, has proven to be a foreign policy disaster for New Delhi. In a variety of roles — facilitator, peacekeeper, mediator, and armed combatant — India has failed to resolve the ongoing civil war in the tiny nation while simultaneously enduring the assassination of a Prime Minister and the humiliation of a military withdrawal. Meanwhile, the Sri Lankan civil war rages between the Liberation Tigers of Tamil Eelam (LTTE) who seek an independent homeland from the majority Sinhalese in the northeast portion of the country and government forces in the northeastern section of the country. The Sri Lankan army suffered its worst military defeats to the LTTE in recent years with the disaster at Pooneryn on 11 November 1993, that resulted in the deaths, capture or MIA status of 650 Sri Lankan soldiers along with the loss of entire armories in three camps located in the north of the country. As a result, Sri Lanka's army chief, Cecil Waidyaratne, resigned five months ahead of schedule.

Due to demographic realities — there are about sixty million Tamils in the southern Indian state of Tamil Nadu — New Delhi originally sided with the minority Sri Lankan Tamils in their quest for independence. Beyond governmental support, Indian Tamils provided money and havens for their Sri Lankan cousins. The Tigers, along with other Tamil rebel groups succeeded in battling the Sri Lankan Army to a stalemate, and in 1987, Indian-mediated negotiations resulted in an accord to create an autonomous Tamil homeland out of Northern and Eastern Provinces, home to most of the Tamils. Rajiv Gandhi sent Indian Army troops to Sri Lanka as peacekeepers, under the Indo-Sri Lankan agreement of July 1987, to implement the cease-fire and protect the Tamils. Soon after the accord was agreed, the Tigers decided that they could not risk disarmament. In a fatal decision for Sri Lanka and India, the Tigers initiated a successful guerrilla warfare campaign against the Indian Army from 1987 to 1990, resulting in frequent and considerable Indian casualties and an eventual retreat of Indian forces from the island in 1990. Later, the Tigers turned their wrath on Rajiv Gandhi, as the Indian Prime Minister became the target of a Tiger bomb (along with seventeen others) on 21 May 1991. Two years later, Tamil rebels directed their terror campaign against the Sri Lankan government. In one week of unprecedented political terror in 1993, former Sri Lankan Prime Minister and then President Ranasinghe Presmadasa and Opposition leader Lalith Athulathmudali of the Democratic United National Front were assassinated, thereby creating a power vacuum in Sri Lankan politics.

In spite of New Delhi's military disengagement from Sri Lanka, India maintains close relations with the Sri Lankan military including a number of training slots made available in Indian defense training establishments for Sri Lankan officers at all levels. As mentioned earlier, New Delhi views Sri Lanka as a critical

Indian Ocean outpost — especially due to its close proximity to India — that must remain friendly with India and not China. Despite India's efforts, however, the Sri Lankan government has not limited itself to only Indian military relations. Recognizing the potential benefits of carefully playing each regional superpower against the other, Sri Lanka has accepted China as a major supplier of military equipment without severing its close ties to India. To date, Beijing has supplied transport aircraft, a squadron of F-7M jet fighters, armor, artillery, and naval vessels to Sri Lanka.

Though not particularly alarming at present, the improving Sino-Sri Lankan relationship unsettles India. In a region that India considers its sphere of influence, China once again appears only too willing, and able, to intrude. By forging a closer relationship with Sri Lanka, Indian leaders believe China is attempting to extend its military reach into the Indian Ocean, thereby jeopardizing critical sea lanes essential to Indian economic and military security. In spite of these concerns, Indian leaders are not overly preoccupied with Sri Lanka. New Delhi continues to insist that a peaceful settlement of the civil war is in everyone's interest. Thus, there does not appear to be any possibility that India will redeploy and use military forces in Sri Lanka for anything more than a peacekeeping role.

Burma (Myanmar)

In 1988, a military junta led by Lieutenant General Than Shwe, the deputy commander of the armed forces, seized power and installed the State Law and Order Restoration Council (SLORC). In 1990, the junta reneged on its promise to the United Nations that it would transfer power over to Aung San Suu Xyi, the Nobel peace prize winner and the daughter of Burma's independence leader, Aung San. Ignoring international pressure to step aside and allow democratic rule, the military leadership has detained and arrested most civilian political leaders and thousands of opposition members. Rangoon's domestic instability has resulted in about 150,000 Rohingya Muslim refugees from the Arakan regions seeking refuge in Bangladesh and another 100,000 refugees fleeing to Thailand.

Joining the international condemnation against the Burmese leadership, India insists that Rangoon must release Aung San Suu Xyi and return power to the democratically elected civilian leadership. Though refusing to go that far, Burma has responded to international criticism by releasing over 1,700 political prisoners in 1993, and peace negotiations are rumored with some tribal insurgents, such as the Karen. Nevertheless, problems remain, including the continuing detention of approximately 35 high ranking and democratically elected officials and some 1,000 activists. Rangoon's leaders apparently hoped that the release of some political prisoners would help Finance Minister, General Win Tim, secure loans from the IMF and World Bank. Thus far, Burma's efforts have fallen on deaf ears despite three visits to Washington by the Finance Minister. For its part, New Delhi has discussed the Burma issue with Beijing, but thus far the PRC has rejected any efforts to change its close and supportive relationship with the Burmese military dictatorship.

The deterioration of Indo-Burmese relations is a relatively new development that is increasingly seen in New Delhi as a real threat to peace in the region. From India's perspective, China is seen as upsetting the balance of regional power. Traditionally neutral in the Sino-Indian dispute, Burma signed a $1 billion arms deal with Beijing in 1990. Over a three year period, Rangoon has purchased $1.4 billion in military equipment from Beijing that includes transfers of ground-based radars, antiaircraft guns, small arms, 12 F-6 and 12 F-7M *Airguard* jet aircraft, two Y-12 troop transport planes, 30 T-63 light tanks, 50 T-69 main battle tanks, more than 100 PL-2A air-to-air missiles, six patrol boats, along with PRC advisers and trainers. Moreover, China and Burma are believed to be constructing a new "Burma Road" that will enable arms, such as rocket launchers, mortars and spare parts, to be more easily sent between the two countries. Indian officials are also worried that closer relations between Burma and China will result in port of call opportunities for the Chinese navy. The PRC also is establishing an ELINT/SIGINT (electronic intelligence/signals intelligence) station on Grand Coco Island, a Burmese territory west of the Andaman Islands.

China's close relationship with Burma, unlike its marginal influence in Sri Lanka, greatly worries Indian leaders. Rangoon's openly hostile regime and unabashedly pro-China policies provide Beijing with an increased opportunity to harass New Delhi. With continued border disputes between Indian and China over Arunachal Pradesh in the northeastern section of India, a more powerful, and pro-PRC Burmese military cannot but alarm New Delhi. Moreover, the combination of China, Pakistan, and Burma united against India creates a potentially precarious national security dilemma for Indian military planners. Alone, Burma poses no real threat to India, but in concert with China, the stakes run considerably higher. At present, there does not appear to be any sign that Beijing or Rangoon seeks to engage India militarily. A crisis anywhere along the Indo-Sino or Indo-Pakistani border, however, could escalate into more widespread conflict. (b)(5)

[redacted]

Bangladesh

Indian relations with Bangladesh focus primarily on the ongoing refugee problem between the two countries. The issue become important enough politically that in April 1993, Indian BJP leader Advani stated that the Bangladesh immigrant issue would become a "major poll plank" of his party since it was in the "interest of the economy of the country to stop illegal migration and...to ensure that illegal migrants are sent back." Advani noted his alarm at what he described as the "demographic invasion" of Bangladeshi immigrants who had seized large Indian areas along West Bengal border. In keeping with the BJP's Hindu nationalist theme, Advani remarked that Hindu refugees would be accepted due to their religious background, but Muslim refugees should be returned. Partially as a response to the growing refugee problem, India and Bangladesh reaffirmed their commitment to resolve the Chakma (Chittagong Hill Tracts tribal) refugee problem amicably in June 1993. Visiting Bangladesh foreign minister, Mustafizur Rahman told Prime Minister Rao on 12 June that Bangladesh would take back the refugees. Despite these assurances, the refugee problem persists.

The confusion resulting from the refugee question provides an ideal opportunity for militant opposition groups to hide and operate within and along the borders of several nations along the northeastern border of India. In July 1993, the director general of the Border Security force of India, Prakash Singh, claimed that Bangladesh, Bhutan and Nepal were providing shelter for militant groups operating in the northeastern region of India. In addition, India claims Pakistan's ISI is training many of these subversive groups.

Bangladesh's relations with China also raise concerns within India. In spite of China's original diplomatic support of Pakistan during the 1971 war of independence, Beijing recognized Bangladesh only after the Soviet leaning post-independent Awami League government of Wajed's father and the nation's founding leader Sheikh Mujibur Rahman was toppled in a bloody coup in 1975. Following her December 1993 meetings with PRC officials, Bangladeshi opposition leader Sheikh Hasina Wajed of the Awami League party expressed her desire for China to play a "pioneering role" in the formation of the proposed organization of Asian countries for strengthening cooperation in the fields of economics, diplomacy, trade and culture. Beyond more friendly diplomatic and political relations, China has developed a military relationship with Bangladesh as well. As part of this improved association, the PRC replaced Bangladesh's 40 F-6 fighter aircraft (and maybe some F-7, A-5 and Soviet fighters) along with four torpedo craft, six coastal patrol craft, and three frigates destroyed by an April 1991 cyclone in late 1992. Bangladesh also has purchased Chinese *Silkworm* missiles and installed them aboard frigates and patrol ships.

While the refugee problem and Chinese military sales are unwelcome developments in India's relationship with Bangladesh, New Delhi does not view Dhaka as a major security threat. Since Bangladesh and Burma have

strained relations due to refugee issues, India does not face an allied eastern flank consisting of Rangoon, Beijing, and Dhaka. Indeed, with a resolution of the refugee issue, Bangladesh may be driven to seek improved relations with India as a response to Burma's troubling military build-up.

Pakistan

Pakistan's security concerns focus almost exclusively on India. Just as India remains fixated on its humiliating defeats at China's hands, Islamabad is obsessed with Pakistan's defeat and dismemberment at the hands of its Hindu neighbor in 1971 and the continuing Indian occupation of Muslim-dominated Kashmir.

Although Islamabad does not view itself as a major international power in the same way India does, no one should question the role Pakistan believes it plays as a leader of the Muslim world. Lacking oil resources that many other Islamic countries enjoy, Pakistan has nevertheless emerged as one of the leading countries in the Muslim world. Islamabad's nuclear weapons capability plays a crucial role in this context.

Weapons

Nuclear Warheads

Pakistan has developed a nuclear weapons capability in less than twenty years. Initiated in 1972, Pakistan's nuclear weapons effort has benefited from an aggressive plan to obtain nuclear technology, equipment and materials — through legal and illegal means — from a variety of countries including China, the United States, and Europe. Following India's PNE in 1974, Pakistan intensified efforts to build a uranium enrichment plant capable of producing weapons-grade plutonium. To a certain extent, U.S. pressure to block Pakistan's early drive towards a nuclear capability was successful. In 1978, France halted supply of nuclear materials to Islamabad after significant diplomatic pressure from Washington. In 1979, the Carter administration cut off aid to Pakistan because of unsafeguarded nuclear facilities.

This all changed, however, following the Soviet invasion of Afghanistan in December 1979. Suddenly, Pakistan became a frontline country in the U.S.-led battle against communism. Acknowledging the new strategic realities, the Reagan administration redefined the U.S.-Pakistani relationship by pledging $3.2 billion in military aid to Islamabad in 1981-82 in return for President Zia's promise that Pakistan would not pursue nuclear weapons. Ignoring these promises, Pakistan's nuclear weapons program progressed. In 1984, a Pakistani national was caught trying to export nuclear triggers from the United States and American officials suspected that China had provided Islamabad with a nuclear bomb design. Meanwhile, Pakistan's Kahuta uranium plant reportedly obtained the ability to process uranium. One year later, the CIA stated that Pakistan had enriched uranium to above weapons grade and had tested a nuclear trigger. In spite of the growing evidence of a concerted effort to develop nuclear weapons, Pakistan remained an important ally in the war in Afghanistan. Willing to look the other way, Congress approved $4.02 billion in aid to Pakistan in 1987. Not until the Soviet Union had withdrawn from Afghanistan did the Bush administration halt foreign aid to Pakistan in October 1990 due to its nuclear weapons ambiguity. By this time, Pakistan's nuclear weapons capability was well established. According to Senator Larry Pressler, the CIA informed him in 1992 that Pakistan had the capability "within a matter of hours to have a (nuclear) bomb in an airplane, flying to someplace and dropping it."

From Islamabad's perspective, nuclear weapons offer a degree of equality with India while promoting Islamabad as the nuclear leader in the Muslim world. The result has been a powerful nuclear weapons program with enough highly enriched uranium for six to fifteen nuclear devices.

Chemical Weapons

Pakistan is a state party to the Geneva Protocol and has signed the CWC. In addition, Pakistanis point to the fact that no country has formally charged Islamabad with using CW. Moreover, proliferation experts note that there is no evidence to confirm a Pakistani CW munitions stockpile.

Pakistan denies having any CW production facilities or stockpiles. As with India, the British constructed a CW testing station in northern India — later known as Rawalpindi, Pakistan — where CW were studied. In 1986, the Pakistani ambassador to the Conference on Disarmament (CD) declared "that Pakistan neither possesses chemical weapons nor desires to acquire them." In 1988, Anthony Cordesman claimed Pakistan had completed research on the "production of nerve, mustard, and cyanide agents." There is no evidence, however, to support this assertion. There are indications that Pakistan has a defensive CW capability, but details are sketchy. Islamabad may have purchased gas masks and other protective gear during the 1980s. In 1990, an unusually large Pakistani delegation showed particular interest in chemical weapons protective equipment during a visit to the British Army Equipment Exhibition in Aldershot.

Despite Pakistan's presumed lack of CW, Islamabad finds itself surrounded by countries that have the capability to produce, deploy, and, in some cases, employ CW in a limited time, including Iran, Afghanistan, China, and India. In the north, the generally held position is that CW may have been used by Soviet forces against the Mujahedin in Afghanistan, but that Afghanistan has no domestic production capabilities. To the west, Iran suffered repeated CW attacks from Iraq during the Iran-Iraq war (1980-1988) and has developed a CW production capability. In one disputed case, Iraq may have been incorrectly singled out for a CW attack that actually involved Iranian CW on the Kurdish border town of Halabja in March 1988. In 1987, Secretary of State George Shultz claimed that both Iran and Iraq had used CW. As stated earlier, India could also produce CW after a few years. The possible presence of CW along Pakistan's borders, however, does not currently alarm Pakistani officials.

Biological Weapons

There is no evidence of a Pakistani biological weapons program. Similar to the situation with regard to chemical weapons, Pakistan has the ability to develop BW if it chooses. According to 1993 Russian intelligence estimates, Pakistan has several scientific centers conducting research on microbiology under the Defense Ministry and at the HEJ Research Institute of Chemistry in Karachi. There is no evidence, however, that a BW program exists. Islamabad is a signatory to both the Geneva Protocol and the BWC.

Ballistic Missiles

In February 1989, Pakistani Chief of the Army Staff, General Mirza Aslam Beg announced that Islamabad had launched two tactical ballistic missiles, the *Hatf-1* and *Hatf-2*, with a tested range of 80 and 280-300 km respectively. The *Hatf-1* may be ready for deployment in 1993-94, while the two-stage *Hatf-2* will not be ready until 1995-96. Hatf-2 missiles cannot reach New Delhi and lack precision strike capability. Although several sources suggest that the Chinese provided the bulk of assistance for these two missile systems, one report indicates that France also played a major role. Pakistan also is developing the longer range *Hatf-3* (600-780 km) that would be the logical choice for delivering a nuclear warhead to New Delhi.

Pakistan continues to search for foreign missile technology. In 1990, U.S. intelligence sources claimed China was ready to sell the 600 km range *M-9* to Pakistan although there has been no subsequent evidence to support this claim. In 1991, Islamabad purchased components and perhaps entire *M-11* (280-300 km) surface-to-surface missiles (SSMs) from China, although current deployment status is uncertain.

Cruise Missiles

Pakistan's cruise missiles currently are limited to the Chinese-made HY-1, FL-1, and HY-2 (*Silkworm*), the French-made air-launched *Exocet* AM 39, along with the U.S. *Harpoon*.

Space Launch Vehicles

Islamabad has only recently begun exploring SLV options with the assistance of China. In July 1990, Pakistan's first experimental satellite was fired into orbit aboard a Chinese *Long March* rocket. Pakistan has two untested sounding rockets, the *Shahpar*, and the *SUPARCO*, under development with considerable Chinese assistance. In spite of these efforts, an indigenous Pakistani SLV capability within the next ten years appears doubtful. According to some reports, Pakistan's SLV program provides Islamabad with the

possibility of extending its ballistic missile ranges to over 1000 kilometers.

Pakistani Rationale for and Perceptions of Nuclear Weapons

Pakistan's interest in nuclear weapons is a direct result of its precarious strategic situation with India. Having suffered successive military defeats to India, Pakistan considers a nuclear weapons option as the only method of deterring India. Following India's nuclear weapons debate during the 1960s, Zulfikar Ali Bhutto and later General Zia ul-Haq envisioned nuclear weapons as a deterrent against New Delhi's overwhelming conventional forces, an equalizer to any Indian nuclear device, and also a means of placing Pakistan at the forefront of the Islamic world. Pakistani leaders also noted that during the 1971 war with India, China provided no military assistance to Islamabad. Therefore, a nuclear weapons capability provides Pakistan with the critical ability to defend itself. Although Pakistan has apparently not deployed nuclear weapons there is no question that leaders in Islamabad view a nuclear weapons capability — the ability to rapidly assemble and deliver these warheads — as a vital deterrent to a much more powerful India.

Certainly, Islamabad's nuclear weapons development has served political interests as well. Pakistan is the first Muslim country to have the capability to construct a nuclear device, thereby generating not only pride and prestige domestically, but also serving as an important symbol for all Muslim countries and other developing countries. This technological prowess elevates Islamabad into an exclusive category of nations. While there is no evidence that Pakistan has sold its nuclear expertise to other Muslim nations, there have been indications that nuclear trade has been seriously considered.

Economically, Pakistan is one of the poorest Islamic nations, lacking the vast oil reserves that many of its Muslim neighbors enjoy. Concerned with development, nuclear energy offered a possible solution for Islamabad's pressing energy problems. As early as the mid-1950s, Pakistan was examining the possibilities of nuclear energy, however by 1993, Pakistan's civilian and military nuclear programs have little to show in terms of real benefits for Pakistani society. Thus far, nuclear developments appear to be purely military and political in value. As will be discussed later, the decision to develop a nuclear weapons capability has not come without considerable

PAKISTANI MISSILE AND SPACE LAUNCH CAPABILITIES

Designation	Type	Weight (kg)	Range (km)	Payload (kg)	Propulsion	Status
Shahpar	sounding rocket	1,200	120	—	Solid	in service
SUPARCO	sounding rocket	3,000	280	—	Solid	in service
Hatf-1	ballistic missile	1,500	80	500	Solid	in service
Hatf-2	ballistic missile	5,500	280	500	Solid	in development
Hatf-3	ballistic missile	—	600	1,000	—	in development
M-11	ballistic missile	4,000	300	1,000	Solid	unknown
HY-2 *Silkworm*	ship launched cruise missile	2,500	80	500	Liquid	in service
FL-1	surface-launched cruise missile	2,000	40	500	Liquid	procured 1980
Exocet MM-38	surface-launched cruise missile	735	40	168	Solid	in service
Exocet AM-39	air-launched cruise missile	652	50	165	—	in service
Harpoon	sub/ship-launched cruise missile	522-630	120^	220	—	in service

*Unclassified sources estimate that Pakistan possesses 6 HY-2 *Silkworm* missiles and 4 *Exocet* MM-38 missiles.

FIGURE 1—14

political, economic, military, and diplomatic hardship. Pakistan's nuclear option has cost it dearly in U.S. military and economic aid.

The willingness of Pakistani political leaders to admit to their nuclear capability, however, is a fairly recent development and remains a point of contention among the various political, military, and scientific leaders.

Political Actors

Unlike India, the Pakistani political scene has been dominated by the military. Nuclear decision-making has rested in the hands of a few actors, and in some instances, certain members of the government and military specifically kept information about the existence of the nuclear weapons program from top ranking political officials. Former Prime Minister Zulfikar Ali Bhutto initiated the Pakistani nuclear weapons development program during the early 1970s. Bhutto's interest in developing a nuclear weapons capability increased sharply following India's "peaceful nuclear explosion" in 1974. At his trial by the Zia ul-Haq regime, Bhutto stated:

> We all know that Israel and South Africa have full nuclear capability. The Christian, Jewish and Hindu civilizations have this capability. The Communist powers also possess it. Only the Islamic civilization was without it, but that position was about to change.

After years of denying any interest or capability in nuclear weapons, Pakistani officials have only recently admitted they have a nuclear weapon option. As Islamabad's ability to produce nuclear weapons became apparent in the late 1980s and early 1990s, Pakistani leaders developed an ambiguous nuclear weapons position not unlike the Israelis. In its simplest form, Pakistani officials indicated that although Islamabad did not wish to construct and deploy nuclear weapons, it did have a capability to do so should the security of the nation be in jeopardy. In February 1992, Foreign Secretary Mohammed Shaharyar Khan became the first Pakistani government official to state that Pakistan had acquired the capability and components to assemble at least one nuclear explosive "device." His successor, Abdul Sattar, declared in 1993 that "we possess a certain nuclear capability or potential. But our government's decision is steadfast: We have no desire to turn this potential into a reality." In September 1993, caretaker Prime Minister Moin Qureshi reiterated that Pakistan was not "making an actual nuclear device," and since the nuclear program had been capped, the Pressler Amendment should no longer apply. In a meeting with U.S. Central Command chief General Joseph Hoar in September 1993, acting President Wasim Sajjad insisted that Pakistan's nuclear program was peaceful while claiming the Pressler Amendment discriminated against Pakistan by not including similar measures against India.

Mohammed Nawaz Sharif, Benazir Bhutto's successor and later defeated rival, denied during his tenure as prime minister that Pakistan had nuclear weapons. In a June 7, 1991, speech before the National Defense College, Sharif explained that Pakistan's "efforts to develop nuclear energy and technology for peaceful purposes have been subjected to unfair criticism and discriminatory pressures. We have repeatedly asserted that our nuclear program is devoted to peaceful purposes." Similar remarks were made by Sharif in April 1993 when he stated that Pakistan's "nuclear policy is geared toward the peaceful use of nuclear energy." However, Sharif indicated his interest in a non-deployed nuclear deterrent when he remarked that:

> Pakistan has been scrupulously adhering to its stand that it will not manufacture nuclear weapons, but it cannot rule out the possibility of developing such weapons if they become indispensable for the sake of Pakistan's security.

Sharif also noted in June 1993 that any Pakistani government that chose to roll back the country's nuclear program would face political suicide since they would be viewed by the Pakistani public as caving into western, primarily U.S., nonproliferation pressure.

Unlike Pakistan's prime ministers, the President's office, and its close relationship with the military, has played an active and often independent and secretive role in developing Pakistan's nuclear weapons capability. Former President Ghulam Ishaq Khan is believed to have been the major political figure involved in Pakistan's nuclear weapons program. The long-term politician had served previously as

Finance Minister and head of the Senate. Under President Zia, Khan helped develop strong political and financial support for Abdul Qadeer Khan's nuclear operations at Kahuta during the 1980s. With the death of Zia, Khan later emerged as President and along with General Beg, the two men solidified their positions as the primary, if not exclusive, controllers of Pakistan's nuclear weapons future. As evidence of the President's and military's power, one source claimed in September 1992 that no Pakistani prime minister had ever been allowed to visit the Kahuta nuclear facility. As one American scholar wrote,

> Aside from A.Q. Khan and the technical personnel who actually perform the nuclear research and development, the (nuclear) decision-making circle is not much larger than President Ghulam Ishaq Khan and the army chief of staff (Beg).

To maintain control of critical issues such as the nuclear weapons program, Khan waged a continual war with Pakistan's prime ministers. For instance, President Khan not only helped oust Benazir Bhutto in 1990, he also dismissed Prime Minister Sharif, in April 1993, on grounds of corruption and mismanagement. The Supreme Court reinstated Sharif 39 days later. In spite of the ruling, Khan continued to obstruct Sharif's rule through the dismissal of two provincial assemblies (only four exist in Pakistan) including Sharif's power base, the province of Punjab.

During her first term as prime minister, lasting twenty months (1988-1990), it appears President Khan was successful in hiding Pakistan's nuclear weapons capabilities from Benazir Bhutto. Although some sources claim the CIA informed Bhutto of Pakistan's nuclear weapons facility, Bhutto suggests that she was contacted by Pakistani scientists "who owed loyalty to my father." According to Bhutto, she was removed from power in August 1990 after confronting the military over the nuclear weapons program. Bhutto blamed then President Ghulam Ishaq Khan for attempting to keep her uninformed of Pakistan's nuclear capability. Bhutto commented that during her first term as Prime Minister,

> I lived under the shadow of a strong military, a hostile President, an entire constituency that Zia had built: extreme right-wingers; religious bigots; and politicians bred during that era of military dictatorship. They had one thing in common: they were dead set against allowing me to rule.

Bhutto's former chief of staff, Major General Nasirullah Babar agreed, commenting that it was a battle from Day One," with the military. "The President was testing her, and he never stopped. Neither did the Chief of the Army Staff (Beg). His resistance lasted until the end." General Babar added,

> We had no control over these people. They were like a government unto themselves...and I must tell you that until a few weeks ago, when General Abdul Waheed, the new Chief of the Army Staff, cleaned house at ISI, these holy warriors were...involved in all these fundamentalist movements across the Muslim World.

Following her ouster from the Prime Minister's office, Bhutto first announced in September 1991 that Pakistan had the ability to build a nuclear weapon. Bhutto explained that "Pakistan has sufficient nuclear information that in the event of a (nuclear) threat it could rapidly produce a deterrent." Following the October 1993 elections that brought her back to power, Bhutto stated Pakistan's nuclear program, "will be continued because Pakistan cannot allow India to have an atom bomb while we stay out of the running."

Despite Bhutto's difficulty in controlling the military's hand in Pakistan's nuclear weapons program, there are indications that the prime minister may be able to exert more control over the military in the future if the Pakistani Constitution is amended. Part of the October 1993 election centered on the need for a reformed constitution. The present Pakistani Constitution owes its legacy of ambiguity to former military dictator Zia, who rewrote a British-style prime ministerial constitution to strengthen the president's power under the eighth amendment. To repeal the amendment, a two-thirds majority in parliament is necessary. The President is chosen by members of the national parliament and the four provincial assemblies. Unlike the Prime Minister, the President appoints Supreme Court judges,

provincial governors and chiefs of the armed forces, and he may dismiss an elected government if there are violations of the Constitution. Under President Khan, these presidential powers were used, and some argue abused, extensively. The resulting confusion from Prime Minister Sharif's dismissal and reinstatement led to the resignations of Sharif and Khan and the call of national elections in October 1993 — which Bhutto won. In addition, with the retirement of General Beg and his replacement of General Waheed — a nonpolitical officer — Bhutto may be in a better position to control the Pakistani government.

In spite of Bhutto's return to office, it was not clear initially who would become President since the election between Bhutto and Sharif was so close. Both politicians were scrambling for support of the smaller Pakistani parties. Sharif supported acting President Wasim Sajjad while Bhutto favored her foreign minister, Farooq Leghari. Bhutto's candidate won, marking the first time that in fifteen years that the prime minister and president are politicians belonging to the same party. After winning, Leghari announced that he intended to repeal the eighth amendment.

(b)(5)

Although currently in a Pakistani prison awaiting retrial on charges of terrorism, Mir Murtaza Bhutto, the younger brother of Benazir Bhutto looms as at least an irritant to the Prime Minister and possibly as a political rival. From prison, Murtaza has claimed he should control the PPP — Benazir's party — while he accuses his sister of accepting "turncoats and intelligence agents to infiltrate the highest echelons of the PPP." In a November 1993 article, Murtaza wrote in detail about Pakistan's nuclear capabilities. The younger Bhutto noted that in terms of energy, oil-poor Pakistan cannot afford to do without nuclear energy or the entire country will "suffer an unimaginable catastrophe." With regards to a nuclear weapons capability, Bhutto conceded that Pakistan had the capacity to produce nuclear weapons as a deterrent against India. Bhutto wrote,

> A conventionally armed state cannot rely for defense against a much large(r) adversary that also happens to have an operational nuclear weapons capacity.

Bhutto continued by stating that nuclear weapons "are good for the economy" since they allow countries to downsize their conventional forces. Finally, Murtaza was outraged by his sister's announcement that Pakistan had "capped" its nuclear weapons program — meaning it would not produce nuclear weapons. Mir Murazata questioned Pakistan's current non-deployed nuclear weapons status:

> Why does Pakistan spend precious time, money, and effort over decades to develop a capability to make nuclear weapons and then to decide not to make them at all?...Were we making monkeys out of our scientists...?

The younger Bhutto insisted that Pakistan should build and deploy nuclear weapons and any attempt to halt this would be tantamount to treason.

Military Actors

Since independence in 1947, the Pakistani military has governed the country for 24 years of its existence. It is not surprising then, that the military establishment has played a major role in developing Pakistan's nuclear weapons program. As will be discussed below, the military's power, together with pro-nuclear politicians such as President Khan, allowed it to block effectively civilian-political (e.g. Prime Ministerial) control of the nuclear weapons program.

Retired General and former Chief of Staff Mirza Aslam Beg has been a prominent proponent for nuclear weapons. Like Zia, Beg favored development of a nuclear weapons capability, but unlike the former President, Beg was more willing to distance Islamabad from Washington. According to one source, the CIA characterized Beg as "a fifty year old Muslim aristocrat who suddenly became very religious...and thought Iran was a savior." U.S. Ambassador to Pakistan Robert Oakley concurred, commenting,

> Beg came back in February of 1990 from Tehran and told me, "I'm greatly reassured. Now we're in good shape. With the support Iran promised me, we will win in case of war over Kashmir."

Beg rejects charges that he and Khan controlled the nuclear weapons decision-making apparatus. The general's opinion, however, may be misleading. Beg vehemently opposed Bhutto during her first period in office and helped to undermine her government in 1990. As a close ally of Khan, nuclear weapons were something they both viewed as necessary to ensure Pakistan's survival.

Beg subscribes to the notion that Pakistan's latent nuclear weapons technology provides a critical deterrent to possible Indian aggression. The Pakistani general stated:

> The balance of terror starts the moment the adversary realizes there is a threat from the other direction. In the case of weapons of mass destruction it is not the numbers that matter, but the destruction that can be caused by even a few. The strategy of terror starts working from the first notion that there is retaliation. The fear of retaliation lessens the likelihood of full-fledged war between India and Pakistan. I can assure you that if there were no such fear, we would probably have gone to war in 1990.

In another meeting, Beg remarked that "the only way for the Pakistanis to deal with the Indians is to be able to take out New Delhi. There's no way that sending ten F-16s with conventional bombs is going to do it. Only the nukes could strike back."

In July 1993, General Beg caught some proliferation experts off guard when he claimed that Pakistan's first successful nuclear weapons test came in 1987 — three years before the United States suspended approximately $570-600 million in military and economic aid, that was part of a six-year $4.01 billion package. Beg commented that:

> Pakistan carried out the test in cold laboratory conditions, and it was very successful...no one should have any doubt about that.

Later, Beg denied this statement, arguing that he had been misquoted. Some Indian and Russian sources claim that Pakistan may have crossed the nuclear threshold in late 1986.

Another military hard-liner and anti-Bhutto leader, General Hamid Gul, also supports a non-deployed nuclear deterrent. Critical in Beg's and Gul's thinking is the notion that deterring India does not necessarily require a *deployed* nuclear force. In July 1993, Beg argued that Pakistan's nuclear weapons capability could be used as a weapon of last resort should Islamabad face defeat in a conventional war with India.

On 6 December 1993, a unique seminar entitled "Pakistan's Nuclear Option" was held in Islamabad. In attendance were several high ranking retired Pakistani generals, including the former Joint General of the Armed Services, K.M. Arif, and the director general of ISI, Asad Durrani. Durrani remarked that Pakistan's nuclear weapons option deterred India from a conventional attack in Kashmir. In addition, Durrani warned that a denuclearized India would create great pressure on Pakistan to roll back its nuclear weapons option — a potentially dangerous situation due to Islamabad's weaker conventional strength vis-a-vis India. Meanwhile, retired General Arif criticized the decision to "cap" Pakistan's nuclear weapons capability since the United States has neither renewed military aid nor eliminated the Pressler amendment. Islamabad has paid the U.S. $658 million for F-16 aircraft, but has not received any equipment yet. The Pakistani Foreign Minister informed a visiting Senate delegation including Senator Pressler, that if Washington did not fulfill this military deal by April 1994, Pakistan would seek other sources. A separate report indicated that Pakistan already had shelved the F-16 plan and as of 21 December

1993, Islamabad had decided to purchase either the French Dassault *Mirage* or the Russian *Sukhoi*-27.

Military hard-liners such as Generals Beg and Gul suggest that U.S. efforts designed to punish Pakistan for developing a nuclear weapons capability strengthen Pakistan by removing its dependence on the U.S. Other officials, such as Prime Minister Bhutto, appear to have drawn completely different conclusions. It remains to be seen if Bhutto can convince the new Pakistani military leadership and the public that accepting nuclear nonproliferation efforts is in the best interests of Pakistan.

Scientific Elite

At the highest levels, the Pakistani scientific community has worked closely with the small Pakistani nuclear decision-making circle, but it is unclear what impact they have had beyond technical issues. In 1984, Dr. Adbul Qadir Khan, the chief of Pakistan's Kahuta nuclear weapons facility since the mid-1970s, told a Pakistani newspaper that:

As soon as they (US) realized that Pakistan had dashed their dreams to the ground, they pounced at Pakistan and me like hungry jackals and began attacking us with all kinds of accusations and falsehood...How could they tolerate a Muslim country becoming their equal in this field...All Western countries including Israel are not only the enemies of Pakistan but in fact of Islam...All these activities are part of the crusade which Christians and Jews have been carrying on against Muslims for about one thousand years.

During heightened border tensions between Pakistan and India in 1986, Khan reportedly told an Indian interviewer that Pakistan had the bomb. He continued,

What the CIA has been saying about our possessing the bomb is correct. They told us Pakistan could never produce the bomb and they doubted my capabilities, but they know we have it.

Although Pakistan had no intention of using a nuclear bomb, Khan warned that "if driven to the wall there will be no option left." Dr. Khan later rejected these statements. In September 1993, Dr. Khan stated that India was deterred from striking Pakistan with a nuclear weapon due to Islamabad's nuclear weapons capability. In a thinly veiled threat, Khan warned that India cannot dare drop a nuclear bomb on Pakistan, and if New Delhi committed that mistake, it would not be safe from its consequences.

Nevertheless, the scientific community echoes the comments of most government officials in stressing that Pakistan's nuclear program is peaceful. For instance, Dr. Ashfaq Ahmed, chairman of the Pakistan Atomic Energy Commission, insisted in May 1993 that Pakistan is committed to the peaceful use of nuclear energy.

Pakistani View of the NPT

Pakistan lacks India's extreme wariness towards the NPT and does not harp on the treaty as being discriminatory. Simply put, the problem is India and the belief that Washington is only interested in punishing Islamabad. As Pakistani Foreign Minister Sardar Asif Ahmad Ali noted in a November 1993 interview:

Pakistan does not oppose the NPT. We have never refused to endorse the NPT. However, as a matter of principle we cannot accept discriminatory treatment vis-a-vis our neighbor India. In fact, as early as 1979, Pakistan had proposed simultaneous adherence by India and Pakistan to the Non-Proliferation Treaty.

Despite the Foreign Secretary's comments, there are plenty of Pakistani officials who view the NPT as discriminatory. As Munir Ahmad Khan, Chairman of the Pakistan Atomic Energy Commission wrote,

By its very nature, legitimizing the possession of nuclear weapons by five states makes the nonproliferation treaty inherently discriminatory.

In June 1991, Prime Minister Sharif suggested that nuclear nonproliferation should be discussed in an international forum including the United States, Soviet Union, and China, but the idea was rejected by India. According to Indian Prime Minister Rao, the Pakistani offer was nothing more than propaganda. In late November 1993, a newspaper editorial summed up the frustration felt in Pakistan:

The variation on that theme (United States nonproliferation efforts directed at Pakistan) is evident in the case of North Korea, which was

recently threatened with extinction by the American President. All this while, Israel, South Africa, and India went ahead with their own nuclear programs without so much as a grunt from across the Atlantic.

Missile Proliferation

The imposition of sanctions by the United States against China and Pakistan for Beijing's sale of missile technology and systems to Islamabad in violation of the MTCR are cementing a growing anti-American sentiment among the Pakistani public. The Clinton administration has prohibited the export of any dual-use high technology equipment such as computers, avionics equipment, and satellites for the next two years. Then Prime Minister Qureshi insisted that the transfer of M-11 technology was not a violation of the MTCR. China argues that the sales were approved before Beijing joined the MTCR and, moreover, the M-11's range falls within the guidelines of acceptable missile transfers. In addition, Beijing may have sent only pieces of missile systems, and not entire units. The prime minister insisted that these missiles are essential since India has developed and begun to stockpile missiles. Unable to match India's domestic missile production capabilities, Islamabad must rely on foreign assistance in its missile programs.

Other political leaders, such as former prime minister Sharif, criticized the U.S. decision during the 1993 election. In an interview with the Canadian Broadcasting Corporation, Sharif maintained that India was responsible for the arms race in South Asia and that Islamabad would not accept one-sided, discriminatory pressure based on a double-standard exempting India from any responsibility for missile and nuclear proliferation. Foreign Minister Sattar said the U.S. action was based on incorrect information and groundless suspicion.

Pakistani Security Concerns

India-Kashmir

Under the 1947 British partition plan, Kashmiris were to be given the choice of becoming part of India or Pakistan. Their Hindu leader chose India without the promised referendum. That choice triggered the first Indo-Pakistani war, in which Pakistan captured adjacent territory — what it calls Azad, or Liberated Kashmir. Kashmir remains the focus of Pakistani attention directed at India. As the only Indian state with a Muslim majority, Islamabad views Kashmir as a prime example of New Delhi's violation of human rights and international law. According to international human rights groups and journalists who frequently visit the region, Indian forces have engaged in widespread torture, rape, and arson.

Islamabad's primary goal in the region has been the absorption of Kashmir into Pakistan. In 1965, under the leadership of Muhammed Ayub Khan, Pakistan instigated a number of border clashes in the Ran of Kush with the ultimate goal of taking Kashmir. After initial success, Islamabad was defeated by Indian forces and the Tashkent Agreement was signed restoring the *status quo ante*. India's 1987 *Brass Tacks* military exercise under the control of General K. Sundarji exacerbated the already tense Indo-Pakistani relationship. The largest Indian military exercise in history took place in Rajasthan, within 100 miles of the Pakistani state of Sindh — an ideal area from which to launch a divisive strike splitting Pakistan in two. Pakistani President Zia, who concurrently served as Army chief of staff, responded by placing Pakistani forces and armored units on alert along the border. Reportedly the two sides together amassed 340,000 forces along the border. President Zia remarked that "Neither India or Pakistan wanted to go to war but we could have easily gone into war." Although the tensions subsided, the Pakistanis were clearly alarmed by the potential Indian offensive.

The Kashmir problem erupted again in December 1989 when young Kashmiris formed Muslim guerrilla units under a nationalist banner. Mainly operating as the Jammu Kashmir Liberation Front, along with several groups (Party of God, Harkat-ul-Mujahedeen, and Al Barq) they have taken up arms against India either seeking independence or union with Pakistan. Indian officials assert that Islamic guerrillas have joined in the battle. India views these groups as terrorists. Thus far, thousands of Kashmiris have died and more than 250,000 Hindu Kashmiris have fled from the Vale of Kashmir, the main area of fighting, to Jammu and New Delhi.

The 1990 Kashmir Crisis

Animosity over Kashmir crystallized again in 1990. As mentioned earlier, there is considerable debate about whether Pakistan went to a nuclear alert during the Kashmir crisis of 1990 as alleged by Seymour Hersh in the *New Yorker*. According to some sources, General Beg and President Khan outflanked Prime Minister Bhutto's April peace overtures to India by sending a provocative message to India via the Foreign Minister, stating, "...we (Pakistan) are desperate enough that we will blow you to smithereens." In May, President Khan used Bhutto's absence to send a similar message through troubleshooter U.S. deputy national security advisor Robert Gates. In a threatening show of force, Pakistan dispatched a well-armed convoy of trucks to exit Kahuta nuclear facility and move to a local airbase where F-16s capable of carrying nuclear weapons were waiting. According to Nawaz Sharif the nuclear threat did not originate from Pakistan but instead, "there was the danger of a nuclear attack by India in April 1990 when the Indian forces had concentrated along (the) Pakistani border in Rajasthan." The crisis subsided when the Pakistanis agreed to shut down training camps for Kashmiri militants. In return, Gates sought promises from the Indians that they would halt their infiltration into Sindh and would take steps to improve human rights in Kashmir. By the end of June, the crisis was over.

There are many officials both in Pakistan and the U.S. that deny the 1990 Kashmir crisis ever reached a nuclear weapons level. Members of Pakistan's government who claim there was no nuclear crisis include Bhutto, Foreign Minister Mohammad Saddique Kanju, former Pakistani Ambassador to the U.S. Abida Hussain, and Dr. Khan. On the U.S. side former National Security Advisor Brent Scowcroft charged that the Hersh allegations were exaggerated, although there was "...the possibility that India and Pakistan would use military force." Richard Haas, a former NSC official who accompanied Gates commented that, "The bottom line I drew from it is not that we were on the brink of nuclear war, but that we were on the brink of war, and beyond that all bets were off." Former Ambassador Robert Oakley agreed, remarking that "We (U.S.) never had any hard indications that any nuclear warheads had been delivered to an airbase...we had no evidence that a nuclear exchange was imminent."

Although tensions remain, there have been no subsequent crises in the region of a comparable nature. The relative peace in the area may have prompted some officials to feel more optimistic that a negotiated settlement of the Kashmir dispute could be realized. For instance, in 1992 Defense Minister Syed Ghaus Ali Shah ruled out the possibility of future armed conflict between India and Pakistan over Kashmir. He noted:

> There exists no possibility of armed conflict between Pakistan and India on the Kashmir dispute and I think both the countries have desired to negotiate and decide issues by putting their cases, rather than taking decisions by force.

In April 1993, Prime Minister Sharif reinforced this notion, stating that:

> The unsettled issue of Jammu and Kashmir is the main reason for the tense relationship between Pakistan and India, which has been like that for a long time...our position on Kashmir is still based on these resolutions. We do not raise any claims against any territory.

The Pakistanis have tempered their interests in inciting violence in Kashmir. Islamabad does not want a war with India and does want removal from the U.S. "watch list" of governments supporting terrorism. For instance, in April 1993, Pakistani troops blocked another march of Kashmiri militants trying to enter Indian-controlled Kashmir. These nonviolent gestures by Pakistan do not lessen the importance of the Kashmiri issue. This became clear in a meeting between Vice President Al Gore and Prime Minister Qureshi, on 29 July 1993, in which Qureshi explained that nuclear nonproliferation issues in South Asia could not be resolved without a resolution of the Kashmir issue.

To reduce tensions and avoid confrontations, India and Pakistan have initiated (although implementation may be in question) several Confidence Building Measures including the following:

- Hotline Between Directors General of Military Operations (used on weekly basis). Agreed at Simla Accords in 1972.

- Agreement on Prohibition of Attack on Nuclear Installations and Facilities. Signed in December 1988 by Bhutto and Gandhi and ratified in January 1991. In January 1992 and January 1993, India and Pakistan exchanged lists of their nuclear-related facilities. Each side has questioned the completeness of the other's lists.

- Advance Notice on Military Exercises, Maneuvers and Troop Movements. August 1992.

- Prevention of Air Space Violations and Permitting Overflights and Landings by Military Aircraft. August 1992.

- Joint Declaration on Prohibition of Chemical Weapons (reiteration of resolve to become original States Parties to the CWC). Issued August 1992. The agreement does not, however, commit Islamabad or New Delhi to ratify the CWC.

- Invitation to Chief of Army Staff, Pakistan, to visit India. Extended August 1992.

In late November 1993, it was announced that on January 1-3, 1994, Foreign Secretaries J.N. Dixit and Shahryar Khan would resume stalled discussions on bilateral problems, including the status of Jammu and Kashmir. Following two days of talks, the two countries issued a statement indicating that no progress had been made and no further talks were scheduled. Politically embarrassed by the failed negotiations, Prime Minister Bhutto has responded to opposition criticism by announcing that new talks cannot begin unless several conditions are met. They include the release of Kashmiri political leaders, a reduction in Indian forces in Kashmir, and an end to human rights abuses. Bhutto also can be expected to resume Pakistan's criticism of India for its poor human rights record in Kashmir.

Secondary Regional Concerns

Iran

Pakistani-Iranian relations, while consequential, will be of secondary importance to both nations. Each country's primary security concerns are located in opposite directions: for Tehran, the threat lies to the west in Iraq; for Islamabad, the danger rests in the east with India. In order to focus on these fronts, both countries seek harmonious relations along their common border. In an interview on December 8, 1993, Prime Minister Bhutto noted that:

> We (Pakistan) attach great importance to our relations with Iran. Iran occupies a special place for Pakistan because of its location and the bonds of faith, history, and culture that link the two countries. Good relations with Iran are an imperative. Since Iran and Pakistan contain large numbers of politicized minorities including indigenous tribal peoples such as the Baluchis, Tehran and Islamabad probably will continue to pursue complementary policies to stifle unrest in the transborder region of Baluchistan. Iran and Pakistan also are concerned by regional conflicts including Azerbaijan and Armenia, Tajikistan and Afghanistan. Both Islamabad and Tehran support the Azeris, many of whom have sought refuge in Iran. Despite Bhutto's public comments, overall improvement in bilateral relations between Pakistan and Iran, however, may depend more on the future relationship between Washington and Islamabad.

During the 1980s, Pakistani-Iranian relations were strained as Islamabad became a critical frontline anti-communist country for the U.S., while Iranian-U.S. relations deteriorated. With the Soviet withdrawal from Afghanistan and the U.S. effort to halt Pakistan's nuclear weapons and missile programs (as well as similar Iranian programs) Islamabad and Tehran have improved relations. Former Pakistani General Beg developed close ties with Iran in 1990 and there were rumors of possible nuclear weapons technology transfers between Islamabad and Tehran. Subsequent reports, however, concluded that no nuclear weapons technology transfers occurred. Interested in developing a more independent and Islamic state, Beg and President Khan continued to develop closer ties with Iran. As former U.S. Ambassador Oakley

commented, General Beg's pro-Iranian policy as it related to the Kashmir crisis was "scary to us." With the resignation of Khan and the retirement of General Beg in 1993, it is unclear how Pakistan's new government will respond to Iran.

The Iranian government continues to view the U.S. as the "Great Satan" determined to deprive Muslim countries of their rights to acquire advanced weaponry. In July 1993, Tehran's government controlled radio stated its solidarity with Pakistan in its purchase of Chinese M-11 technology while castigating Washington's nonproliferation concerns:

> America feels unhappy with the access to the relatively advanced weapons of any Muslim country even though its government may be an ally to Washington. This is a part of the U.S. strategy as well as the commitments which it has been following in order to protect its imperialistic base in the Middle East, namely Israel.

In that same month, Prime Minister Sharif traveled to Tehran where he met with President Hashemi-Rafsanjani. Sharif claimed that relations between Pakistan and Iran were very good and that friendly meetings would be held between the heads of the two countries to reassess previous cultural, political and economic agreements. As an indication of Islamic solidarity, the Iranian ambassador to Pakistan stated that Tehran and Islamabad hold similar views on Bosnia, Kashmir, and Afghanistan.

Despite these improvements, there are strains in Pakistani-Iranian relations primarily focusing on India. For example, on 8 November 1993, first deputy foreign minister of Iran, Alaed-Din Borujerdi, told Indian external affairs minister, Dinesh Singh, that keeping external powers from interfering in Kashmir was a prudent policy — thereby contradicting previous statements given to Pakistan. Islamabad also expressed its displeasure with Iran's pact with India providing rail and road links with the Central Asian Republics. As one Pakistani editorial suggested, "if the pact cannot be undone, at least have its implementation deferred till India changes its attitude towards the Muslims in general and Kashmir in particular." At about the same time, an Iranian delegation was considering granting India a gas pipeline from the Qeshm Islands in the Persian Gulf.

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[redacted]

Afghanistan

Pakistan bitterly resents the disappearance of U.S. aid following the Soviet withdrawal from Afghanistan. In its place, the United States has suddenly decided that nuclear nonproliferation and anti-terrorism are Washington's primary foreign policy concerns with Islamabad. In terms of terrorism, Pakistani authorities responded — after a year of foot dragging — by detaining foreign Islamic militants based in the Northwest Frontier Province bordering Afghanistan. On the nuclear issue, Islamabad has been more obstinate. Pakistani leaders argue, not without good reason, that Washington was well aware of Islamabad's nuclear weapons capability and only after the end of the Afghan war did charges related to the Pressler amendment become germane.

Meanwhile, Pakistan's ten-year commitment to the Afghan resistance has resulted in a myriad of problems for Islamabad including the spread of a drug culture, unrest in Sindh and the Northwest Frontier Province, a bankrupt economy, and the continuing burden of approximately 1.6 million Afghan refugees. Pakistani leaders also are wary of Afghanistan's possible disintegration which might result in ethnic battles which Pakistan, Iran, and other Muslim nations might feel compelled to enter. In response, Pakistan has promised that it will: provide assistance for reconstruction of Afghanistan's communications infrastructure; transfer thousands of tons of wheat; and revive the historic trade route between the two

countries. As part of these closer relations, Afghanistan has condemned the human rights violations in Jammu and Kashmir and they have supported Kashmiris' right to self-determination.

Conclusions

Proliferation trends and tension in South Asia cannot be understood by examining only India and Pakistan — other regional actors must be considered. India's original decision to develop a nuclear weapons capability had nothing to do with Pakistan. Instead, China was the catalyst for Indian nuclear developments since Indian leaders realized that they could not defend against Chinese attack — as demonstrated by India's humiliating defeat by China in 1962 — nor could New Delhi match Beijing's ambitious weapons modernization program. As Swaroop Krishna Kaul, India's Chief of Air Staff, noted in November 1993, China is India's primary concern over the next decade:

> They (China) are cutting the size of their armed forces but compensating by inducting hi-tech weaponry including nuclear and long-range missiles...It is a threat we cannot wish away.

Determined to avoid similar military fiascoes and a costly arms race, India developed a nuclear weapons option designed to deter Beijing. Too often, western analyses of South Asia focus on the "arms race" between India and Pakistan with only a passing reference to China. Certainly Islamabad's nuclear program has played a role in New Delhi's nuclear thinking, but only as a piece of a far more intricate geostrategic puzzle.

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India and Pakistan are not the only countries in the region facing ethnic and political

challenges. Comparable internal problems including ethnic unrest and uneven economic distribution threaten Chinese stability (b)(5) From the Chinese perspective, resolving the Sino-Indian border dispute is far outweighed by the need for domestic stability and a peaceful transition of power. Continued separatist leanings in Tibet and Muslim dominated Xinjiang remain a particularly worrisome problem. For example, on October 10, 1993, Islamic separatists attempted to stage a massive rally to protest the mistreatment of minority Chinese Huis and Uighurs in Beijing.

(b)(5) Acting Pakistani President Wasim Sajjad reinforced this idea in an address before the Parliament on October 27, 1993:

> Pakistan is tied in eternal friendship with the People's Republic of China. We are proud of this friendship and it will be the government's endeavor to further deepen these ties of friendship.

India views this ongoing Sino-Pakistani relationship as reason for concern. With the addition of Burma into the Chinese sphere of influence, India finds itself increasingly encircled by hostile regimes supported by Beijing. Even India's southern flank, the Indian Ocean, is in jeopardy as the Chinese navy undergoes significant expansion along with improved port of call opportunities.

Indian leaders also are anxious about the Clinton administration's recent policy reversal towards China. Elected on a platform that criticized President Bush's congenial relations with China in the wake of the Tiananmen Square massacre, human rights abuses, and a growing trade surplus with the U.S., President Clinton originally threatened to withhold Most Favored Nation (MFN) status from China until Beijing's policies improved on human rights, trade practices, and unconventional weapons transfers. In a departure from his campaign rhetoric and early policy statements, Clinton announced his intention to engage the Chinese through high level meetings, including a meeting with Chinese President Jiang in November 1993 followed by direct contacts between senior U.S. and Chinese military officials. The importance the United States has attached to China, combined with the recent U.S. statements questioning India's control over Kashmir, suggest to New Delhi that Washington seeks a confrontational approach with India. On 30 October 1993, Dinesh Singh, Indian External Affairs Minister, expressed his government's dissatisfaction with the U.S. position on Kashmir:

> We are surprised at the timing of the American pronouncements; they came just as it appeared that armed terrorists inside the Hazratbal Shrine were about to release civilian hostages held by them. These signals could encourage a continued confrontation not only in Kashmir but all over.

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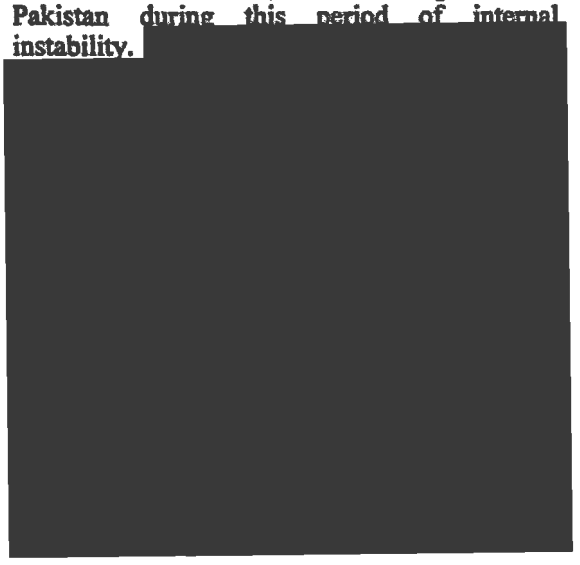
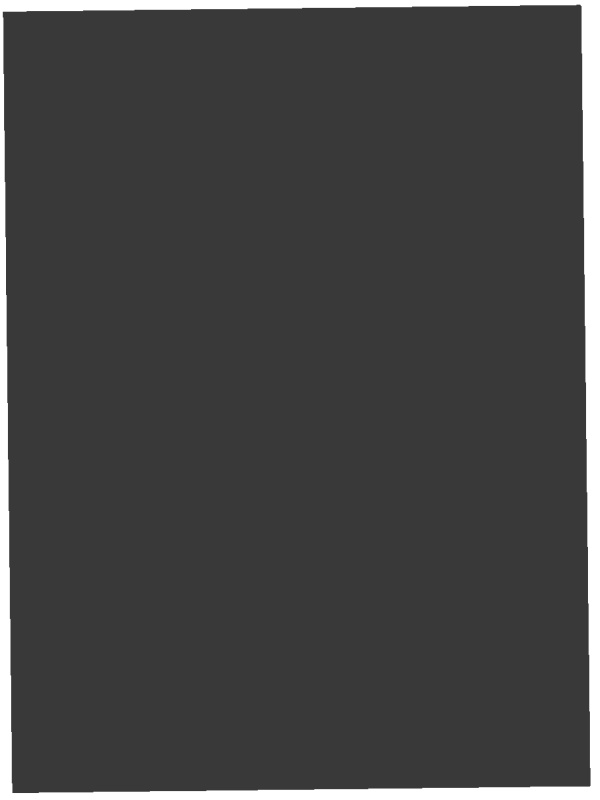
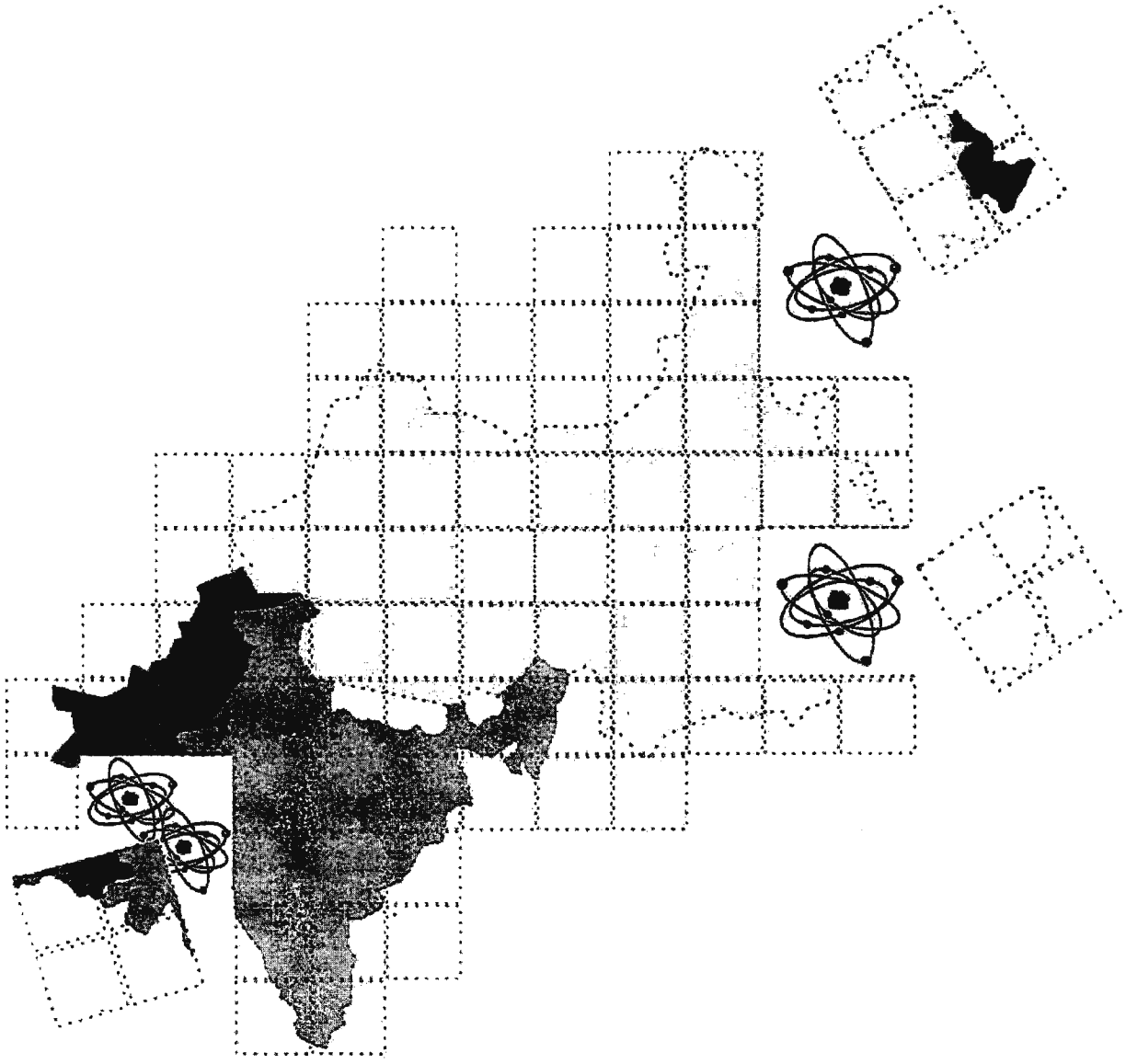
Meanwhile, Pakistan will continue to monitor Indian political and military developments with suspicion. In her first Federal Cabinet meeting

held on October 26, 1993, Prime Minister Bhutto reacted to the latest Kashmir controversy concerning the Hazratbal shrine by placing "on high alert all the country's security forces to meet any eventuality." According to the Pakistani media, Bhutto and her cabinet are concerned that Indian forces might attack Pakistan during this period of internal instability.





CHAPTER 2
THE ROLE OF NUCLEAR WEAPONS IN REGIONAL CRISES



Introduction

Accurately depicting the employment of nuclear weapons in a regional crisis has presented wargame designers with a number of challenges obscured during the Cold War only because of the relatively static strategic context. With the end of the bipolar era, a number of dynamic international security trends have been unleashed or have resurfaced, including conflicts engendered by ethnicity, nationalism, religion, culture, and history. In particular, various segments of the international community are increasingly threatened by both the combination of the above trends and the accelerated rate of technological diffusion, especially the proliferation of nuclear capabilities and the associated means of delivery.

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It is axiomatic to say that nuclear weapons can be employed in a variety of ways short of detonation; the history of nuclear weapons employment (broadly defined) since World War II offers several examples of this. The Cuban Missile Crisis and President Eisenhower's play of the nuclear card vis-a-vis the PRC to end the war in Korea are just two examples of employment as it was understood in the superpower context. Paradoxically, it now seems that while the threat of a major intercontinental nuclear exchange has abated, the likelihood of regional nuclear may be increasing. Such a possibility makes U.S. planning a great deal more complex.

One example of how a widened and less-defined scope of employment can have an impact on U.S. planners is evident in the current Korean situation. For the United States, the knowledge that a country hostile to U.S. interests (e.g., the DPRK) is acquiring a nuclear weapons capability could in and of itself precipitate a crisis. While this was always a concern during the Cold War (the Indian or Chinese entry into the group of nuclear powers is illustrative), the bipolar security system helped to restrain the ambitions of would-be nuclear actors while providing a regional security balancing mechanism; the result of this "filter" was restraint and discipline in the use of force. Now, given the fluidity of international security, even the suspected possession of nuclear weapons would greatly complicate crisis decisionmaking.

In an attempt to provide U.S. decisionmakers the means to understand better the options confronting them in increasingly complex regional nuclear contexts, free-form, multiplayer Grey Team wargames ~~of the type conducted by OSD/NA~~ can illustrate various technical and political characteristics of proliferators, including their motivations, expected benefits, risks undertaken, and how capabilities may be employed. Further, Grey

Team wargames recognize the need to model non-state actors as accurately as possible. As such, such wargames have come to be regarded as a useful tools in simulating the complexity of defending U.S. interests in regional crises, many of which may well have a nuclear component.

This chapter addresses the complexity of representing nuclear weapons in free-form wargames, with a specific focus on the Asian theater (including, as in Chapter One, China, the Korean peninsula, and the China-India-Pakistan dynamic). This task is complicated by four factors:

- the range of actions a nuclear weapon holder or potential holder can take, from component acquisition to infrastructure and arsenal development;
- the range of overt and covert employment means, the diversity of weapons, and potential targets;
- lack of information available to decisionmakers about the intentions and capabilities of the weapons holder; and
- extreme variations and uncertainty in the amount of time available to decisionmakers to respond to the crisis — literally ranging from hours to months.

Making accommodation for these factors in multi-player wargames is a considerable challenge. In traditional gaming approaches, the U.S. (or Blue) team usually engaged a Soviet (or Red) team in some form of crisis situation in a straightforward, one-on-one game. In a nuclear Grey Team wargame, however, uncertainties for any team's decisionmakers are multiplied by the number of players participating in the game.

While the United States typically remains Blue, Red teams may represent a non-nuclear state or a faction within a nuclear state. Red could be attacked with a nuclear weapon launched by Purple (representing Blue allies) or Grey (representing, ostensibly, neutral observers). Complications of a conflict in the Middle East involving the United States, Iran or Iraq, and Israel and other U.S. allies help to suggest in this regard just how fluid team definitions may become. Importantly, in some games, any state or non-state actor may become Red simply by virtue of making a threat of nuclear use, even if uncertainty remains with regard to that actor's actual possession or capability. Lastly, besides the usual politico-military means of influence in wargames, other game stimulants (for example, humanitarian missions, or economic and trade leveraging) increase Grey Team wargame complexity.

Because they more closely approximate the number of actors and the complexity of considerations at work in emerging security environments, Grey Team wargames can serve as a useful vehicle for investigating issues associated with nuclear proliferation. In particular, they can help identify other points of view relevant to crisis management and conflict resolution. In the areas of policy development and crisis response, an improved understanding of how and why a proliferator undertakes certain actions in a crisis situation — or, at least, an assessment of which actions are most or least likely — can lead to more successful policy initiatives on the part of the United States.

The following sections of this chapter examine the use of scenarios in Grey Team wargames, and then provide an overview of the nuclear weapons acquisition and development and arsenal development processes. As alluded to above, with concepts of nuclear employment evolving and taking on more subtle charateristics, this effort will focus more specifically on four aspects of nuclear employment.

- employment of the process of nuclear acquisition and development itself by proliferant actors to influence events;

- an assessment of the "rise phase," the point where an advanced nuclear infrastructure surges towards weaponization;
- nuclear employment in a regional crisis; and
- the "certain uncertainty" of hidden nuclear weapons is addressed.

A final section describes possible implications for Blue/Blue-Purple conventional operations.

Following this discussion, an illustration is offered of how the nuclear weapons process itself and nuclear employment can be portrayed in Grey Team wargames by examining the perceptions and actions of all players. Lastly, a section on non-state actors is included, where several suggestions for vignettes are provided to assist Grey Team wargame designers in representing nuclear ambitions, intentions, and possible employment issues associated with nuclear weapons in Asia. Though the focus of this effort is not intended to be primarily on Blue, the foundation of this analysis rests upon a framework (see Figure 3—1) that assumes primarily Blue perspectives.

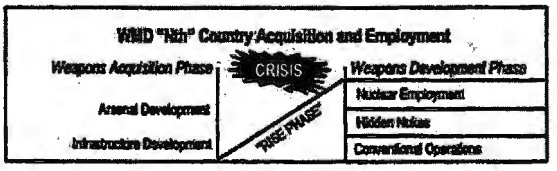

FIGURE 3—1

Scenarios and Grey Team Wargames: Overview

The late 1980s witnessed a structural shift away from the bipolar competition that dominated U.S. national security planning during the Cold War toward a multipolar security environment populated by a variety of actors ranging from single countries to regional coalitions and sub-national groups. U.S. military planners began to contend with an emerging international security environment dominated by the reemergence of nationalist and subnationalist conflicts. Thus the effective development and design of scenarios for Grey Team wargames to test U.S. capabilities to deal with, and respond to, future contingencies will become a more and more critical element of gaming, which itself will be a more important decision and policymaking tool in this new security environment.

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The chief innovation of these free-form wargames was that the number of competing teams was increased from two to four. In addition to Blue and Red teams, Purple, and Grey teams were added to represent U.S. allies and other concerned state or non-state actors, respectively. Some teams represented groups rather than unitary actors, developing decisionmaking structures that reflected internal competing interests. Further, there were two additional channels of communication available. In addition to the traditional political and military, an economic/trade and a humanitarian channel were incorporated (See Figure 3—2). The intent of these Grey Team wargames was to represent and stress the complexity of dealing with multiple actors in a crisis. Composition of the Grey, Purple, and Red teams was carefully developed to include personnel with in-depth experience and exposure to the specific countries or groups under consideration.

Games such as these are typically conducted as free-form wargames, where two or more teams represent different decisionmaking groups depicting nation states of various sizes and statures or even official representatives of subgroups within nations. Free-form wargames can be open games, characterized by unlimited player access to other players' resource information, or closed games, where limits are placed on player access to other teams' information. Depending on the level of game detail and the objectives of the game, players may take specific actions to augment their

knowledge about the other team's capabilities and intentions.

The decision to conduct closed, free-form wargames has important implications for scenario development, and can enhance the realism of the game. As mentioned above, lack of information available to the decisionmaker is a major constraint in crisis situations. Decisionmakers often face abnormal information flow during a crisis — the amount of information tends to increase dramatically as its relevance to the crisis diminishes. Decisionmakers may receive raw or near-raw data that may be contradictory and incomplete. Additionally, the media plays a significant role in shaping crisis information. In the Persian Gulf War, for example, CNN was providing live footage while U.S. intelligence agencies scrambled to assemble situation reports.

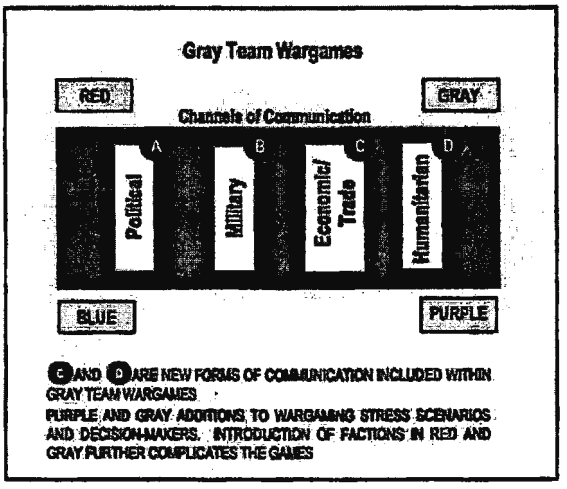

FIGURE 3—2

The function of scenarios in open, free form Grey Team wargames is to provide the initial starting position, for example a general situation statement which includes the policy positions, resources, and recent actions of the four teams, and to provide updates later in the game. Depending on the scope and complexity of the game a source book is often provided specifying each team's resources, capabilities and constraints. Teams are also provided with a set of game instructions that specify rules and procedures.

Potential scenarios may take a number of forms, from a brief situation statement to elaborate scripts requiring considerable technical support and data. In some cases, game players may participate in the development of scenarios, while in other cases they may have no advance knowledge of the game's context. Whatever form they take, the nature and scope of wargame scenarios directly influence the game's results, and must therefore be consistent with the situation being gamed.

Scenarios provide the means to structure the flow and content of information (the terms of reference for investigating the issues) to players during the course of a wargame. Flow can be controlled through the use of a time step, the length of which has a direct relationship to information flow. For example, as time is compressed, information available to decisionmakers becomes less complete, creating pressure to reach consensus and make decisions, thereby restricting the search for options. In international crises involving nuclear weapons, decisionmakers will often be forced to rely on their perceptions rather than hard, verified information. Not only must a decisionmaker rely on the accuracy of his own perceptions about his adversary, he must accurately judge opposing perceptions of his statements and actions.

Finally, it must be emphasized that Grey Team scenarios are fluid. That is to say, that in certain games, or phases of games, there may not be a Red Team. Or, multiple Grey Teams may be in dispute over territory. Conceivably, Purple may attack Grey, while in another game (or even possibly in the same one) Grey becomes Red but still does not threaten Blue interests enough for Blue to become directly involved. Further complications are manifested in the inclusion of non-state actors, or factions of Grey or Red that may or may not involve

Blue. Hence, these wargames offer a plethora of scenarios and situations which will place great stress on all decisionmakers.

The Nuclear Weapons Process

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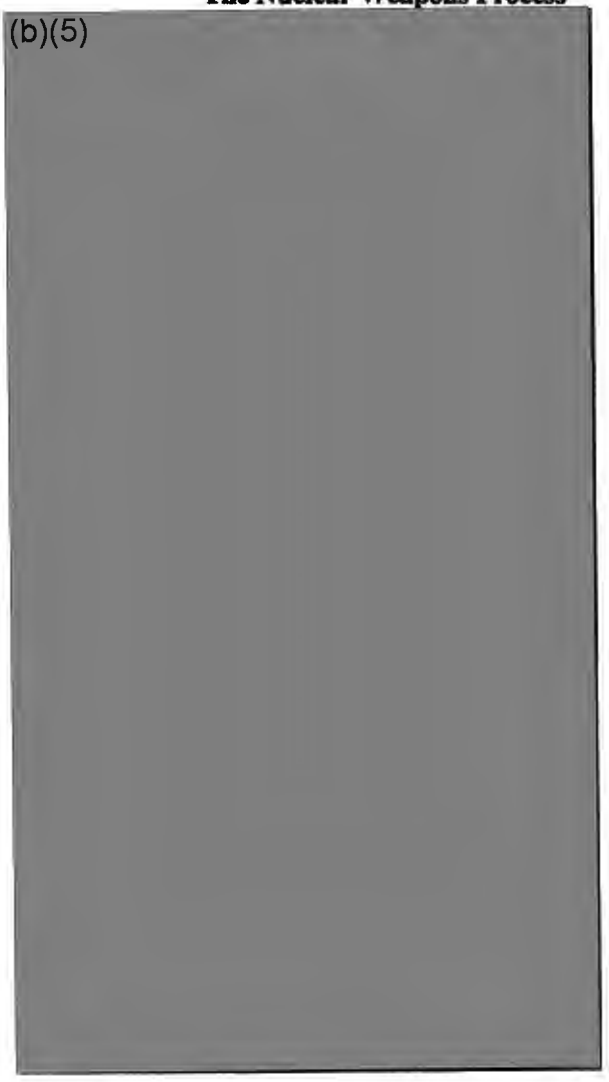

Acquisition and Development

Though opportunities for compellence exist with the initiation of a nuclear program, the continued building of the infrastructure and, ultimately, of a nuclear weapon makes a proliferator's threat of use more credible. This is to say that acquisition and development can be considered indicators of ambitions, intent, burgeoning capability, and even employment in a pre-crisis period, crisis, or in wartime. It makes sense, then, for decisionmakers to prepare for interdiction efforts at the earliest possible time, thereby increasing leverage. However, Grey Team wargamers will be challenged in their portrayal of these events by the numerous variant acquisition and development paths that may yield ambiguous signals not conducive to proactive decisions.

The costs of an overt or covert full-scale indigenous nuclear weapon program can be great depending on the priorities of the proliferator. Many potential nuclear-armed countries have limited resources, yet disproportionate amounts of those assets are devoted to nuclear weapon acquisition and development. For example, Iraq spent approximately $10 billion and relied on 7,000 predominantly Iraqi scientists and 13,000 technical support personnel in its quest for a nuclear weapon.

The scale of the DPRK's efforts clearly illustrates this contention as well. The Bank of Korea estimates that Pyongyang's economy has been contracting for four years: -4% in 1990, -5% in 1991, -8% in 1992, and -11% in 1993. In 1990, comparative figures for North and South Korea demonstrate the North's extremely weak economic situation. North and South Korean Gross Domestic Product were $1,064 and $5,569 for 1990, respectively; real growth was -4% and 9%; and total foreign trade was $4.6 billion and $134.9 billion. Thus, Pyongyang's enervated economy supports a nuclear infrastructure in part with defense expenditures estimated at 25% of its national output. This is an enormous percentage of a healthy economy, let alone as part of one that continues to shrink.

But other developing countries also have fiscally austere models to emulate. A 1993 report by the Russian Intelligence Service estimates that a nuclear weapons development effort only requires 1,300 engineers and 500 scientists, of whom 120 should be nuclear specialists. South Africa's nuclear program employed a total of 1,000 personnel (400 at any one time) and utilized one-half of one percent

of its defense budget, all within an economy one-third the size of Mexico's.

The opportunities for nuclear weapon system or major component acquisition have increased with the breakup of the Soviet Union. The strong central government there has given way to a less formidable group of fifteen, most of which are characterized, in part, by porous border and export controls. Greater numbers of suppliers exist, not only individuals and companies who want to make a profit, but an emerging second-tier of nuclear suppliers (such as India) that further complicate anti-proliferation efforts. Smuggling and intelligence collection continue to support nuclear ambitions.

For a proliferator to develop a nuclear weapon with a complete production capability, despite the fact that a wider range of choices are available to fulfill this objective, he must overcome several demanding tasks. A sufficient amount of concentrated and purified weapons-grade fissile material must be obtained or produced; high explosives technologies must be mastered; and a workable nuclear weapon design must be developed or obtained. It is important to include this information here because, as mentioned before, early indicators may be vague, even misleading. Enough accumulated information on the proliferator's acquisition cycle, however, may allow decisionmakers to act if the data can be linked back to one of these decisive elements of a nuclear program. (See Figure 3—3)

A nation can make a nuclear fission weapon from uranium by obtaining the required Highly Enriched Uranium (HEU). For weapons use, uranium must be enriched to at least a 90% concentration, from less than one percent, by an isotope separation technique. To constitute a nuclear weapon core, 25 kilograms of fissile uranium-235 (U_{235}) are required. Natural uranium ore, once obtained, must be milled for processing into uranium oxide concentrate ("yellowcake"). To continue with uranium enrichment, a conversion plant is required to purify the yellowcake and convert it to uranium hexafluoride (the material processed in the enrichment plant). An enrichment plant enriches the uranium hexafluoride gas into the isotope U_{235} and a capability for converting the

THE NUCLEAR WEAPONS PROCESS

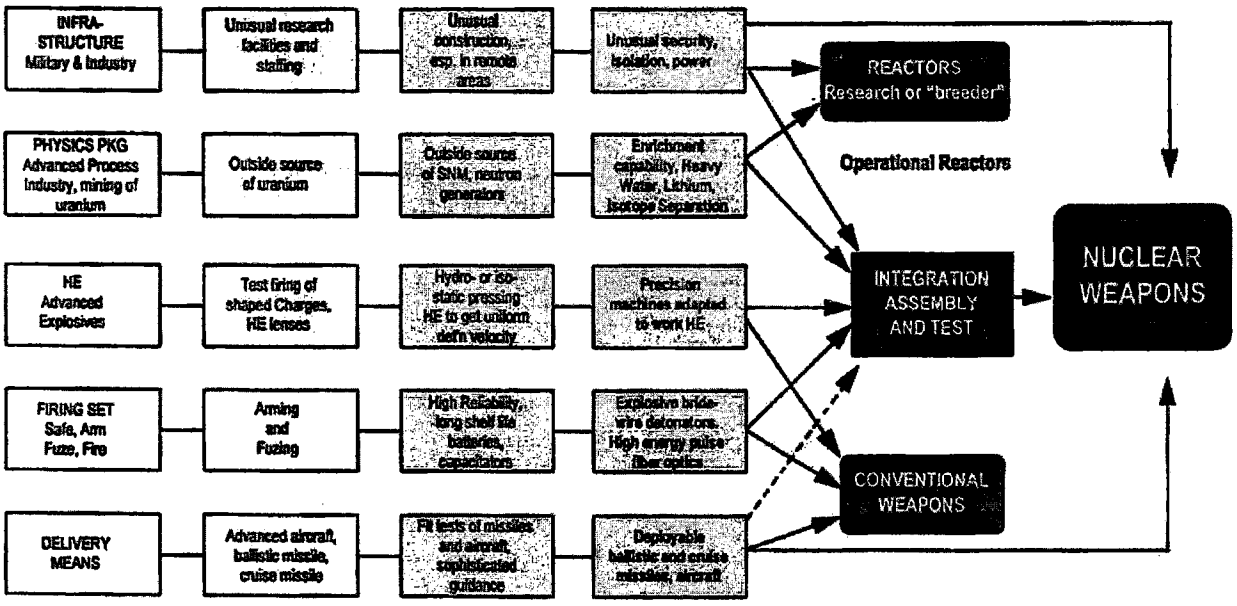

FIGURE 3—3

enriched uranium hexafluoride gas into solid uranium oxide or metal is required.

There are two primary commercial methods of enriching uranium: gaseous diffusion and gas centrifuge. Other methods include calutrons, aerodynamic techniques, electromagnetic separation, laser isotope, and chemical exchange. Gaseous diffusion requires significant amounts of energy, large facilities, and equipment and technology that is not readily available. The required scientific and technical resources may not be readily available either. By way of example, Argentina announced in 1983 that it had been building a gaseous diffusion plant with indigenous technology and that it had already produced a small quantity of enriched uranium. Iraq, on the other hand, eschewed this approach in 1987 due to technological limitations and the paucity of outside assistance in this area.

Gas centrifuge technology, though it suffers from many of the same restraints as gaseous diffusion, is attractive because there is abundant information about early designs, the technology is available, and the method is relatively simple. Although the technology is available, it has few uses, and thus constitutes an anomaly to export monitors. For example, once operating, a centrifuge plant needs precision engineering and metallurgical skills, i.e., maraging steel, high-quality computer numerically controlled machines, special oils and magnets, and large amounts of aluminum piping. Modern centrifuges could lead to smaller, more efficient and relatively inexpensive facilities, thereby making detection of the facility difficult. As the history of Pakistan's nuclear program demonstrates, although export monitoring may reveal the existence of a centrifuge program, it will rarely reveal conclusive information about research locations.

Calutrons are considered the easiest technology to be mastered, though the facilities are large, require massive amounts of electricity, and must be augmented by a substantial labor force. Aerodynamic separation has been developed only by a few countries (South Africa and Germany) and is more energy intensive than gaseous diffusion. Electromagnetic Isotope Separation (EMIS) was pursued by the Iraqis, and a 1984 Oak Ridge Laboratory study reported that 20 nations had research programs in EMIS technology. Initial forms of laser isotope separation are currently pursued by more than a dozen non-nuclear weapon states. Once the process and technologies are perfected, the facilities will be small and can achieve their task in only a few stages, making detection difficult. Chemical exchange (chemex) may become more popular since it is fairly easy technically, though at present there are no commercial-scale chemex facilities. France and Japan have built pilot plants.

Uranium enrichment is a complex and expensive process that requires construction of enrichment facilities that demand extensive design, the installation of large amounts of costly equipment, and trained operators. Uranium enrichment is not usually the path of choice for developing countries, many of whom may lack the infrastructure, financial resources, and personnel to complete the task, Admittedly, though, South Africa, Argentina, Brazil, India, and Pakistan have succeeded. Grey Team wargamers should be aware that enriched uranium can be used in nuclear power or research reactors ("light-water reactors"), though it is only enriched to 3%. Making the decisionmakers' job more difficult, it is plausible to have a legitimate, non-weapons-related program for enriching uranium.

A second way to a nuclear fission weapon is the plutonium path. A country needs 8 kilograms of plutonium (it does not exist naturally), which can be produced in a nuclear reactor by irradiating U_{238}. Plutonium-239 (Pu_{239}) is produced when a U_{238} atom absorbs a neutron. A reactor designed to maximize production (fueled by natural uranium), a large research reactor, or a power reactor that produces electricity are all usable in this endeavor, though reactor development is difficult (the specifics of design and engineering, to say

nothing of operation). Preparing uranium for Pu_{239} production involves obtaining, milling, and converting natural uranium into yellowcake, and purifying that into reactor-grade uranium dioxide. Following this, a fuel fabrication plant is required (fuel fabrication is a demanding metallurgical task), to manufacture the fuel elements, as is a capability to fabricate zircaloy or aluminum tubing. This is for uranium fuel in the form of uranium-filled tubes (fuel rods) which are placed in the reactor and partially transform into plutonium — an amalgamation of unused uranium and radioactive waste. Spent fuel rods are then taken to a reprocessing plant where the plutonium is extracted in a series of arduous chemical processing steps. Again, to be kept in mind by wargamers and decision makers alike, plutonium can be used as fuel in nuclear-power reactors, including those designed for civilian power reactors.

Though difficult, it is generally believed that obtaining fissile material through plutonium is easier than by enriching uranium. Much of the ease with which either option could be conducted, however, depends on that nation's resources and what it believes it can access, legally or illegally. For example, if a nation was willing to violate safeguard instruments and succumb to supplier cut-offs, a functional nuclear power reactor could bypass several steps in the Pu_{239} production process. (Some Pakistanis argue that the U.S. decision to cut off military and economic aid cutoff via the Pressler Amendment has, paradoxically, enhanced Islamabad's self-sufficiency and indigenous nuclear capabilities.) Pakistan has also demonstrated how indigenous development can be accomplished by obtaining the necessary equipment piecemeal from foreign sources through front companies, false documentation, and other furtive endeavors. ~~Both of these points may be useful in portraying South Korea, Taiwan, Japan, or Vietnam.~~

With a successful enrichment capability, a proliferator must master high explosives technologies that allow for a supercritical mass to be formed. Ideally, in pursuit of a fission weapon, the proliferator would prefer an implosion device that bombards the atoms of the fissile core until they split, in effect squeezing the core until supercriticality is achieved, thus creating neutrons. This releases energy and more splitting neutrons in a sustained chain reaction that, if fast enough, releases tremendous amounts of heat and energy. Another method exists, however. The gun assembly technique propels, by means of a conventional explosion, two subcritical masses of HEU (plutonium cannot be used) together, resulting in a supercritical mass. Iraq was working on this type of nuclear weapon design prior to *Desert Storm*. The high explosives necessary for core compression and gun assembly are available, but the capacitators and high-speed switches, or triggers, are not; beryllium, which reduces the size of the core, reflecting "tampers" which minimize the size requirements of the core, and sophisticated high compression weapon designs are not readily available; and the metallurgical skills required to manufacture components and final weapon fabrication are also difficult to obtain.

Nuclear Arsenal Development

While nuclear acquisition and development constitute a disingenuous form of employment, arsenal development is less so. Nuclear weapons by themselves can be intimidating, especially if an invasion of that country is envisioned. The expectation, however, that a nation can *deliver* nuclear weapons across its border is more menacing and destabilizing. In discussing a proliferator's development of nuclear weapons, the examples of Israel, South Africa, Pakistan, and possibly even North Korean are portentous: nuclear testing is not required to have confidence in a workable, reliable nuclear weapon, though there may be apprehension over yield. (There was the well publicized "double flash" over the South Atlantic in 1979, however.) In fact, considering the abundance of open information about nuclear weapon design, a state need only access requisite quantities of fissile material in order to

manufacture a 20-kiloton single stage fission bomb and be confident of its reliability. Arsenal development can also include Electromagnetic Pulse (EMP) and radiological weapons.

Proliferators might begin by constructing aerial bombs first since they would not have to be as light or as compact as missile warheads. Nor would they have to be as structurally sound as missile warheads in order to survive the aerodynamics of ballistic trajectory. Making this option more feasible and desirable for the proliferator, numerous types of military and civilian aircraft are possessed or available for use as delivery vehicles. Combat aircraft are reusable, allowing for several sorties, and can deliver a nuclear payload of several tons to targets thousands of kilometers away. In this way, they are more efficient than many of the short- and intermediate-range ballistic missiles found in the Third World.

Especially in the case of mobile targets, though, aircraft are preferred since intelligence and target acquisition updates are possible. Importantly, from a crisis management perspective, aircraft are recallable. Civilian aircraft, of course, would have the advantage of being non-threatening and, possibly, capable of landing at National Airport before detonating a device, a point which should not be lost on those who realize how close normal commerical flight paths come to major U.S. government buildings.

Combat aircraft have disadvantages, however. These aircraft must be kept operationally effective and with enough spare parts and maintenance personnel. Further, unless the proliferator plans to drop a nuclear bomb in broad daylight, these planes have to be operationally effective at nighttime. Pilot training must be very good, too; the aircraft may have to fly against enemy air defense networks and may be subjected to enemy counter-air and surface-to-air missile (SAM) operations when maneuverability and speed are not optimized.

Ballistic missiles are also effective delivery systems for a nuclear weapon and appear, for now, to be the means of choice among developing countries in general and emerging nuclear powers in particular. All the primary Asian countries that form the base of this study (Pakistan, India, China, North and South Korea) with the exception of Japan, produce ballistic missiles indigenously. (Japan has an active space program that could convert a booster into a ballistic missile if it chose, and Tokyo also produces cruise missiles.) It should be noted that Third World ballistic missile proliferation trends are towards missiles with greater range, lethality, and sophistication (short-range ballistic missile [SRBM] extension is popular — but not the only way).

Besides symbolizing prestige and power, the ballistic missile offers the proliferator a means to deter, coerce, fight, and terrorize. Ballistic missiles, as Saddam attempted in *Desert Storm*, could also be used to involve another country, such as Israel, in an ongoing war. Further, the prospect of hidden ballistic missiles with nuclear weapons erodes confidence in intra-war deterrence, escalation control/dominance, and may affect war termination by allowing the proliferator to terminate hostilities on more favorable terms. Though air defenses have improved somewhat against aircraft, a key advantage of the ballistic missile is that it is assured of penetration. They can hit fixed front-line targets, strategic targets in the rear and cities, given the proximity of cities and borders in South and Northeast Asia. As ranges improve, they will be able to be based further inland, bolstering survivability and making preemptive strikes more difficult than they already are (given missile mobility). The command and control aspects of ballistic missiles are another advantage. While it is possible that an aircraft's pilot disobeys his commander, such an eventuality is obviously impossible with a ballistic missile. Further, since the accuracies of Third World ballistic missiles are not great, it is an ideal delivery system for weapons that do not require precision in order to be effective — nuclear

weapons. China's sale of as many as 60 CSS-2s to Saudi Arabia in 1988 illustrates this point. Though capable of being fired 2,500 kilometers away, its accuracy leaves much to be desired (it has a circular error probable [CEP] of 2,000 meters), leading many analysts to the conclusion that nuclear weapons would be the only suitable warhead for it if used.

Space launch vehicles (SLVs) offer another potential means for the delivery of nuclear weapons — once they are converted to ballistic missiles. Of the countries listed above, only North Korea does not have a SLV program. (South Korea probably has, or will soon have, a SLV due to its IRBM program and desires for orbiting a satellite.) Though ballistic missiles are often transformed into SLVs, the reverse is straightforward and fairly rudimentary. The major difference between the two is in the types of payload, trajectory, and guidance and control. Covert conversion would be particularly attractive, since SLV programs are generally viewed with less concern than ballistic missiles. This way, foreign technical assistance may be more forthcoming and technological restrictions, such as the Missile Technology Control Regime, may be more easily circumvented. Additionally, neighbors may not feel the need to respond with comparable missile programs if they suspect a SLV program instead of one designed to produce ballistic missiles.

Cruise missiles are becoming more popular, too, especially in the wake of the Persian Gulf War and subsequent *Tomahawk* cruise missile (TLAM-C) attacks against Iraqi nuclear facilities on 17 January 1991. There are at least four types of cruise missiles: strategic cruise missiles armed with nuclear weapons (ALCMs and TLAM-N); anti-ship cruise missiles (*Harpoon*, *Silkworm*, *Styx*, *Exocet*); conventionally armed ground attack cruise missiles (TLAM-C, SLAM); and harassment drones equipped with specialized sensors (*Harpy*, KDH). U.S. and Russian strategic cruise missiles can deliver payloads out to 3,000 km or more, though in order to attain those ranges sophisticated guidance systems and support infrastructures are required for mapping and targeting. Third World cruise missiles are of lesser range (under 150 km), though there are some sixty-six cruise missile buyers.

Cruise missiles, available from a total of seven suppliers (China, Russia, U.S., Britain, France, Italy, and Israel), involve less sophisticated technology than ballistic missiles. Cruise missiles are a versatile delivery platform capable of being fired from land (including trucks), sea (small ships or submarines), or air. Indeed, their size and versatility are two primary attributes. Other advantages include high accuracies (to be increased with the accessibility of Global Positioning System capability), air defense evasion (maneuverability), and they can fly at very low altitudes.

Most Third World cruise missiles are used in anti-shipping roles, possibly counter-air roles, and for coastal defense with conventional high-explosive warheads. Cruise missiles can also be armed with nuclear, chemical, and biological warheads, as well as cluster munitions and fuel-air explosives (FAEs). (b)(5)

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The proliferator's arsenal could also include developed, purchased, or stolen artillery shells. The latter two may be more realistic since the technical ability to place the physics package in an artillery shell is demanding. Iraq was pursuing this arsenal development option. Regardless, U.S. and Soviet nuclear artillery shells have yields of 5-10 kilotons. While this is a significant size, the battlefield application of an artillery shell may be determined by the range of its delivery system. For shorter

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In the main, with development of a nuclear weapon capability becoming easier, accurate portrayal of such activities becomes more important to game players, since obscure or redundant information may hinder early action. Today, more information is available on the early stages of the U.S. nuclear program, nuclear technology in general (the result of civil nuclear programs), the design and construction of facilities, what pitfalls exist, and how to avoid them. Further, there are multiple sources for requisite materials and equipment, including data bases, modems, and computers. Lastly, educational opportunities in this area have increased significantly, generally increasing the capability of various Third World countries to support domestic nuclear programs. While producing enough fissile material remains the key obstacle in the nuclear weapons acquisition process, it is possible to succeed at acquiring and developing all the required components and materials with a dedicated effort.

Delivery systems for a nuclear weapon do not appear to be an impediment since they already exist in abundance throughout the Third World. They range from ballistic and cruise missiles to aircraft, artillery, mines, boats, trucks, and other surreptitious delivery means. Intercontinental ballistic missiles are a limitation, to be sure, but in the future, SLV programs of various nations will offer opportunities for longer-range delivery with adjustments to payload, trajectory, and guidance and control. Grey Team wargames can offer a multitude of challenging scenarios to decision makers, stressing the timeliness of a response (i.e., a ballistic missile attack on U.S. troops or allies), or the ability of those in charge to retain their composure in the frenetic atmosphere of nuclear or radiological blackmail (i.e., clandestine placement of a nuclear weapon in major U.S. or allied city).

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China's motivations for its early nuclear testing (China first tested a fission weapon in 1964, a fusion weapon in 1966, and performed a thermonuclear test in 1967) bear this out. Early Chinese motivations, formed prior to the Sino-Soviet split, reflected, in part, China's desire to become a nuclear power and demonstrate that the PRC was an autonomous power independent of the Soviet nuclear umbrella. Reflecting this renewed confidence, China shortly thereafter intensified its efforts to establish itself as leader of the non-aligned movement. Though China did not achieve superpower status on par with the Soviet Union and the United States, it did become a more significant regional power.

For a more recent illustration, on 20 May 1992, India successfully launched its Augmented Space Launch Vehicle (ASLV) and sent a 66 pound scientific satellite into low earth orbit. This sent a clear signal to China; as implied above, if a SLV can carry a satellite into orbit, it can also be used to carry a nuclear warhead anywhere in China. Further, India's "remote sensing" satellite program, of which the 66 pound satellite was a part, was, in effect, another step towards a reconnaissance and targeting capability.

The following day, China conducted a one-megaton nuclear test (its largest test ever) at its Lop Nor testing facility in western China while the Indian President was in Beijing. This, too, was a clear scientific and technological signal, as well as an affirmation by Beijing of which country is the dominant regional power. It is at least arguable that in this case that Beijing was not intimidated by long-range weaponry and chose to carry out its test at Lop Nor to send back a stronger signal to New Delhi. In turn, and not to be out-done by China, India conducted another flight test of its 2,500 kilometer *Agni* intermediate-range ballistic missile (IRBM) — a system that can cover targets in eastern China, southern Chinese provinces, and Beijing itself.

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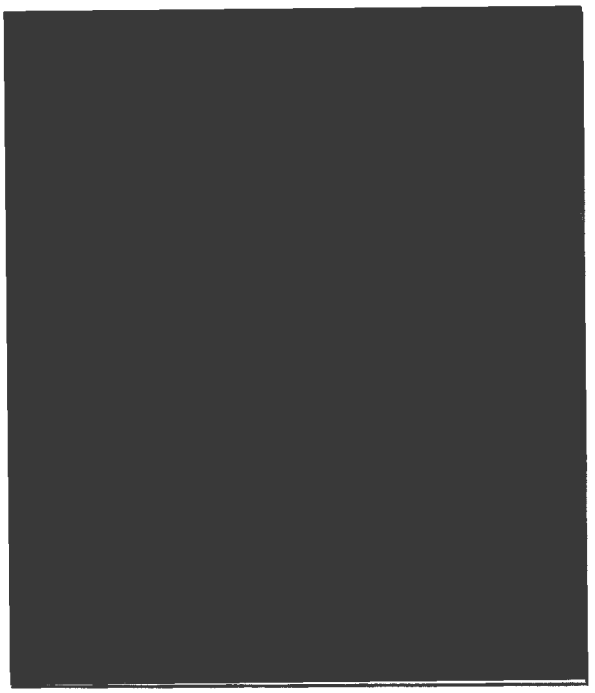
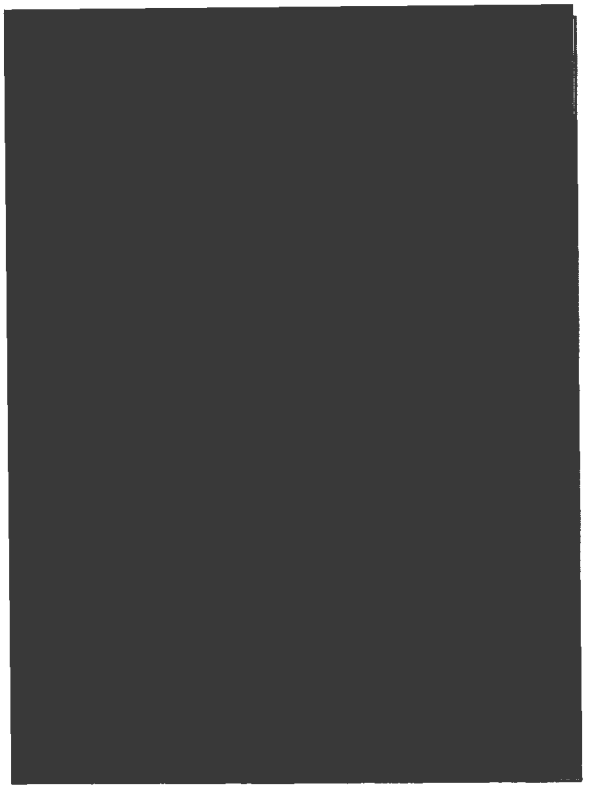
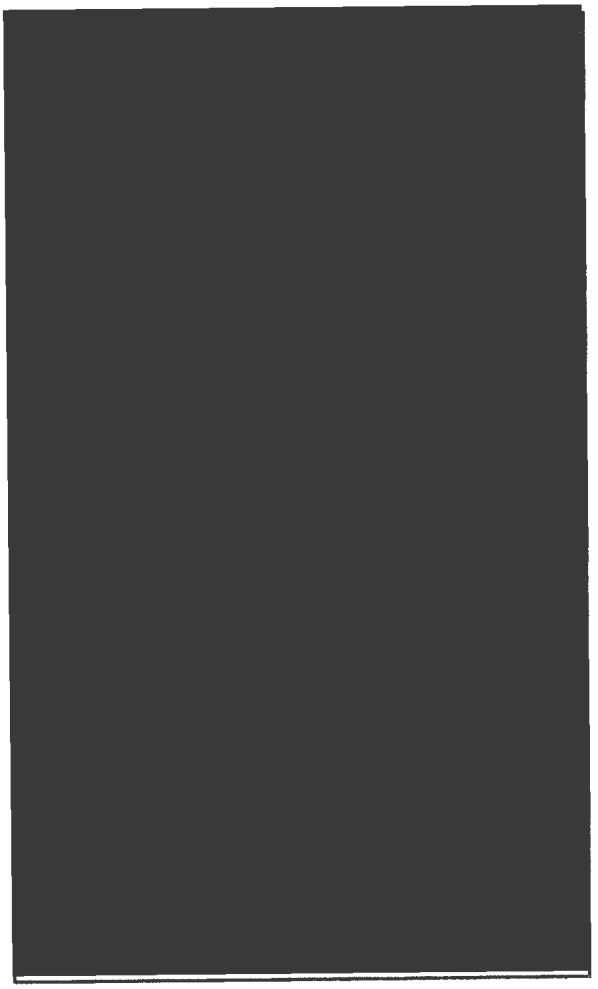


there are "virtual" arsenals; arsenals that would take literally hours or days to develop. The infrastructures of India, Pakistan, and possibly North Korea fit into this category. Third, Japan, South Korea, and Taiwan constitute "near-virtual" arsenals since many months would be required to develop nuclear weapons.

Currently, the quintessential examples of infrastructures that are poised to be surged are those of India and Pakistan, where nuclear weaponization is virtually complete, save for final weapon assembly. In the spring 1990 crisis between the two, deliverable nuclear weapons were thought by some to be a "screwdriver's turn" away from being fully assembled and deliverable. (The U.S. response was to dispatch Deputy National Security Advisor Robert Gates to New Delhi and Islamabad to defuse the crisis.)

The "Rise" Phase





Nuclear infrastructures of declared or emerging nuclear powers in Asia can be characterized in three ways. First, as in the case of China, the infrastructure can be fully developed. Second,

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Weapons of Mass Destruction and Non-State Actors

The prospect of an individual or small group acquiring or developing a nuclear device has been considered since the development of the

Hiroshima and Nagasaki bombs. Nuclear weapons since their inception have been considered "terror" weapons in a basic sense — the concept of mutual assured destruction was based on a "balance of terror" where the cities of an aggressor would be destroyed in a devastating retaliatory strike. The problem of terrorists employing a nuclear weapon to inflict the same sort of damage confronts the target country with the dilemma of not having a defined target against which it can retaliate. If subnational groups were to acquire WMD capabilities, they would instantly gain the ability to negotiate with the most powerful nations in the world through the capability to inflict thousands or tens of thousands of casualties. WMD would enable terrorists to make the leap from killing hundreds in a single blow (such as bombing a 747 jetliner) to crippling the industrial capacity of a nation.

There are a number of potential non-state actors that could be participants in a WMD crisis. These range from internal factions which gain control of WMD for their own objectives (for example, dissident military officers acquiring control of nuclear armed ICBMs) to independent criminal elements who have seized or developed biological agents. The increase in availability of sophisticated weapons (particularly nuclear) technology over the past five years has made the prospect of non-state actor use of WMD more plausible. Consider, for example, the recent arrest of three Poles in the German town of Bochum charged with attempting to sell a quantity of weapons-grade Uranium-235, Uranium-238, and Cesium-137. Unfortunately, this was not an isolated incident — illicit nuclear material has been seized in Germany, Austria, Switzerland, and Bulgaria. Furthermore, nuclear material is being seized in significant quantities. In the Swiss seizure, 30 kilograms of uranium were recovered, a sobering thought when one considers that 25 kilograms of fissile Uranium-235 constitutes a nuclear weapon core.

Much of this material is making its way from the former Soviet Union through Eastern Europe to the West, and is then sold by criminal elements to the highest bidder. *Intersec* (July/August 1993) reported that a well organized smuggling ring of former KGB and Soviet Army officers were responsible for stealing Plutonium-239 from a civil nuclear processing facility. Another report indicates that a ring of Russians and Bulgarians had hidden 140 kilograms of plutonium hidden in 120 boxes in the Sofia area, where it was to be moved through the port of Varna to customers in the Middle East. While it is clear that the primary market for illicit nuclear experts lies among nations in the developing world attempting to acquire a nuclear capability, the economics of smuggling dictate that any organization willing to pay the right price has the potential to develop the means to manufacture a nuclear device.

Terrorists cannot attempt to defeat existing governments with traditional, conventional methods of warfare and instead will use violence and the threat of escalated violence to force concessions. The terrorist's objective is psychological rather than physical, and is calculated to shock. Consequently, terrorists often seek to inflict the maximum amount of impact on the general population for two reasons: to undercut the impression of government power and to apply additional indirect pressure on the government through a

fearful populace. It is for these reasons that modern, developed democratic societies often find themselves the targets of terrorist acts. WMDs provide terrorists with an unparalleled potential to inflict the type of indiscriminate damage, death, and destruction wrought by random conventional terror bombings. Because the nature of WMDs are so closely aligned with the *modus operandi* of terrorism, the threat of terrorist acquisition of a WMD must be taken seriously.

There have been several instances of terrorist groups conducting actions that have indicated an interest in WMD. Some prominent examples include:

- The German Red Army Faction has been found to have been in possession of "maps and drawings of nuclear storage sites and security patrols."
- Terrorists have temporarily occupied nuclear plants while still under construction in Spain and Argentina.
- During BG James Dozier's kidnapping, the Italian Red Brigades repeatedly interrogated the General as to the location of U.S. nuclear weapons in Europe.
- In October, 1981, protestors claimed to have taken infected soil from the Hrebidean Island of Gruinard and placed it at the chemical defense establishment at Porton Down. The island has been closed to the public since germ warfare experiments on sheep were conducted there in 1941.
- A terrorist plot to use CW agents in an attack on a U.S. nuclear storage site in Europe was uncovered by U.S. authorities in the early 1980s.
- In addition, there have been numerous hoax calls referring to weapons of mass destruction in several cities world-wide.

Despite this level of interest, for reasons that remain unclear, there have been no major instances of WMD terrorism to date. Paul Leventhal and Yonah Alexander noted in 1986 that terrorists have been constrained from "going nuclear" by a lack of technical capability, a lack of motivation, or a combination of the two. As recent smuggling activity in the former Soviet Union and Eastern Europe demonstrates, however, the required materials and technical capability are more available now than ever before. The following sections examine some of the considerations associated with non-state actor acquisition of nuclear devices, some the motivations of groups contemplating the step to nuclear terrorism, and other aspects of potential weapon employment.

Non-State Actor WMD Acquisition

There are essentially three ways a terrorist organization could acquire a nuclear weapon: theft, purchase, or development. Theft of a nuclear device is an attractive option to well-motivated terrorist organizations for several reasons. First, the organization would not have to acquire the many components and the technical expertise required to build a weapon. Each step in the component acquisition process is subject to detection and interdiction by authorities. Second, while an operation to seize a nuclear weapon would be expensive in terms of both time and money, and would require excellent intelligence information, it would probably be less costly than purchasing one on the black market. Finally, the reliability of a stolen weapon would be much higher than that of a "homemade" device, and the destructive power of the weapon could be more accurately estimated. A stolen weapon would probably be smaller and more transportable, particularly if it was broken down into its critical components.

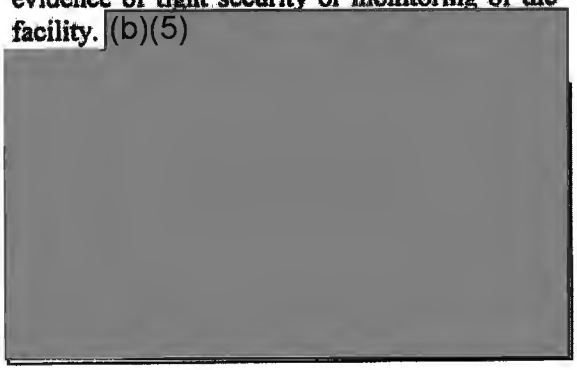
Stealing nuclear weapons is a challenging proposition since they are heavily guarded and subject to advanced security measures. Nuclear weapons security has always been a high priority, and the latest generations of weapons are equipped with self-deactivation devices

should they be handled by unauthorized personnel. Despite these precautions, nuclear weapons security procedures are constantly reviewed, and recent Department of Energy reports have emphasized that the skill of terrorist organizations in bypassing elaborate security systems should not be underestimated. While the security of Western nuclear weapons is high, there has been a great deal of concern regarding weapons security in the former Soviet Union. Published reports have stated that in 1991 there were at least 27,000 nuclear warheads in numerous locations across the vast territory that makes up the FSU. Frequent press reports of sophisticated conventional systems falling into the hands of nationalist groups have heightened these concerns. In a particularly disturbing incident it was reported that in a 1989 attack on a nuclear weapons storage site in Azerbaijan dissidents were within reach of weapons storage shelters before they were stopped.

The rapid withdrawal of forces from the former Warsaw Pact countries in Eastern Europe has compounded problems of accounting for, storing, and securing the wide range of nuclear systems that made up the equipment of the Red Army. Smaller systems deployed with a range of units could pose a particularly attractive target to terrorist organizations. Of particular concern are Special Atomic Demolition Mines (SADMs) and nuclear artillery shells. SADMs were developed for employment by Soviet special operations forces, known as *Spetsnaz*. While the numbers of SADMs developed for possible use by *Spetsnaz* forces is unclear, former Red Army intelligence personnel have written that these weapons were designed to have between a 0.8 and 2.0 kiloton yield, and were man-portable. Research suggests that the Soviets investigated applying "boosted fission" technology to their SADMs, which would provide 98% of the yield of fusion weapons.

The thousands of nuclear artillery shells deployed with Soviet artillery units pose an even greater security threat than SADMs by virtue of their numbers. The smallest Soviet nuclear artillery shell, the 150mm, weighs approximately 94 lbs. (42.7 kg). Comparable U.S. weapons, for example the Mk-33 or W79 projectiles, have an explosive yield of between five and ten kilotons and are between 37 and 43 inches long. The size and weight of these projectiles can be reduced further by removing the jacket or shell casing if the containment potential required to initiate the nuclear reaction can be maintained through other means (for example by burying the device). Terrorist weapon acquisition would not have to be limited to these smaller systems, however. Tactical ballistic missiles, intermediate range mobile systems, and cruise missiles are all equipped with warheads small enough to be easily concealed in a vehicle. A U.S. W80-1 cruise missile warhead, for example, weighs only 290 pounds, is 31 inches long with a diameter of 12 inches. The yield of this warhead is between 150 and 170 kilotons.

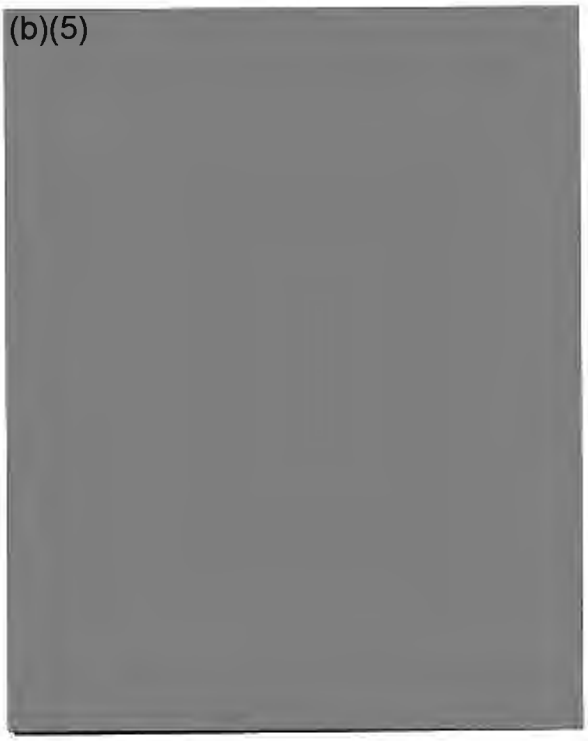
Purchasing a weapon would eliminate the risk of attacking or breaking into a storage site, and would lessen the requirements for intelligence information on security capabilities and procedures. It is also conceivable that the purchase of a weapon could be covered by manipulating the inventory — apparently a risk in the former Soviet Union. Western observers visiting a storage site near Smolensk in 1993 indicated that the facility was overcrowded with surplus nuclear weapons. Many weapons withdrawn from former Warsaw Pact countries and Soviet Republics were piled randomly throughout the facility. There was little evidence of tight security or monitoring of the facility. (b)(5)



Development of a nuclear device by a subnational group has been considered feasible by analysts for many years. The key variables have been funding, technological expertise, and access to critical materials. As discussed above, the availability of critical nuclear material required to construct a nuclear weapon is increasing at an alarming rate. The availability of the requisite technical expertise is also increasing. Not only has the number of unemployed physicists and weapons technicians in the FSU grown, but there is also an increasing number of technical personnel who have left Western weapons programs. Information related to the production of nuclear weapons is also increasingly available in the public domain. The Office of Technology Assessment (OTA) estimated that a group with the required technical capability and fissionable material could manufacture a "crude" nuclear device capable of an explosive yield of between 100 and 1000 tons of TNT. A "homemade" weapon would also eliminate problems terrorists may encounter with permissive action links (PALs), devices designed to prevent unauthorized detonation of nuclear weapons.

A potential "low tech" alternative to crude fission weapons entails use of conventional munitions to detonate a quantity of nuclear material. This type of "dirty bomb" would potentially disperse radioactive material over a wide area and cause serious decontamination problems. Such a weapon could be used against a military or commercial target, and would inhibit use of the area for the time required for cleanup. Combined with a large conventional explosive this tactic may even simulate a small nuclear explosion and raise fears of future nuclear terrorism activity.

Constructing a nuclear weapon presents terrorist groups with a number of technical challenges. Handling nuclear material is a risky proposition requiring extensive technical facilities. Even enriched uranium, which is less volatile than the enriched plutonium used in advanced nuclear devices, poses extreme health risks when handled outside laboratory conditions. Although a conventional explosive could be used to trigger a fission weapon, it would have to be contained to generate the force necessary to initiate the nuclear reaction. Without elaborate placement high strength casing has to be developed to contain the explosion. Highly specialized machine tools are also required to build and assemble bomb components. Many of these technical limitations could be overcome, however, if the group was state-sponsored and had access to advanced facilities to produce some weapon components. State sponsorship would also afford terrorists a safe haven in which the components could be assembled free from risk of detection.



Non-State Actor Employment

Assuming that a weapon could be built or obtained, the terrorist organization would have to be motivated to use the device or threaten use. Target selection would be directly tied to the motivation and capabilities of the group planning the attack. Targeting by an organized terrorist group tends to emphasize the organization's objectives or the vulnerability of

their adversaries. A common thread to all targeting decisions, however, would be the calculation of the potential propaganda value of terrorist use of a nuclear device. Any threatened or actual use of a nuclear or other WMD device would have to be designed to influence a target audience. An inherent danger in the use of a nuclear weapon would be large numbers of civilian casualties which could result in mass revulsion in the very population the group was attempting to influence

Nuclear threats would not be made without extensive planning by established terrorist organizations. A RAND study noted that "Terrorists, like other blackmailers, are reluctant to mount threats that they are not prepared to execute if their demands are denied." The credibility of future threats and the organization itself are tied to a willingness to conduct the threatened action. There are several cases where terrorist organizations have executed prominent hostages (former Italian Prime Minister Aldo Moro and German industrialist Hans Martin Schlyer for example) despite potential public backlash, to maintain their credibility. Credibility is an important consideration when analyzing the validity of WMD threats. A group appearing for the first time has little to lose in staging a hoax while an established terrorist organization could potentially undermine all of the operations staged in the past. This may be a primary factor behind the lack of established group WMD threats to date — even when a group may have access to WMD there has been an unwillingness to go through with the threat.

The decision to employ a WMD will be driven by two primary factors — the group's motivations and operational capabilities. These factors will also influence how the weapon is employed — the means of delivery, the target selected, and propaganda or other communications with authorities related to the incident. The following sections will discuss these factors to assist in developing non-state actor employment scenarios for Grey Team wargames.

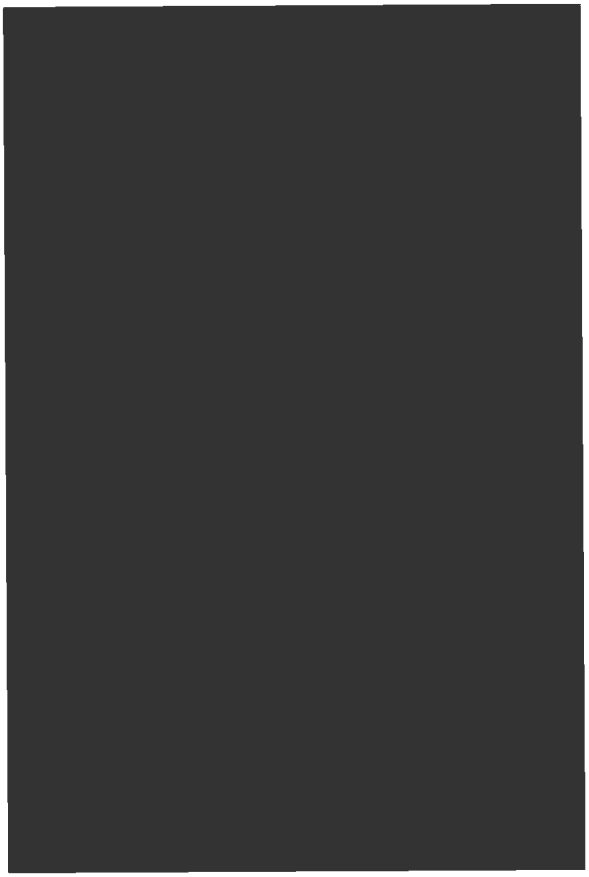
Motivation

In order to evaluate the WMD potential of a terrorist group, the motivations that shape the group's actions and reactions must be evaluated and understood. Terrorism is not a end in itself — it is a tactic to accomplish a larger goal such as overthrowing a government or gaining political autonomy or even addressing more narrowly defined issues. Prior to undertaking the major operational step of acquiring WMD, terrorist groups must be highly motivated and must have identified how use or threatened use will support their overall objectives. To accurately "play" a terrorist group, the team representing the non-state actor must be fully conversant in the group's motivations, and these motivations must be conveyed to the other players in a manner consistent with the group's operational profile.

Group motivations are as diverse as terrorist groups and range from broad and all encompassing to situation specific. Past motivations have included: acquiring money to finance further operations; achieving or avoiding political or social change; settling political, social, or ethnic grievances; supporting specific political causes; or gaining the release of fellow terrorists. The specific objectives of the group may shift within a broader context. For example, political secessionist groups may undertake attacks to gain the freedom of imprisoned comrades. Even while situation-dependent motivations may drive a specific tactical operation, terrorists will not undertake operations that they view as counterproductive to their general objectives.

Before even initiating a program that could lead to a nuclear attack, the terrorist group must have a vision of how employment of a nuclear device will further the group's objectives. Use of a nuclear device may underscore one of the group's primary issues, for example opposition to U.S. "imperialism" or Western "hegemony" in general. A nuclear detonation or widespread contamination of an area could be viewed as a means to underscore the dangers of nuclear

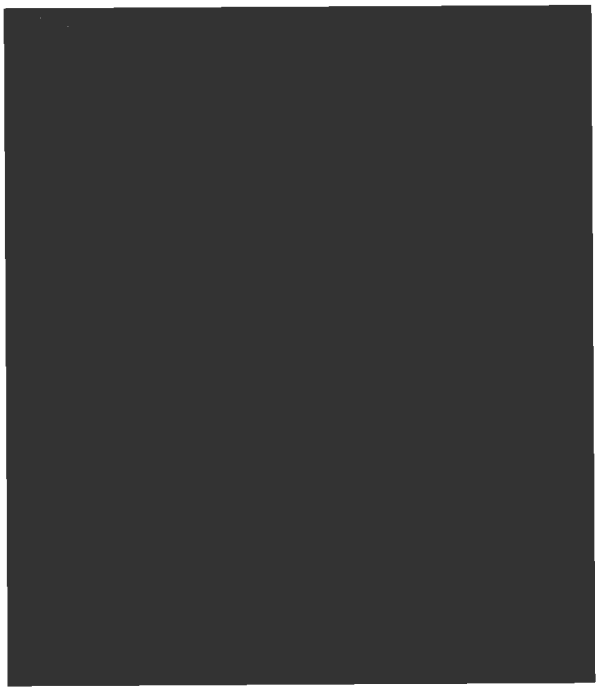
power and sway public opinion against new facilities. In other cases, a nuclear weapon may be seen as the only means to destroy a highly symbolic target, for example a U.S. military base on foreign soil. Whatever the objective, the group contemplating use of a WMD has three employment options: to threaten use without initiating the device (which as noted above could erode the credibility of the group); to employ the device in an unpopulated area as a "demonstration shot"; or to select a target and proceed with a full scale event. For a group to have the motivation to acquire a WMD they must first identify how employment through one of these three means will further their objectives.



Based on past terrorist actions, those groups with extermination of specific ethnic groups as a primary motivation or those groups that are oriented against major military powers will have the highest motivation to use WMD. Motivation will be further fanned by access to sophisticated media systems that could serve as a conduit to the target population. Because the overall objective of politically motivated terrorist organizations is dissemination of their message, employment of a WMD in a demonstration mode would be tied closely to access to the media. Newly formed terrorist organizations or splinter cells from existing groups may have extreme motivations and be less concerned with long term credibility issues.

Operational Capability

Employment of WMD, like other terrorist attacks, is dependent on the capability of the group to conduct the tactical activities necessary to execute an attack successfully. Because there are no historic examples of major employment of WMD by terrorist organizations, a review of the patterns of group behavior provides the best indicators of how a group may employ WMD. Those groups that have demonstrated high proficiency in the past, and have a proven record of executing difficult attacks successfully would have a higher degree of confidence in their ability to carry out a successful attack. Target selection be will closely tied to the capability of the group to execute the operation with a high probability of success.



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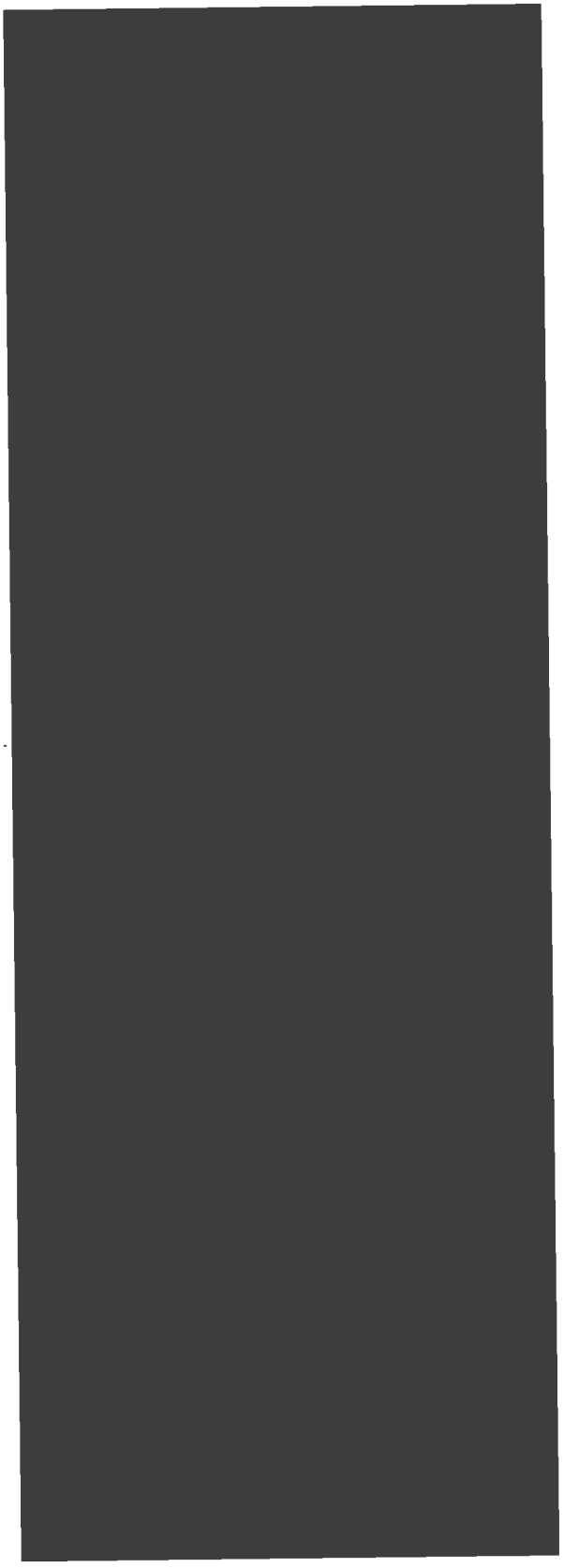
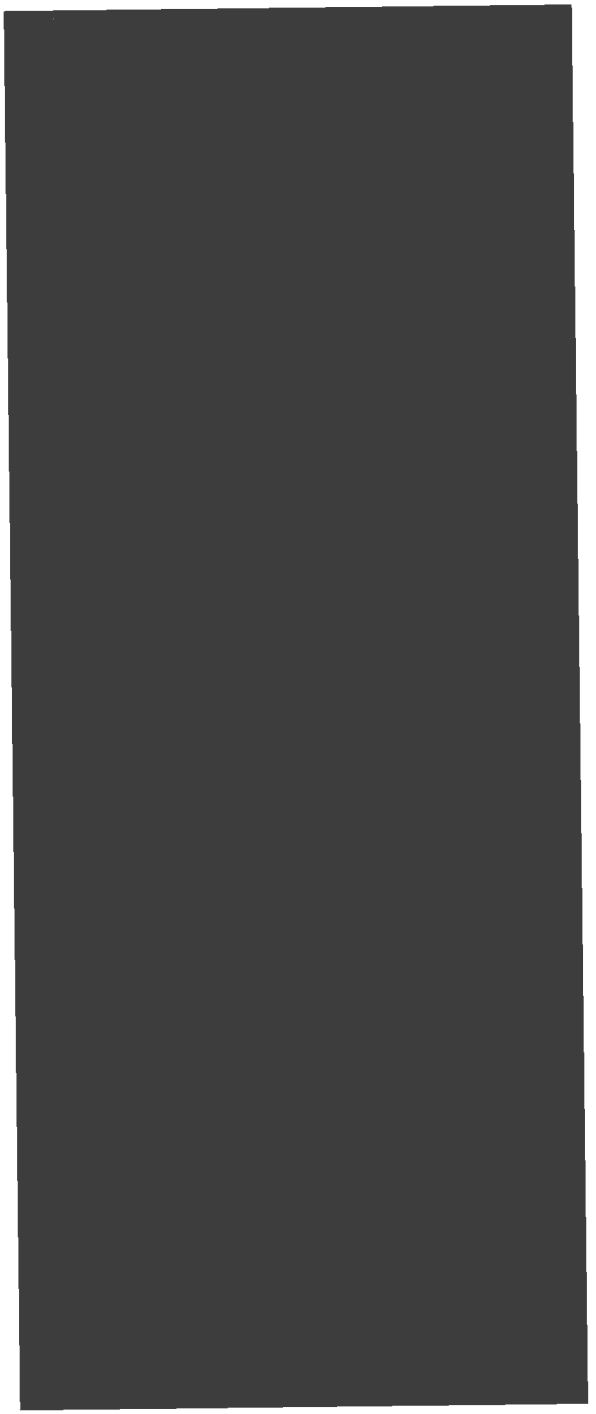




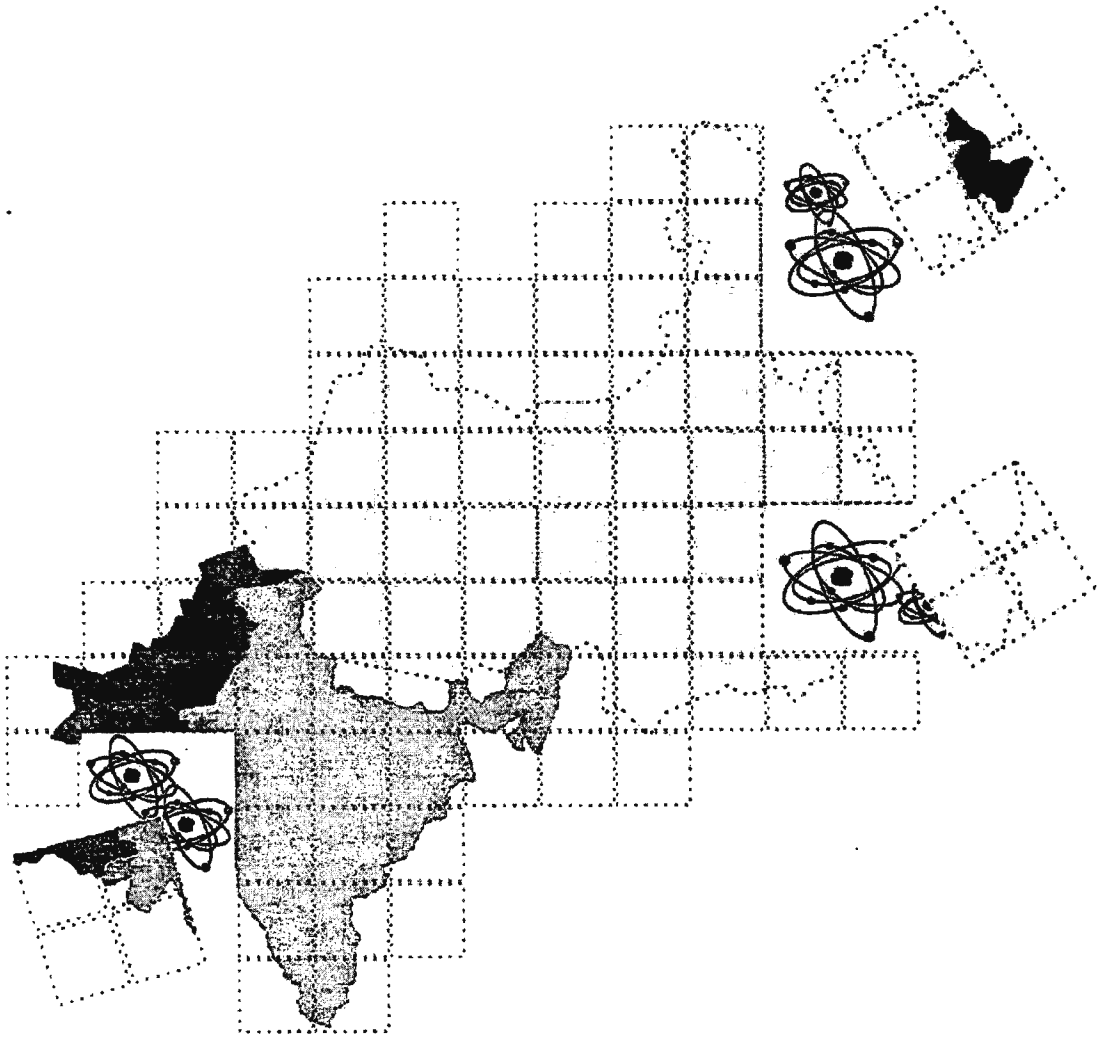
While Grey Team wargames cannot solve all of the problems associated with nuclear employment in a regional conflict, they can begin to organize the wealth of information regarding the subject and package it in ways that explore or enhance Asian nuclear proliferation crisis management. As new

information is gained, wargamers can manipulate a credible scenario focused on the present or five, ten, or even fifteen years in the future. (b)(5)

Throughout all of these time-phases and scenarios, factional or clandestine employment by terrorists would be a prevalent concern.

For the foreseeable future, nuclear proliferation and the means for delivery will constitute a primary threat to national and international security. Decision makers must face an increasing number of countries in unstable regions where nuclear proliferation is occurring and accelerating. These countries have, for the most part, idiosyncratic regional strategies and goals, differing motivations for initiating the nuclear weapons process, and varying frameworks for contemplating nuclear weapon capabilities and employment. Additionally, different concepts of America's and their places in the world result in policies by some that are amenable to the U.S., and by others, inimical. Importantly, non-state actors such as terrorist groups could be the user. With the impracticality and impossibility of developing just one wargame and model to practice decision maker response options, the Grey Team format is well-suited for nuclear proliferation wargames in Asia.

CHAPTER 3
RESPONDING TO THE BIOLOGICAL WEAPONS THREAT



Introduction

History has shown that in war more casualties have resulted from disease than from combat. Although those felled by disease have not necessarily been the victims of attack by biological weapons, this statistic highlights the potential danger of such weapons. It is the horror of death by disease combined with the relatively small quantities needed to inflict major casualties that make biological weapons such vile instruments of war. If effectively disseminated, ten grams of anthrax will have the equivalent impact of a ton of chemical nerve agent.

The threat of biological weapons (BW) is not new, but it is growing both in terms of the number of countries pursuing biological weapons programs and the sophistication of the potential weapons themselves. Entry costs for beginning a BW program have declined, and some commentators would argue that the norm against the use of biological weapons has eroded. Biological weapons are relatively easy to produce (at least compared to nuclear weapons), and an illicit program is relatively easy to conceal. At the same time, the impact of biological weapons is potentially strategic in scope, equivalent in the eyes of many to the impact of nuclear weapons. In the future, therefore, the United States might confront a dangerous BW threat to its allies, to the forces it might want to use overseas to defend vital interests, and, ultimately, to the territory of the United States itself.

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Biological Agents

A biological agent is a microorganism, toxin, or agent of biological origin which causes disease in man, animals, or plants, or which causes deterioration of a material. Most agents are highly infectious if inhaled, and pneumonic diseases are usually the most lethal. In the case of microorganisms, biological weapons are different than other weapons in the sense that the payload, i.e., the agent, can reproduce after delivery. Some analysts have likened BW to neutron weapons in that they are only effective against living things, not structures or other inanimate objects.

An infectious organism must have several characteristics to make it a potentially effective biological weapon. These include infectivity, virulence, environmental persistence, a capability for being grown in quantity, stability under conditions of storage and dispersal, and, ideally, resistance to medical countermeasures.

Potential biological agents can be divided into four categories:

- Naturally occurring, unmodified infectious agents (i.e., pathogenic organisms), usually bacterial agents or viruses. Biological agents that have been developed include the causative agents for anthrax, tularemia, Q fever, and Venezuelan equine encephalitis

among others. Plant pathogens such as stem rust and wheat rust have also been developed.

- Toxins, or poisonous substances made by living things such as snake venom. Unlike infectious agents, toxins cannot reproduce, but neither do they require long incubation periods as some infectious agents do. Toxins can cause incapacitation or death within minutes or hours. As a consequence, toxins have been explored mainly for battlefield tactical use where rapid action is required.

- Modified infectious agents, in which the molecular structures have been in some way rearranged — for example, through genetic engineering — in order to enhance certain characteristics of the agent. This issue is discussed in greater detail below.

- Bioregulators, which are the natural body chemicals that regulate a range of body functions as well as psychological states. The concern is that the creation of even a small imbalance in such substances could interfere with essential psychological and physiological processes. Analysts have raised the possibility that the dissemination of bioregulators in large quantities could incapacitate troops by inducing fear, fatigue, depression, or sleep.

Given that the most damaging impact of biological weapons is through inhalation, agent particles must be an optimal size, neither too small to have an insignificant impact nor too large for adequate inhalation and pneumonic penetration. It is generally considered that the ideal size for BW particles range between one and five microns in diameter. Size of the agent particles is an especially important issue in relation to weaponization, as discussed below.

The Scope of Biological Weapons Proliferation

Analysts disagree over which specific countries are pursuing biological weapons programs, but there does appear to be a general consensus that the number of countries is approximately ten and growing. A study by the Office of Technology Assessment (OTA) compared the lists of suspected biological weapons proliferators from a number of unclassified assessments. Figure 3—1 summarizes that comparison. Countries appearing on at least two thirds of those lists include Iran, Iraq, Israel, Libya, Syria, the People's Republic of China, North Korea, and Taiwan. The former Soviet Union also admitted to having an illicit offensive BW program in violation of its commitments under the Biological Weapons Convention (BWC), but the Russian government under President Yeltsin declared an end to the program. Suspicions remain in some U.S. government circles, however, that such work continues.

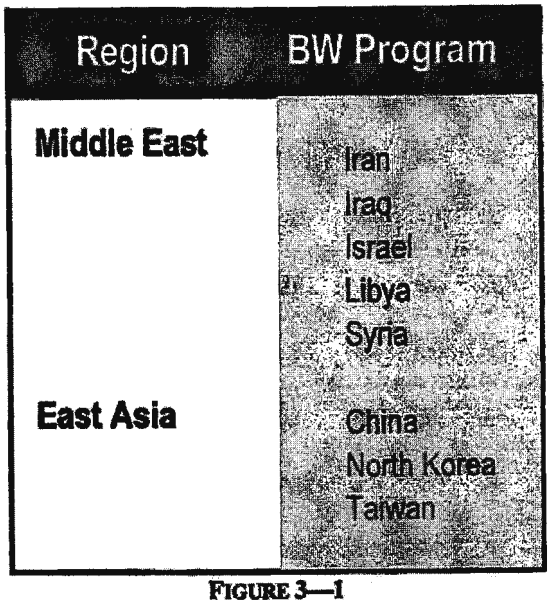


FIGURE 3—1

In addition to the countries listed in Figure I, other states alleged to be working or to have worked on BW programs include Brazil, Argentina, South Africa, India, Pakistan, and Laos.

The OTA study points out that the potential threat posed by BW proliferation is concentrated in two major regions: East Asia, particularly Northeast Asia, and the Middle East. Some

analysts would add South Asia to that list. It is not coincidental that these regions are also areas of high tension where conflict simmers close beneath the surface. This relationship suggests that one motivation for seeking biological weapons is that they represent a cost-effective means of acquiring a weapon of mass destruction for a state which perceives a real threat to its security.

The easy availability of the equipment needed for at least a rudimentary BW program is also an incentive to move in this direction. Virtually all of the necessary supplies and equipment for research on and production of BW agents can be acquired commercially either for business or research purposes. The large scale production capability needed for food and agricultural purposes, the production of vaccines and medicines, and medical research result in a large number of countries already possessing much of the infrastructure and know-how needed for a BW program. As Defense Department analyst Seth Carus points out, the technology to weaponize biological agents is now also readily available; it is possible, for example, to purchase remotely piloted vehicles (RPVs) with spray tanks to spread pesticides. Few changes would be needed to adapt such a system for BW purposes.

Finally, states may be increasingly interested in BW programs because it is extremely difficult to detect a clandestine program, as Iraq demonstrated. There is no easily discriminated, unambiguous signature for such a program, and the relatively small amounts of agent that have to be generated make identification of illicit activities extremely difficult

Biological Weapons Production

The route to producing basic standard biological agents is scientifically and technically unchallenging and could be done at relatively little expense if the agent is to be used for sabotage or in attacks against broad area targets. In contrast, the development, production, and integration of biological agents into reliable, more sophisticated weapons for battlefield use — such as missiles — would be both more difficult and more costly. In the latter case, greater technical and financial resources would have to be devoted to the development, testing, and production of the agent itself, as well as to the more complex engineering problems associated with weapons design.

All necessary supplies and equipment for research on and production of agents (for example, media, fermenters, centrifugal separators, and filters) can be acquired commercially. The classical approach to mass production of pathogens is production in fermenters such as those found in breweries. Moreover, according to one analyst, the introduction of computer controlled, continuous flow fermenters has significantly increased productivity, making it possible to reduce the size of a fermenter about one thousand times below conventional batch fermenters that give an equivalent production. Such mass production capabilities significantly reduce the amount of agent that would have to be placed in storage for weapons purposes, thus overcoming one of the more difficult traditional hurdles to an effective offensive BW program. Subsequent harvesting is done with a centrifugal separator or filtering process, or production in embryonated eggs and subsequent preparation as "whole egg slurry."

Plant toxins such as ricin may be harvested directly from the plant (or seed), which is easy to grow and readily available. Biosynthesis with natural organisms is the current method of choice for production of reasonable laboratory quantities (e.g., grams) of certain mycotoxins. Some toxins, such as saxitoxin, have been synthesized in the laboratory, but such procedures are complex and labor intensive, considered more of an academic than practical production exercise.

One past problem in developing practical biological weapons has been the inability to produce them in mass quantities in short periods of time. At the same time, storage is a problem due to the relatively short shelf-life of biological agents, usually in the three to six month range.

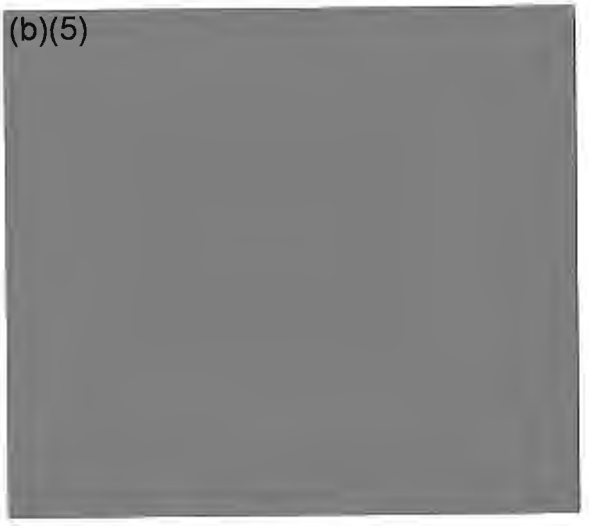
Beyond new mass production techniques mentioned earlier, one technique for extending shelf life is freeze drying. The problem with this technique, however, is that the virulence of freeze-dried microorganisms and toxins tends to decay over time.

The form of the disseminated agent could also have an impact on the production process. Biological agents can disseminated either in liquid droplets or dry particles. Liquid offers savings in equipment and facilities in that dried powder requires drying, special treatment, and milling to obtain the correct particle size. Milling in particular entails high safety risks, and according to Congressional testimony of then CIA Director William Webster, the major technological constraints within the BW agent production process are in safety technologies. The advantage of dry powder, however, is its greater resistance to biological decay and its improved dissemination efficiency.

Although biological agents are relatively easy to produce, they are also relatively easy to destroy. As living organisms, biological agents can be particularly sensitive to heat or sunlight or susceptible to moisture or drying. The pathogenic and virulent qualities of the agent must be maintained not just during its production process but also throughout storage, delivery, and dissemination if the agent is to infect a large number of people. Achieving this goal is the major challenge confronting those who wish to employ biological agents as weapons of war.

Weaponization

A clear distinction must be drawn between the production of biological agent and the development of biological weapons. Many of the problems confronting would-be BW proliferators relate to the transformation of the agent itself into a useful military tool. The problems encountered in weaponizing biological agent may account for the fact that biological weapons have not yet made their appearance on the battlefield.



As to more sophisticated weapons systems, one problem in weaponizing biological agent relates to the function that BW munitions must serve. The primary purpose of such a munition is to convert a payload of bulk solid or liquid into particles, droplets, or vapor of one to five microns in size at a controlled and predictable rate without destroying the agent itself. This demand differs considerably from the function of a conventional munition which must simply provide enough explosive power to achieve the desired level of destruction.

In this sense, BW payloads drive the munitions technology, not the reverse. For example, there are complex scientific and technical problems in disseminating biological particles with bursting type munitions, including controlling particle size. The explosion intended to release the agent, for example, could split the agent into particles too small to be effective.

This problem is complicated by the fact that different agents may require alternative munitions designs given that they respond differently to climatological elements and other such factors. Burning type munitions, for example, may be more suitable for agents that can withstand heat better than stress. These would include cutaneous toxins such as cutaneous anthrax, cholera droplets, or Yellow Fever droplets. Heat requirements for pyrotechnic munitions, however, would probably exclude agents such as botulinim toxin,

tularemia, and Q Fever virus which are more susceptible to heat.

Although warhead design entails many challenges, delivery of the agent is perhaps the single most difficult aspect of creating reliable, efficient biological weapons. According to some analysts, ballistic missiles, such as Iraq's *Scud*, could well be the delivery vehicles of choice for BW proliferators. Ballistic missiles certainly have the advantages of high speed and the difficulty of defending against them, as well as mobility, at least in some cases.

Ballistic missiles, however, also encounter considerable difficulties as BW delivery vehicles. Jonathan Tucker points out, for example, that a warhead for a BW-ballistic missile system would need to disseminate that agent as an aerosol cloud at the correct altitude, given the prevailing atmospheric conditions. To achieve this, a series of mechanical steps would have to work perfectly and with the right timing. Releasing the agent too high in the atmosphere would cause the agent to dissipate before being inhaled by the target; releasing it too low would create "a puddle of toxic material on the ground."

Precision fuzing and guidance controls, therefore, are critical to the effective delivery of BW agent by ballistic missiles; fuzing technology monitors the aerosolization of the agent by controlling the explosions of the submunition containers holding the agent.

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It is not clear, however, that many BW proliferators have the ballistic missile technology to meet these stringent performance requirements. One study argues, for example, that the "most widely used ballistic missile technologies in the Third World, are composed of older generation technology" and that Third World inventories include "marginally effective submunitions, conventional CBU metal bomblets, and simplistic barometric fuzing technologies for ballistic missiles. In general, these types of older munitions casings will probably destroy 95 percent of an agent payload due to the high pressure needed to break open the casings at the detonation point."

Like ballistic missiles, aircraft and cruise missiles have attractions and drawbacks as BW delivery vehicles. One analyst argues that loaded with BW agent, cruise missiles would be "vastly superior to the blast effect of nuclear weapons and would rival nuclear weapons fallout in terms of area coverage per ton of payload."
Aircraft and cruise missiles have many of the same advantages: they are widely available, and depending on the state of the technology involved, they may also be more accurate. Their ability to fly low-level flight paths could be more effective in delivering BW agents at the proper altitudes, and they could incorporate more effective dissemination technologies such as spray tanks, rather than depending on submunitions. Cruise missiles have the flexibility of being fired from land, sea, or air platforms. At the same time, cruise missiles and aircraft also share disadvantages: if detected, they are vulnerable; payloads are relatively limited; and they have shorter ranges than ballistic missiles. Moreover, if aircraft and cruise missiles are used to disseminate BW through cluster munitions or other kinds of bombs (rather than by sprayers), problems remain with designing a warhead that keeps enough of the agent alive until it reaches the target.

Some of the problems entailed in weaponzing biological agents derive from the expectation that such weapons will be used on the battlefield against an enemy's military forces. The BW threat, however, extends beyond military targets; indeed, it is more severe for unprotected civilian populations. In such cases, the demands of BW weaponization may not be so onerous. A number of analysts have suggested that, in some cases, a BW weapon need not be more sophisticated than a terrorist's suitcase or the introduction of BW agent into the water supply of a major

metropolitan area. Clearly, problems associated with BW weaponization are highly dependent on the scenario in which biological weapons are expected to be used.

The Impact of Genetic Engineering

In a number of studies of the biological weapons problem, analysts have pointed to the dramatic breakthroughs in biotechnology that could heighten the attraction of biological weapons by diminishing the technological obstacles that inhibited their development in the past. While the potential for enhancing BW capabilities through techniques such as gene splicing must be addressed, the impact of such developments should also not be exaggerated.

Victor Utgoff of the Institute for Defense Analyses has identified three major impacts of the biotechnology revolution with important implications for the threat of biological weapons:

1. Biotechnology provides a set of new tools that will promote an understanding at the molecular level of the structures and functions of the complex organic molecules that collectively make the human body work. That understanding, however, will also help to identify ways that chemical and biological agents can interfere with the proper functioning of the body.

2. Biotechnology provides tools with which to make delicate adjustments in structures of organic molecules which would allow, at least in theory, agents that do not meet the practical requirements for use as BW (e.g., high toxicity, rapid action, high contagiousness, predictability, survivability, etc.) to do so.

3. Biotechnology provides vastly more efficient and compact means for producing complex molecules, opening the door to more efficient mass production of both antidotes to biological agents and the agents themselves. This allows proliferators to overcome one of the more difficult past hurdles to creating practical biological weapons. Moreover, if militarily significant quantities of biological agent can be produced more quickly, thus obviating the need for extended storage, it makes it more risky to misjudge the intent behind a BW research program, increases the potential strategic salience of such programs, and heightens the difficulty for detecting significant capabilities.

While scientific development could lead to the creation of new and more virulent agents, their most likely impact will be to make it easier to do a number of things that in the past have been difficult or risky. Analysts seem to agree, for example, that there is no convincing evidence that a genetically manipulated hybrid bacterial organism would be more pathogenic than either of the parental species. Rather such genetic manipulation may combine certain desirable characteristics of one species — immunological properties, adaptation to a new environment, survivability — with the disease causing potential of the other. The result is not some new "superagent" but a more effective agent that may act faster, be more resistant to vaccines and drugs, or be more controlled with regard to its persistence. Focusing on enhancing such characteristics through genetic engineering creates the potential to overcome some of the traditional drawbacks of standard BW agents.

Brad Roberts has summarized the real danger inherent in the contribution of the biotechnology revolution to the development of biological weapons: "the primary effect of the biotechnology revolution will be to raise questions about some of the assumptions and perceptions that underpin U.S. policy — especially the view that anyone studying biological weapons is likely to conclude, as the United States did, that their utility is narrow and difficult to achieve." Such innovations, in turn, are likely to raise new challenges (and complicate existing ones) with regard to potential defensive and deterrence measures, and U.S. evaluations of their relative priority in varying regional contingencies.

Using Biological Weapons

The previous discussion suggests that the characteristics of biological agents and the problems associated with their weaponization make them particularly difficult for use on the battlefield. With the exception of toxins, biological weapons act more slowly than chemical or nuclear weapons; there is a considerable incubation period before the targets feel the effects of the disease. Given the heightened importance of rapid action on the battlefield of the future, such slow acting systems may not have the impact desired.

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Persistence of agent is also a consideration; biological agents must be kept alive through the dissemination process and long enough afterward to infect the target, but not so long as to impede further use of the area. In some cases, use of BW will render an area unusable or uninhabitable for decades. The Scottish island of Gruinard, for example, was contaminated for almost fifty years as a result of British government experiments with Anthrax in the early days of World War II. Conquering such territory would hardly seem a useful objective.

Contending that BW is not entirely suitable for use on the battlefield is not to argue that biological weapons have no military utility. Indeed, there are a number of situations in which BW use could prove useful, especially those in which rapid results are not required and where the danger to friendly forces is minimal. Examples of such situations could include BW use against:

- fixed fronts in wars of attrition in which the delay caused by incubation is of minimal impact;
- reserves or massing formations;
- airfields;
- logistics nodes such as supply depots and port facilities;
- command and control centers;
- beachheads established by interventionary forces not yet ready for or capable of breakout; and
- large naval vessels.

Beyond their use against military targets of this kind, biological weapons are also extremely dangerous as strategic weapons against civilian populations, especially in densely populated areas. Indeed, Graham Pearson, Director of Britain's Chemical and Biological Defense Establishment at Porton Down, argues that "biological warfare is essentially a strategic concept." In this regard, biological weapons resemble nuclear weapons much more than chemical weapons. This comparison is dramatically illustrated in Figure 3—2 which provides estimates of attacks on unprotected populations using nuclear, chemical, or biological weapons.

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Finally, terrorist use of biological weapons cannot be ruled out. BW terrorism has to date

remained the province of thriller writers and has not yet occurred, but the prospects for such use must be seen to have increased. State sponsors of terrorism have now acquired biological agents and equipment as dual use technologies have become more widely available internationally. In addition, the end of the Cold War and the consequent rise in ethnic and other forms of conflict previously dampened by the U.S.-Soviet competition engender the intensely hostile conditions that might give rise to such extreme measures.

The United States must consider itself a potential target for terrorist use of biological weapons. As the "last superpower" and perceived as a defender of the status quo by many "revolutionary" forces, the U.S., in the view of Brad Roberts, must be a "likely target, made more likely by its reputation among some as a skittish or fickle power whose political decisions are determined fundamentally by the media that magnify the effects of acts of violence."

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Responding to the Growing BW Threat

Since the United States unilaterally forswore offensive biological capabilities in 1969 and

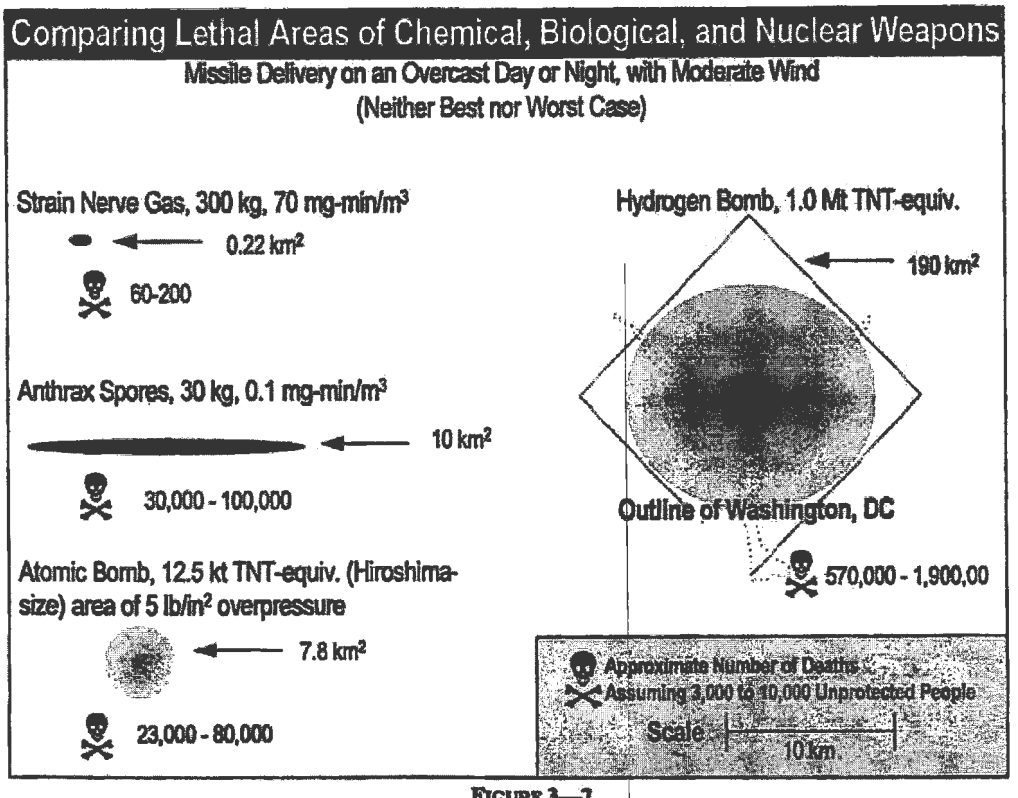

FIGURE 3—2

initiated the negotiations that produced the Biological Weapons Convention (BWC), the U.S. approach to the problem of biological weapons proliferation has been a combination of deterrence and arms control. The military defense program, however, was of a particular kind, primarily concentrating on production of vaccines against demonstrable BW agents. Arms control, too, was of a specific type, namely, reliance on a combination of the BWC and export controls.

BW developments over the last several years provide reasons to be concerned about the future efficacy of the U.S. approach. On the arms control side, the BWC, at least in its current form, is increasingly in doubt as an effective international norm against BW proliferation. In the military arena, the U.S. experience in Iraq demonstrated that a wider range of issues must be considered in developing an effective deterrent to the threat of biological weapons.

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Deterrence/Defense

As the diffusion of dual use technologies makes it more difficult to stem the potential acquisition of biological weapons, efforts to deter the BW threat will assume greater importance. What should be the U.S. approach to those situations in which the United States confronts a regional BW capability intended to deter U.S. action?

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Improved Defenses

After Operation *Desert Storm*, the *Conduct of the War Report* noted that "while the defensive capabilities of U.S. and other coalition forces improved rapidly, CW/BW defense readiness at the outset of the crisis was quite low...BW defenses should be emphasized more fully in DOD programs. Inadequacies exist in detectors, vaccines, and protective equipment."

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U.S. efforts to bolster defenses against biological attacks have been highly open. Such transparency is an important contribution to deterrence because it alerts potential proliferators to the increased cost that an effective program will entail. At the same time, such openness must be balanced against providing a degree of information that might allow a proliferator to plan his program more efficiently and design his efforts to circumvent possible defensive measures.

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The BWC is the centerpiece of international arms control in the biological arena. It was negotiated in 1970 and 1971 after the United States unilaterally renounced in 1969 its possession of biological weapons. The agreement was signed in 1972 and entered into force in 1975. Twenty years later, the continued efficacy of the BWC is in doubt due to a range of developments. Beyond the BWC, arms control also entails efforts to curtail the transfer and diffusion of materials and equipment that may be used to produce biological weapons. In light of technological developments, this aspect of biological arms control must also be reviewed.

The Biological Weapons Convention was, like all arms control agreements, a product of its time. The willingness of the United States to end its national BW program and commit to an arms control approach was based on several factors related both to biological weapons themselves and to the broader international political context. First, the Nixon Administration was seeking a means to improve its relationship with Moscow, and a joint BW effort appeared to be a low cost step in that direction. Second, the safety risks were considered too high to justify a program whose military utility was unpredictable. Third, concerns existed about BW proliferation. The United Nations Secretary General had issued a

report in 1969 that had shown biological weapons had potential strategic impact parallel to that of nuclear weapons, and his evidence suggested that biological weapons were cheaper than conventional, chemical, or nuclear ones. These factors heightened the attraction of biological weapons which Washington wanted to discourage.

The United States also considered biological weapons unreliable. The uncertainty of their impact on the battlefield diminished their value as tactical weapons. At the strategic level, BW were seen as redundant for a nuclear-armed state. It was not that Washington determined BW are useless. As Brad Roberts argues, to make such an assertion is "a misreading of a decision that the specific military effects of biological agents were marginal, if not irrelevant, to a United States equipped with other conventional and nuclear assets and not confronting an imminent military threat."

Over the life of the treaty, various Review Conferences of state parties have agreed on a number of measures to bolster the convention. Many of these measures have been in the area of building confidence, resting on the argument, made largely by the United States, that openness and transparency regarding a state party's biological-related activities is the best way to instill confidence that its obligations are being observed. Other improvements have been made in procedures for investigation of allegations of BW use and enactment of national legal and export measures.

The United States recognized at the time it signed the BWC the agreement's shortcomings particularly with respect to verification. Today, the absence of meaningful verification provisions for the BWC is the major point of contention regarding the agreement's continued utility. Without some form of verification, some argue, the agreement is not up to the job in the face of the diffusion of technology, the biotechnology revolution, the prospects of terrorist use of BW, and specific concerns regarding noncompliance that have arisen not just with Iraq, but with the then Soviet Union and Russia as well.

Verification was the single most contentious issue and the last to be resolved at the 1991 Third Review Conference. Many states came to the meeting believing that with the CWC negotiations near to an agreed verification package and general improvements in verification techniques, the time was appropriate to add a verification protocol to the BWC. Indeed, the majority of participants in the conference seemed to support the addition of even a weak verification system because of its perceived deterrent effect. The United States stood virtually alone in opposing a conference commitment to moving ahead on verification, arguing that given the wording of the treaty — outlawing offensive weapons but not defensive biological research — and the nature of biological weapons, the treaty was not verifiable and the U.S. did not know a way to make it so.

The United States did not close the door completely, however, to further work on verification. It recognized the utility of a continuing discussion of verification issues, particularly a broadened understanding of scientific and technical matters associated with potential verification measures such as data exchange and on-site inspection. The U.S. delegation argued that it was only after these factors were understood that political judgments regarding the balance between costs and benefits of various verification measures could be made.

The result of these two approaches was a compromise establishing the Verification Experts (VEREX) exercise which was given the precise mandate to explore potential verification measures from a scientific and technical standpoint and to make recommendations to a special conference of states parties on ways to strengthen confidence in compliance with the Convention. This Verification Experts exercise culminated in September 1993 when the group's recommendations were finalized.

The VEREX effort defined twenty-one potential measures encompassing both on- and off-site activities in the area of development, acquisition or production, and stockpiling. Measures addressed such activities as information exchange and monitoring, remote sensing, inspections, and exchange visits. These recommendations will be reviewed by a special conference of states parties in September 1994. At that conference, a process is likely to be initiated which could culminate in the incorporation of some of these measures into the Convention.

In a parallel development, the United States, the United Kingdom, and Russia have been involved in a tripartite effort to resolve U.S. and U.K. concerns about Russian compliance with the BWC in the wake of admissions by President Yeltsin that the Soviet Union had continued an offensive program in violation of its BWC commitments. The United States had held that the Soviet Union had been in violation of the BWC since an outbreak of anthrax in Sverdlovsk in 1979 which Soviet authorities attributed at the time to tainted black market meat. Shared U.S. and British concerns were reinforced by information from defectors regarding the ongoing program. The only other public allegation the U.S. has made of violation of the BWC has been Iraq in the wake of the war in the Gulf.

The ability of the Soviet Union and Iraq to hide large BW programs from the international community, at least to the extent that allegations of noncompliance were seriously debated and unconvincing to many, highlights the concerns about compliance that lie at the heart of current efforts to strengthen the BWC. The ongoing political and intelligence challenge of determining the contours of an illicit program in terms that are convincing to the international community is manifest. There is no signature that distinguishes clearly between the development of offensive biological agents and work on defensive vaccines since both require the same basic know-how and laboratory techniques at the research and development stage. Some weaponization signatures (e.g., storage of bulk agent, preparation of aerosol dispensers, field trials) probably are easier to detect than production signatures, but even in these cases, not all such activities are necessarily prohibited by the Convention.

The public criticisms of U.S. allegations of noncompliance demonstrated the paralysis regarding compliance that currently prevails. It is this problem that the advocates of verification are attempting to address, to use additional verification techniques to provide a clearer answer to whether a state is or is not meeting its obligations. Those who are skeptical of such verification doubt that measures such as data reporting and on-site inspection will provide a sufficient degree of certainty regarding compliance or noncompliance at an acceptable political and financial price. The cost is not only the price of procedures that would meet the high standards on which the United States insists for effective verification, but the risks that important national security secrets or proprietary business information could also be lost. The problems with suggested verification measures are exacerbated by the fact that in assessing compliance the BWC's language makes intent the critical factor, a rigorous, if not impossible, determination to judge given that offensive and defensive activities are virtually identical in many respects.

Brad Roberts identifies a critical lesson regarding verification learned as a result of the activities of the UN Special Commission (UNSCOM) in Iraq in arguing that "verification is a complex political and technical process that involves much more than monitoring and requires the kinds of investigation of patterns of activity possible only over extended periods of time." It is a process that also demands particular kinds of information, and there is nothing to indicate that those states who are strong advocates of a verification protocol, let alone the United States, have developed the capability to determine the patterns of biological activities in suspect countries or to evaluate changes in those patterns that may suggest noncompliant behavior. This

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The danger of labeling measures that do not provide a high degree of certainty in capturing militarily significant violations of the BWC as verification is the false sense of confidence that such labeling instills. Iraq had been given a clean bill of health by the inspectors of the International Atomic Energy Agency shortly before the Gulf War, only to discover after the conflict that Baghdad had been pursuing not one, but at least four paths to building nuclear weapons.

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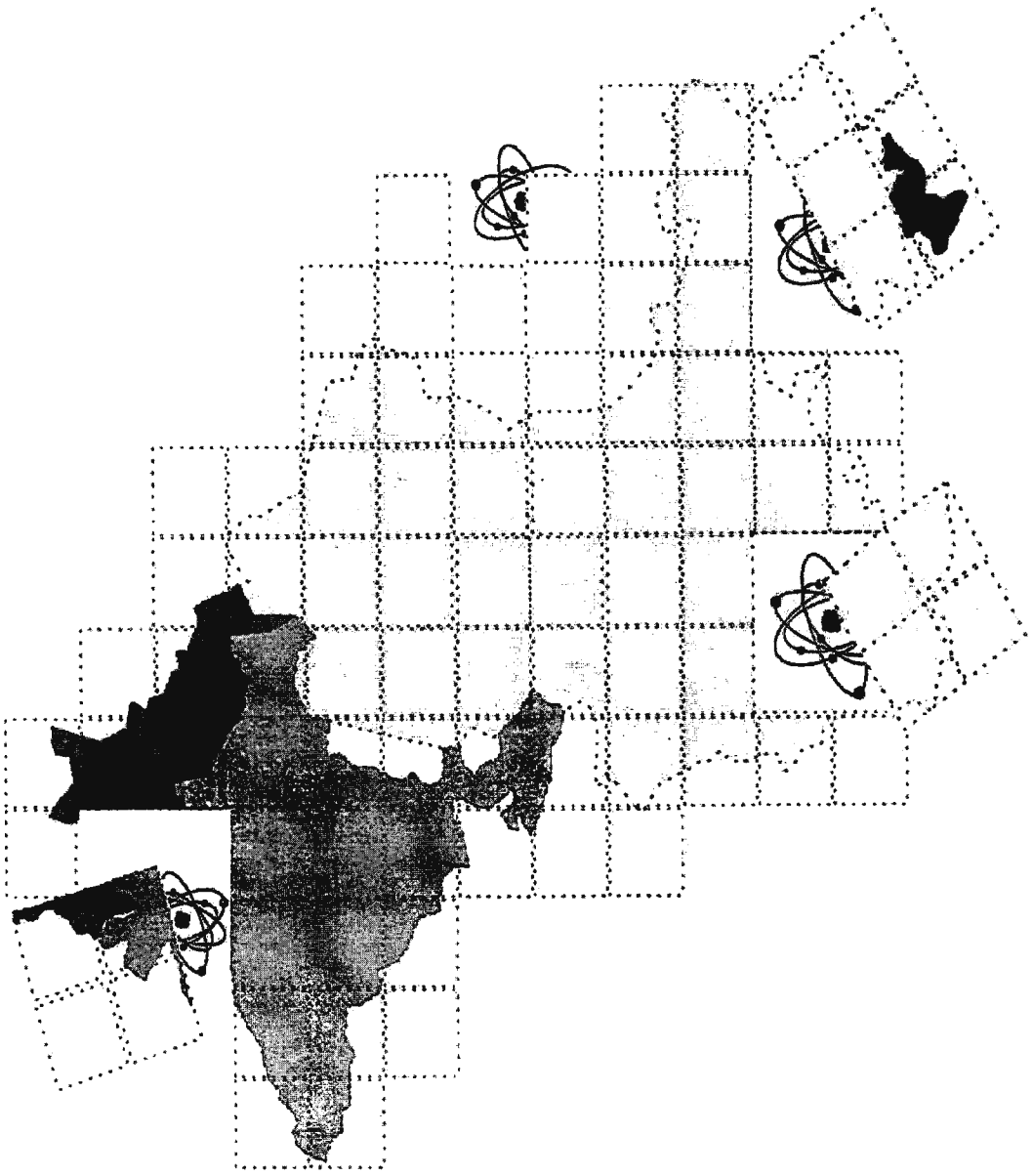
CHAPTER 4
INFORMATION TECHNOLOGY AND GREY TEAM WARGAMES



Introduction

Innovative use of information technology can enhance the effectiveness of wargames and other simulations. It is valuable, therefore, to explore the application of technologies that have a strong potential for enhancing the development and conduct of future wargames and simulations. These technologies include computer networks, communications media, knowledge systems, and artificial players.

Computer Networks

Every interactive wargame requires some mechanism for transmitting information to the various players and to permit each player to communicate with other players. One of the primary objectives of wargame design is to make a game correspond as faithfully as possible to the real world. In the real world, decision makers (players) often do not have full knowledge of what each other person is trying to accomplish, what alliances exist, and detailed knowledge of resources and capabilities of others.

In the past it has been customary to assemble people who might participate in a wargame in one room or a group of rooms in one building. This arrangement has a number of advantages in terms of being able to communicate quickly with the participants. It also provides much flexibility in terms of game control and gives a free flow to the game. Such advantages do not have to be lost when some or even most players are located in remote sites, provided proper use is made of current technology.

Leaders in the real world make decisions based on information from news sources and staff briefings, too. These forms of communication may be reflected in wargames through the use of computer networks to serve as communication links among players. Networks provide one form of communications that permits players to be geographically separated. Players may talk directly to other players and may also send and receive electronic mail messages over a network. The network may transmit "news reports" and intelligence estimates to individual players or groups that share intelligence resources. Such intelligence reports may describe the situation and predict likely actions of other players. Something as sophisticated as the Distributed Interactive Simulation (DIS) infrastructure or as simple as electronic mail on a computer network may be used to implement player network communications.

Distributed Interactive Simulations (DIS)

DIS is a set of standards and supporting methodology for creating virtual worlds consisting of two or more simulations running simultaneously, linked by computer network. DIS is part of the advanced distributed simulation (ADS) movement, a Department of Defense (DOD) program to revolutionize planning, training, testing, and acquisition. The intention of ADS is to integrate into the ADS infrastructure almost all new DOD simulations.

The DIS infrastructure integrates real and virtual systems built for different purposes at different locations, technologies from different eras, and platforms for various defense services and permits them to interact. It supports a mixture of virtual entities (e.g., simulators), live entities (real systems), and constructive entities (wargames and other automated simulations). The DIS infrastructure provides interface standards, communications architectures, and other elements needed to combine disparate simulations at various locations into a seamless synthetic environment. DIS grew from the earlier DOD efforts to integrate simulators through networks, such as the Simulator Networking (SIMNET) project. DIS is intended to interface with live entities such as crews in real vehicles moving on instrumented ranges, such as the Army's National Training Center. DIS is also intended to interface (with certain constraints) with constructive simulations, or wargames, such as the Army's Corps Battle Simulation, the Navy's Enhanced Naval Wargaming System and the Air Force's Air Warfare Simulation. These various platforms

may interoperate within the DIS environment over a network.

DIS provides a set of protocols that convey messages about entities and events in different simulations via a computer network. A central computer or other control element does not maintain the state of the virtual world. Instead, each network node is responsible for maintaining the status of entities in the world. DIS standards define entities and events as data items; provide a common representation for the data items; a means for assembling data items into network messages, called protocol data units (PDU); procedures for network nodes to transmit and receive PDUs; and algorithms used to update information about the state of the virtual world at each network node.

Object/Agent/Event Architecture

In DIS, the world is modeled as a set of entities that interact with each other during events. Entities may be either agents (referred to as *dynamic objects* in DIS literature) or objects (*non-dynamic* objects). Agents may be human or artificial (the latter referred to in DIS as computer-generated forces or semi-automated forces). Both agents and objects take actions that cause changes in the state of the world. Each change in the state of the world is an *event*. The actions of objects are deterministic. That is, the actions they take and the results of the actions may be predicted precisely. Actions of agents are nondeterministic. For example, an agent may be a soldier firing a mortar which is the object. The soldier chooses when to fire the mortar and where to aim the projectile; the mortar does nothing consciously. There is at least one agent at each node of a DIS network that is unique to the network. Agent actions are broadcast to the other network nodes. Agents (dynamic objects) keep the agents at other network nodes informed of their actions and the events caused by their actions through the transmission of PDUs.

Establishing Ground Truth

Identical algorithms are used at each node to deduce the results of the actions of entities using a form of deduced reckoning, like the dead reckoning in navigation. For example, when a mortar is fired, the results of this action (such as its exact position, time of firing, orientation, velocity vectors, and other information) are broadcast to all other network nodes so that they can use dead reckoning algorithms to determine the result of the mortar fire. Such events are predicted deterministically, even if the they appear to be random, such as the question of where a mortar projectile will actually land. An identical sequence of pseudo-random numbers are generated at each network node that determine the result of "random" actions of objects. Pseudo-random numbers may determine whether the mortar malfunctions and, if it does not malfunction, where the projectile will land and the damage it will do.

Ground Truth Versus Agent Perception

Each node maintains the absolute truth, or ground truth of the state of the world at each point in time. This truth may not match what an agent perceives to be true. The agent may know that a mortar was fired but may not know who fired it or the result of the explosion of the projectile. Each node is responsible for consulting its sensor models to determine what information, if any, to pass on to the agents at the node, based on the events that are taking place.

Time Issues

One complicating factor concerning the use of wargames or other automated, event-driven simulations as part of a DIS network is that time in a simulation may move faster or slower than the time in the rest of the network. DIS assumes that time progression throughout the network is consistent. When simulations are connected to a DIS network, they must use some mechanism to send and receive PDUs at real time rates. Another complicating factor is the delay in the reception of PDUs by various network nodes due to the physical separation of the nodes, communication traffic, and the characteristics of the computer network being used. This delay is referred to as

communication *latency*. The DIS standard is for the latency to range from 1/10th to 3/10ths of a second. This may be too great for handling rapid interactions between agents at different nodes.

Communications Architecture

A combination of local area networks (LAN) and wide area networks (WAN) make up the communications architecture of DIS. Nodes located at the same site are connected by a LAN. LANs at different sites are connected by a WAN. The point of connection between a LAN and WAN is the local area network *gateway*. In DOD applications of DIS, Defense Simulation Internet (DSI) is often used as the WAN. DSI is a general-purpose, high speed WAN developed to serve DIS applications. The communication traffic generated by a DIS application may be quite heavy, making it difficult for all nodes to process all incoming PDU packets in a real time mode. For that reason, incoming PDUs are screened to permit only those considered relevant to the current node. The local area network gateway is responsible for data traffic control, by screening PDUs and compressing others into more compact packets.

Simple Networks

While the DIS infrastructure and standards are useful for creating virtual worlds in a real time mode, simpler methods may be practical for games using less structured approaches, such as seminar games. These games require less demanding standards and less computer control than what is provided by DIS.

Seminar games may be organized into two or more teams representing decision making groups from confronting entities such as nations. A control team manages game procedures and may assess outcomes of actions proposed by the teams. The game may be initiated by presenting each team with an initial scenario describing the current situation of the team (with a description of prior developments) and a source book describing characteristics and capabilities of organizations and material controlled by each team. The teams may also be given a set of game instructions that provide rules and procedures. Each team may discuss the actions and counteractions it would take in a given situation and the interactions that are likely to occur. A control team may then assess the results of those interactions and report back to the players. This process may be repeated for a number of cycles. Such games often involve player actions of various lengths of real time and may involve different periods of action at different levels of detail.

Given the relatively unstructured nature of seminar games, something less rigorous than DIS may be appropriate. The following is a discussion of how simple computer networks may be used in support of relatively unstructured games such as seminar games. It focuses on some of the key issues in DIS.

Object/Agent/Event Architecture

As in DIS, the world may be viewed as a set of entities interacting through events. The teams in a seminar game may be considered to be composed of agents. The agents in the world of the game may reside at computer terminals connected by network nodes and may be human or artificial. The terminals may be connected by a computer network, and may exchange messages by electronic mail. The messages may describe actions taken by the agents. These actions may trigger events that affect other agents.

Establishing Ground Truth

A control team at a network node may be responsible for maintaining ground truth, the true state of the world portrayed in the game. This team should receive messages specifying all agent actions that affect the state of the simulated world. The control team should determine what events result from player actions.

Ground Truth Versus Agent Perception

The ground truth established by the control team may not be communicated to all players in

the game. The control team should provide to agents the information their real-world counterparts would receive. For example, secret agreements could be reached between two teams that would only be known by the two teams and the control team. Other information may be public knowledge, broadcast by the control team to all network nodes. Intelligence assets used by some agents may result in them receiving more information than others. As in the real world, agents may receive information that is incomplete or misleading.

Time Issues

Since the time portrayed in a seminar game often varies from real-time and is generally flexible, stopping or jumping ahead as needed, the DIS standards for latency may be ignored. Some games may be flexible enough to permit delays of several minutes between the time messages are sent and the time they are received. The control team needs to maintain the "clock" in the game, determining when events will take place and how long events will last.

Communications Architecture

Existing computer networks such as INTERNET may be used for the communications architecture of these games. The network nodes may be inexpensive, such as desk top computers connected by a standard network, exchanging messages by electronic mail. Such communications may be supplemented by teleconferencing, and use of faxes and modems.

Communication Media

To improve the realism of a game, the media used to provide information to the players should appear very similar to what they use in real life. Compact disk (CD) technology permits a group of realistic news messages to be recorded on one disk with stock footage of past news reports from the region under consideration and simulated reports recorded prior to the game. The messages may look and sound like news reports of actual world events. These reports may provide background for the game. The events might also be hypothetical, triggered by the decisions of the players. When a player makes a decision and communicates the decision to the game control team, game control team may determine what events, if any, are caused by the decision. Any events prompted may be communicated to the players by selecting the appropriate portion of the disc. A variety of other media may also be used, such as computer networks, telephones, modems, fax machines, and teleconferencing. Such media can enhance the feel of the game, provoking a realistic interaction among the players.

CD-ROM Technology

Technologies such as compact disc - read only memory (CD-ROM) offer the opportunity to both enhance the realism of seminar games and permit the games to be conducted either in one area or over a network.

The primary application of CD-ROM technology pertaining to seminar games is in rapidly selecting and playing video clips that may resemble news bulletins or the reporting of external events pertaining to a game in progress. Since up to 74 minutes of video may be stored on one CD, it is possible for the game control element rapidly to select and play (in about 1/4th of a second after selection depending on device seek time) any of perhaps 100 to 200 video clips, based on player decisions and other factors. One of the main problems with the current use of this technology is relatively poor picture quality compared to VCRs. The picture quality is sufficient for the many commercial CD-based video games being produced, and may not prove very distracting to participants. It is important to note that research in compression/decompression methods is yielding improvements in picture quality so that some CD-ROM formats and systems offer advantages over others.

There are, however, some limitations to current CD-ROM technology:

- Seek time is slow on CD-ROM drives compared to personal computer hard drives. The seek time is the amount of time it takes for the drive to locate a segment of data on the disk. This may vary from 400 milliseconds (ms) (400 thousandths of a second, or 0.4 seconds) to 200 ms for the fastest drives. This is slow compared to hard drives. A seek time of 10 to 12 ms is typical for a hard drive.

- Data throughput for a CD-ROM drive is also low compared to a hard drive. A CD-ROM reads audio data at the rate of 150 thousand bytes (kilobytes) per second, compared to 1 megabyte or more for a hard drive. Some CD-ROM drives are capable of reading at twice or even four times that speed. They switch back to 150 kilobyte speed when reading audio data.

- Because a large amount of data must be read from CD-ROM for video images, these video images typically do not look very good. A CD-ROM drive typically plays video clips in a 200 x 150 pixel window, an area about 3 inches wide on most TV screens. It updates the screen 15 times per second, as compared to 30 times per second for a VCR, so movement is not as smooth as people might expect.

- One fairly obvious limitation of CD-ROM technology is that is a read-only medium. Most users may not both read and write to CDs. Devices to read CDs are cheap, but devices to write to CDs are expensive. Of course, it is not necessary to own expensive equipment used to write to real CDs; this equipment may be rented and some companies offer CD recording as a service.

To make use of video clips on a CD, it is necessary to incorporate some software routines with the CD video. The software would provide a user interface to select and play video clips by the game control element. This makes use of many of the resources of a computer. A CD-ROM application is built on the same strengths as any other well-engineered program, but the emphasis in software development is on a smooth, intuitive interface. By maximizing the strengths of CD-ROM technology — excellent audio quality, ability to blend computer and recorded sound and images, and massive data storage capacity — while minimizing its limitations, one may develop applications that enhance the quality and usefulness of seminar games.

Videotapes

Like the CD-ROM, reports and briefing for game participants may be recorded on videotape and played to participants when appropriate. Use of videotapes has certain advantages and disadvantages relative to CDs. They are easy to produce, relatively cheap, and have better picture quality than CDs. The main disadvantage is the lack of flexibility. Where a CD can select and play a video clip within seconds, a videotape may require perhaps minutes to find and play similar clips. Also, a videotape may not integrate computer graphics and software with the video clips as can CD-ROM. A CD videoclip can actually change the sound that accompanies it based on the software. While a separate sound source may also be provided for videotapes, this is very awkward compared to a CD.

Media Mixtures

Advances in the various areas of information technology have resulted in a blurring of the distinction among what previously were considered distinct fields: computer science, communications, and data networks. Various kinds of technologies may be combined to improve the usefulness of games. The main emphasis is to provide the kinds of support and methods of interaction the real-world counterparts of game participants would expect.

Computer support of games should not be obtrusive. Support that is very visible to players may appear artificial and distracting. This may interfere with accomplishing the game

objectives. In the real world, decision makers do not spend much of their time reviewing computer products. Rather, they receive various briefings from their staffs. The briefings may describe the current situation and what has happened during the time since the previous briefings and may include what is known about the situation with their opponents and other parties. Effective computer and multimedia support provides the material that is needed to produce these kinds of briefings.

In a game setting, staff briefings may be realistically represented in video clips stored on CD-ROM or videotape, may be done by live participants, or could come from some electronic form of communication such as telephone calls or teleconferences. Computers and computer networks may provide much of the information for these briefings. For instance, computers may generate reports and other materials used in briefings. Reports may be sent by modem, fax machine, or attached to electronic mail messages. The guiding principle for use of computers and communications media is to make the product appear similar to those decisionmakers actually use.

Data Systems in Support of Games

A game system may maintain game information at different levels. At one level is the real state of the world being modeled by the game. At another level is the state of the world as perceived by each player. It may also maintain information at different levels of detail and interests, facilitating subgames as described earlier. The kinds of information the system should maintain include: 1) a scenario that describes the situation to be examined; 2) the goals of each player and the perception that player has of the goals of each other player (which may be correct or incorrect); 3) the resources each player has at his or her disposal and the perception that player has of resources at the disposal of the other players that may be used to accomplish their goals; and 4) the actual and perceived result on the world state from actions taken by each player. This would maintain information hierarchies and relationships among various pieces of information. Thus, a scenario might be quickly generated, tailored to a specific situation.

The primary information for a game pertains to a set of entities, the relationships among the entities, and the events that result from the interactions among the entities. This provides the information players need to help them make decisions. This information includes resources available to each player and capabilities of the resources. It also includes physical conditions, such as terrain, climate, and atmospheric conditions, as well as other environmental factors, such as the psychological environment and political situation. Because of its importance in decision making, the method of data storage used must present the information players would have available to them in an actual situation concisely and in a manner readily accessible for use during a game.

This information may be stored in a database or knowledge base. A database stores information as fields in records that may be related to other records. A knowledge base stores information about objects in the form of attributes or descriptors, and the relationships among the objects. The main difference between the two forms of data storage and retrieval is that a knowledge base is a closer model of knowledge representation to humans than is a database and may permit queries that are more powerful than database queries.

Database

A database is a self-describing collection of integrated records. It contains data records and also a description of its own structure. A database is a data model of an organization. Its data represents the state of an organization at a point in time. A database management system (DBMS) is a set of programs that processes the database, ensuring consistency among data elements, and permits queries. Queries are requests for information from the database that may be based on specific conditions. Queries

may be used to produce ad hoc reports of information from the database. Many databases permit the use of Structured Query Language (SQL) to manage their information. SQL commands may be used interactively or may be embedded within applications and permit users to retrieve, add, update, or delete data.

Many commercial DBMS are available that may be used to support games. Electronic spreadsheets may also be used for this purpose. Some spreadsheets have features similar to relational databases. Databases may be updated during a game to reflect the current state of the world, and preset or ad hoc reports may be derived from the databases to provide information needed by participants or the control team.

Knowledge Base

A knowledge base may maintain the information on the state of the world represented by a game, similar to a database. A knowledge base is a model of how the human brain organizes, represents, and reasons about information. It may represent the same information as a database, but is much more flexible. It may represent information from various perspectives and at different levels of abstraction and aggregation. Rather than simply extracting information explicitly provided to it by users, the knowledge base may use plausible reasoning to derive information that is incomplete or based on contradictory or incorrect data.

The components of a knowledge base are shown in Figure 4—1. When any component of the game system needs information, it may send a request for information to the knowledge base. If the information requested is explicitly contained in the knowledge base, it is looked up in a manner similar to a database. Otherwise, the inference engine will derive the information, provided it is included in the deductive closure of the knowledge base. In other words, it must be able to derive the information from the use of plausible reasoning, performed by the inference engine.

Just as the engine in a car is fueled by gas, an inference engine is fueled by uncertainty. It runs either until it derives the information it is missing, or until it determines that the missing information cannot be derived from information available. The inference engine deduces information from facts and rules, using deductive logic. For example if there is a fact *A* and a rule *A implies B*, the deductive inference engine may deduce *B*. The information thus derived constitutes the deductive closure of knowledge in the knowledge base, that is, everything that it is explicitly known and everything that can be deduced from what is known.

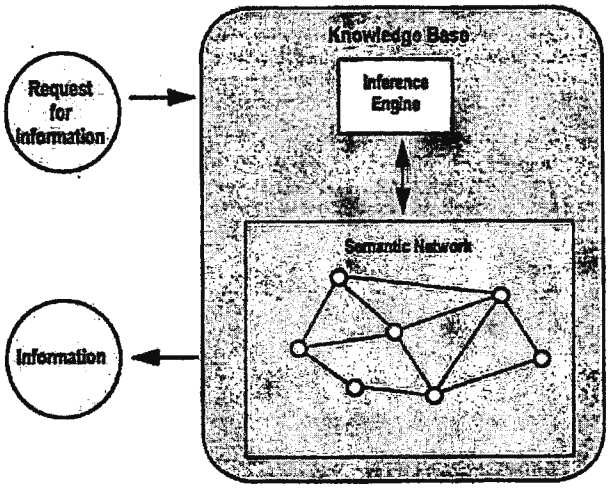


FIGURE 4—1

The system may keep track of what information is made available to each player. During a game, the knowledge base may be consulted by each player who will be provided information, if the information should be accessible to the player. The information may or may not be correct. The knowledge base may also be consulted by the control element who is provided the ground truth, as well as analysts who might use the information in postgame analysis. New methods of knowledge representation may be used to implement the knowledge base such as dynamic interlaced

hierarchies and multi-tiered knowledge representations. Temporal logics supplementing predicate calculus may be used to derive information considered true during specified time intervals, as well as context-dependent nonmonotonic logics being developed through artificial intelligence research.

Major Roles for Minor Players

AI technology permits the use of both live and "artificial" players. An artificial player is a computer-based agent (using AI technology) who plays some role in the game. For example, it might be the representative of a neighboring country that is not directly involved in the situation being modeled. Other players may consult this representative to see how it would respond to their actions. An artificial agent may represent someone subordinate to the decision-maker, such as the commander of a military force, a political leader, or an intelligence analyst. Artificial agents may enhance the realism of the game from the perspective of the players by providing the perception that the player has a staff and by providing players that may perform minor roles.

Potential for Artificial Agents

Artificial agents are increasingly being used as substitutes for human participants in wargames and other interactive simulations. There are several reasons for using artificial agents: 1) once built, they are readily available for use any time; 2) once built, they are inexpensive compared to humans; and 3) they will act according to the contents of their knowledge bases, reflecting the culture, education, values, and beliefs of specific regions, which may be more authentic than the behavior of human participants who might act based strictly on American values and beliefs. Because of these considerations, there is much incentive for using artificial agents, at least for minor roles, if they can be constructed based on current technology. Artificial agents currently suffer from various constraints that may limit their usefulness. They generally lack the flexibility, creativity, and common sense we take for granted in human participants. Increasing the performance of artificial agents will permit a more widespread and productive use of them in games. Recent advances in AI planning and learning systems offer the opportunity to improve significantly the performance of automated forces in simulations. In the following discussion we will see how current research is finding ways to overcome what have been viewed as limitations in agents used in military simulations.

At this point, it may be useful to define some terms used in this discussion. An agent's planning takes place in a *small world*, a model of a subset of the real world that contains objects relevant to the accomplishment of the agent's goals. Irrelevant parts of the real world may be ignored by the agent's planning process. The resulting small world is the world in which the agent's planning takes place. This world has various objects that may or may not be under the control of the agent. Each combination of relevant attribute values of the objects in this world constitute one state of this world. An agent has a set of goals the agent wishes to accomplish. These goals may be represented in a hierarchy as a kind of *and-or* tree. This tree has a main goal that may be decomposed into a set of subgoals. Some subgoals must be accomplished together with other subgoals, to accomplish a higher level goal. These subgoals have an *and* relationship. Some subgoals may be substituted for other subgoals to accomplish a higher level goal. These subgoals have an *or* relationship. Some subgoals may have to be accomplished before other subgoals may be accomplished. These subgoals are preconditions for the other subgoals. In general, a chain of subgoals, the instrumental goals, must be accomplished in some order to satisfy an overall goal. Some goals are more important than other goals in terms of contributing to the accomplishment of higher level goals. These subgoals have a higher priority than others. An agent has control over a set of resources. The resource objects might include machines, the agent's body, and people under the influence of

the agent. The agent's resources may be employed by the agent to change the state of the world, to satisfy the agent's goals. Actions are intentional changes in the state of the world caused by agent resources. An agent takes actions to accomplish changes that satisfy goals.

Overcoming Perceived Limitations of Artificial Agents

Recent AI research has addressed a number of the issues that have been perceived as limitations in artificial agents. We will briefly discuss some of the perceived limitations and ongoing research.

Inflexibility

Most artificial agents incorporate some type of expert system technology. Their knowledge typically is in the form of structured rules that allow them to respond effectively in a number of different situations. However, they suffer from the same limitations as current expert systems. It is very time consuming and difficult to build an expert system which models a specific decision-maker, whether they would represent U.S. or other interests. Once built, this expert system tends to be inflexible in its decision-making process. As a result, the artificial agent's performance suffers.

Decision-Making

The forces represented in these games, be they national leaders or other wielders of power, will generally have interests that sometimes agree and sometimes conflict with the interests of other forces. This situation is different from that of a two-player zero-sum game, which is the basis for most AI research. In a two-player zero-sum game, there are two players and the goals of the two players have utility values that sum to zero — where one player succeeds the other player must fail. This was similar to the situation where there were two superpowers, the U.S. and Soviet Union during the Cold War, but it is seldom found in international relations in the current world order. In conflict situations in the current world situation there may be several players, and the satisfaction of any goal of one player may mean either: 1) the satisfaction of some goals of another player; 2) denying the satisfaction of the goals of another player; or 3) no significant affect on the satisfaction of the goals of another player. Current AI decision methods such as minimax search techniques used in games such as chess, do not map well to such situations.

Research Needed to Overcome Limitations in Artificial Agents

The limitations discussed above are not insurmountable obstacles preventing the development of useful artificial agents, but they are problems that must be addressed by AI research to permit artificial agents to make useful contributions to seminar games. Following is a discussion of current research that may help to overcome these limitations.

Inflexibility

To address the problem of inflexibility in artificial agents, research is being done in machine learning. One approach is to design and build an adaptive artificial agent using apprenticeship learning from a domain expert, and then use experienced-based learning to improve its performance over time. The underlying technology used may be multistrategy machine learning, which allows a knowledge-based system to learn deductively, inductively, or by analogy.

Apprenticeship learning is a type of interactive machine learning where an adaptive agent learns to improve its performance in conjunction with a human expert. Typically, the expert will point out mistakes made by the adaptive agent during a simulation and assist it in revising its knowledge so that it will not make such mistakes in the future. The advantage over the current technology is that the process of revision is well-defined and semi-automated. Multistrategy learning techniques may then be used to revise the knowledge of the adaptive agent.

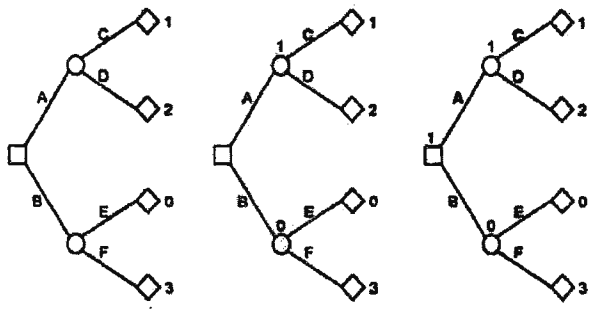


FIGURE 4—2

Experienced based learning founded on multistrategy machine learning will correct the knowledge of the adaptive agent when it has made obvious mistakes as a result of missing or incorrect knowledge. This process may revise the knowledge base autonomously. Multistrategy learning integrates different learning strategies such as explanation-based learning, learning from examples, analogical learning, case-based reasoning, abductive learning, etc. Multistrategy learning systems take advantage of the complementary nature of different learning strategies and are therefore able to perform learning tasks that are beyond the capabilities of single strategy machine learning systems.

By using machine learning in an integrated system, it is possible to address both the problem of 1) building adaptive agents for simulation and training through interactive learning from a human expert; and 2) the problem of their continuing adaptation and improvement during their normal use in training through autonomous learning from their own experience.

Decision-Making

Advances are also being made in AI planning systems. For example, recently developed planning systems permit decision-making by agents whose goals may be fairly independent. The traditional decision process for a two-player zero-sum game is illustrated by the tree graphs in Figure 4—2.

Suppose the planning agent has two alternative actions, A and B. Given a choice of action A, another agent may choose either action C or action D. Given the choice of action B, the other agent may choose either action E or action F. The utility to the planning agent of the result of each action of the other agent is a number next to a diamond-shaped node. For example, if the other agent chooses action D, the utility to the planning agent would be 2. The planning agent wishes to maximize the utility value, and wishes to select an action that results in the highest utility. The other agent wishes to minimize the utility to the planning agent. For that reason, if the planning agent should choose action A, the other agent will choose action C, with a utility value of 1. If the planning agent should choose action B, the other agent will choose action E with a utility of 0. Thus, the best the planning agent can do is to choose action A.

This method assumes that the other agent will do everything possible to prevent the planning agent from achieving its goals. In the real world, the situation is usually more complex than this. For example, in relations between two countries there may be goals that are shared by both countries such as improving the environment. There may also be divergent goals such as those pertaining to a territorial dispute between the two countries.

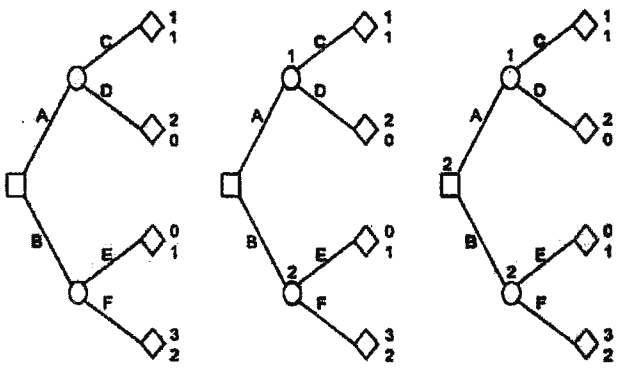


FIGURE 4—3

Such a situation is reflected in Figure 4—3. There are two numbers next to each utility node of the decision tree. The top number is the utility to planning agent. The bottom number next to each node is the other agent's utility. Here as in the

previous example, we may expect that the other agent will choose actions that maximize its utility values. Should the planning agent choose action A, the other agent will choose action C, with a utility to the planning agent of 1. Should the planning agent choose action B, the other agent will choose action F, with a utility to the planning agent of 2. Thus, the planning agent should choose action B in this situation.

AI planning systems are being developed that permit a planning agent to maximize the accomplishment of its goals regardless of how the goals of other agents may relate to it.

Proposed Architecture for an Artificial Agent

The architecture proposed for an artificial agent is shown in Figure 4—4. The artificial agent may consist of a planning system that uses a knowledge base and plausible reasoning strategies to generate plans for achieving mission goals. Such goals may be organized in a hierarchy. The planning system will take the goal hierarchy and generate a plan intended to maximize the accomplishment of the mission goals. The generated plans are then executed and the sequence of events that take place as a result of the plan is recorded. This result of plan execution is analyzed during learning to improve the current knowledge base so that future plans will be more effective in accomplishing the goals.

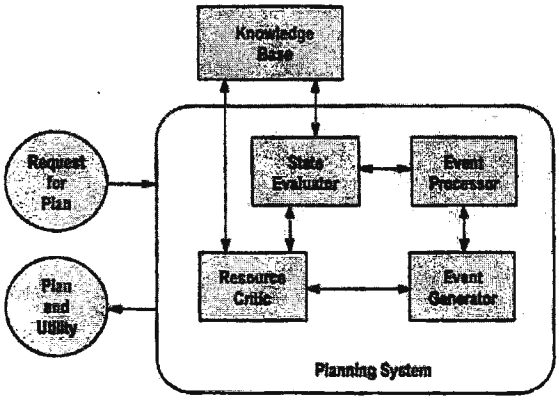


FIGURE 4 — 4

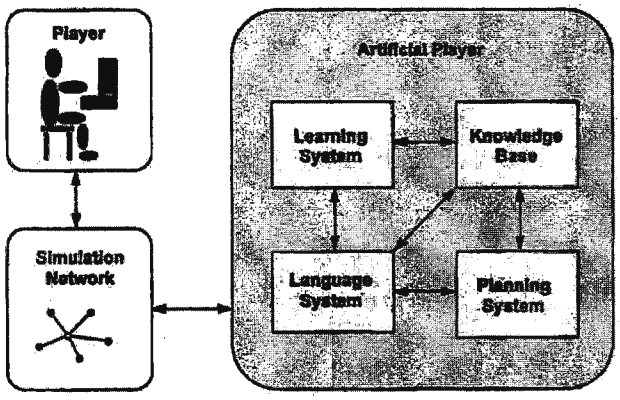


FIGURE 4— 5

The planning system may be used by an artificial agent as the basis for its decisions. Given the current state of the world and the agent's goals, both reflected in the agent's knowledge base, the planning system would construct a plan for achieving its goals. The artificial agent may be a computer opponent playing a game, a participant in a simulation (not necessarily an opponent, just a rational agent whose decisions affect the course of events in the simulation), or a robot using the planning system to solve problems concerning the best way for it to deal with its environment. Machine learning in the form of apprenticeship and multistrategy learning may be used to improve the knowledge of the planning system. Generally, the knowledge provided by a user to the knowledge base of a planning system will be incomplete and partially inaccurate, if the domain of the planner is complex. Since the quality of plans produced by the planning system depends on the quality of the knowledge in the knowledge base, machine learning may play an important role in improving the effectiveness of a knowledge-based planning system.

As shown in Figure 4—5, the proposed planning system has four main components: a state evaluator; a critic; an event generator; and an event processor. When the contingency planner is called, the calling system requests a plan for an agent. The planner returns the plan it develops and the utility of the plan in terms of the subjective probability of the agent eventually achieving its top goal. The plan

specifies the sequence of actions the agent must take and the times the actions must be performed, to accomplish the goals of the agent.

The contingency planner may also recursively call itself to determine the outcome of actions taken by other agents. The outcome of each recursive call may be expressed as a utility value indicating how the actions of the other agent are expected to affect the ability of the planning agent to achieve its goals. The assumption underlying the operation of this planning system is that each agent will take actions that will maximize its goals. These actions may or may not have any bearing on the accomplishment of the goals of other agents.

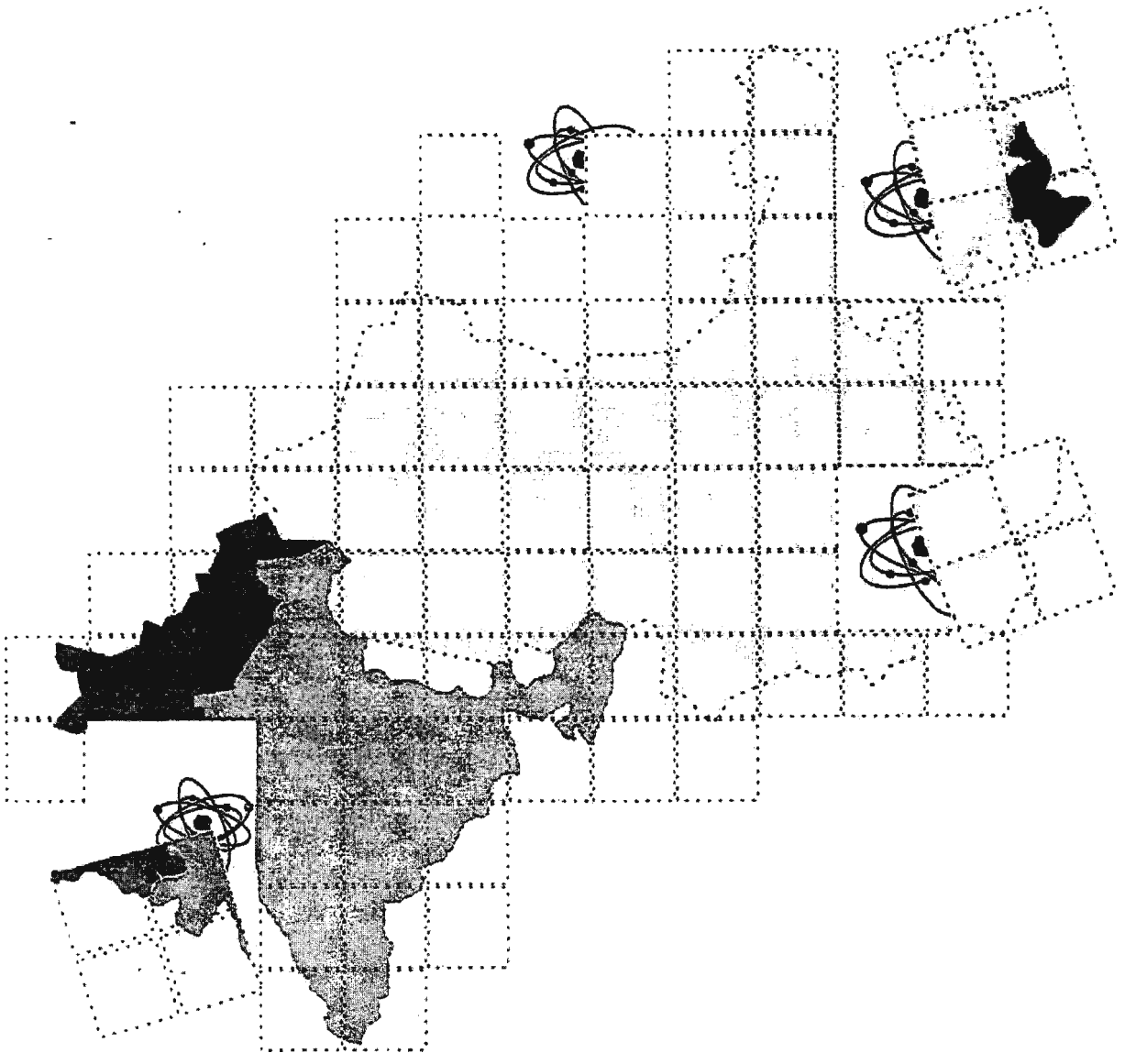
The state evaluator determines, given a specific state of the world, the subjective probability that the highest goal of the agent will be satisfied. The state evaluator consults rules and functions in the knowledge base to establish this probability. This probability is a number from 0 to 1, where a 0.5 means the agent's top goal is eventually expected to be accomplished 50% of the time given correct actions by the agent. If the top goal of the planning agent has been satisfied, the state evaluator returns 1. If it cannot be satisfied, the state evaluator returns 0. Otherwise, the state evaluator is called only when the contingency planner has decided to terminate the exploration of the event space. This decision may be based on a specific depth expressed as a number of plies in the search tree.

Various kinds of constructive critics may be employed to perform tasks in support of a planner. The critic referred to in this planning architecture is a resource allocator. It determines what resources will be assigned to a goal. This determines what actions may be taken by the resources to satisfy the goal. The critic generates alternate sets of action sequences the resources may take for the contingency planner to consider.

The event generator derives from the critic sets of alternative actions that may satisfy bottom level goals. For each set of actions, the event generator predicts a set of alternative events that might result from the actions, together with the probabilities of the alternative events. Some events are deterministic. They occur with probability 1. Other events are stochastic. The event generator determines the mutually exclusive set of events that might be triggered by an action and the probability of each event.

The event processor takes each alternative event and sees how the event affects the accomplishment of the goals of the planning agent. It takes each event from the Event Generator and uses the simulator to project how the event will change the state of the world. Then it calls the contingency planner to see how another agent will respond to the new world state. When the planner returns with the utility value for the event, the Event Processor computes the expected value pertaining to the event by multiplying the probability of the event times the utility value of the event. It keeps track of the highest expected value resulting from the various actions to identify the optimal sequence of actions.

CHAPTER 5
SECURITY PLANNING OPTIONS FOR U.S. DECISION-MAKERS



THE ANALYTICAL FRAMEWORK

Introduction

The relatively static nature of the bipolar security system has been replaced by a higher degree of fluidity in the international security environment. In particular, the proliferation of weapons of mass destruction (WMD) and associated delivery systems has become an increasingly serious threat to U.S. and international security. These weapons, particularly nuclear and biological weapons, carry with them devastating effects. Moreover, these weapons offer smaller countries and subnational groups the opportunity to affect U.S. policy in a disproportionate manner. The proliferation of WMD threatens to become the cause of greater turmoil, further aggravate international security, and challenge the U.S. ability to move with freedom in the international arena. These factors argue for the need to develop a comprehensive flexible WMD Planning Option Framework that augments and assists in the development of policy options from wargaming efforts.

Gaming credible scenarios is one way in which U.S. decision makers can be better prepared for future crises involving WMDs. As discussed earlier in this report, Grey Team wargames are more complex and better suited to the emerging multipolar security system than the traditional Red - Blue wargames. These games can be as dynamic as the environment they portray. Further, the benefits of Grey Team wargames for U.S. decision makers are complicated by a number of factors, including diverse acquisition patterns, the range of employment options available to an aggressor, and uncertain time response requirements and availability.

Grey Team wargames, however, can illustrate various technical and political characteristics of the proliferator, as well as motivations, expected benefits, risks undertaken, and how these capabilities may be employed. In turn, this increases the awareness of decision makers and prepares them for potential crisis management. In addition, these wargames can evaluate the optimal form and style of the information needed in certain contingencies, thus avoiding the ubiquitous problem of information overload in a crisis. Given that usual political and military channels of communication will be supplemented by others, for example economic/financial and humanitarian, planners can use Grey Team wargames to ensure that the full range of options are considered. Lastly, a tailored information package(s) can be used in forming more options than were previously considered in Red/Blue wargames. Thus, a thorough evaluation of the factors that might be used to select the best option, or reject lesser ones, reduces the negative impacts of poor policy choices by allowing for the examination of particular options or combinations thereof.

The WMD Planning Option Framework for Blue decision makers established below, and depicted in Figure 5—1, offers opportunities for innovative gaming and practice for successful conflict resolution. The framework is divided into three parts: Phase I, event assessment; Phase II, option development; and Phase III, option selection/implementation. Though political, economic, and humanitarian response options may be available, a greater challenge exists in determining the adequacy and efficacy of military responses. Therefore, the military aspects of this problem, either in crisis or wartime, will be the primary focus of the Planning Option Framework.

Phase I: WMD Event Assessment

This phase consists of four categories: event identification; ascertaining who the responsible party is; determining the context of the event; and focusing on U.S. interests. Arguably, the single most critical aspect of the Planning Option Framework is event identification since it may be that the range of response options are

WMD Planning Option Framework

Phase I: WMD Event Assessment

- EVENT IDENTIFICATION
  - ✓ Infrastructure Development
  - ✓ Material Theft/purchase
  - ✓ Tests/exercises
  - ✓ Explicit Threats
  - ✓ "Virtual Arsenal" Capable
  - ✓ WMD "Surge"
  - ✓ Employment (Demo or attack)
- RESPONSIBLE PARTY
  - ✓ State
  - ✓ Non-state
  - ✓ Unclear
- EVENT CONTEXT
  - ✓ Local
  - ✓ National
  - ✓ Regional
  - ✓ International
- U.S. INTERESTS
  - ✓ Direct/Vital (U.S. Territory, personnel, economic)
  - ✓ Type I allies (ROK, Japan, Australia)
  - ✓ Type II allies (5 Tigers - India?)
  - ✓ Gray players
  - ✓ Red players

Phase II: Option Development

- DO NOTHING
- ACTIVE MONITORING/ASSESSMENT
- UNILATERAL OPTIONS
  - ✓ Political/Diplomatic
  - ✓ Economic
  - ✓ Military (Presence, show of force, spec ops, surgical CF, quarantine/ blockade, force entry)
  - ✓ Preemption/Prevention (spec ops, surgical CF
  - ✓ Retaliation (spec ops, surgical CF, force entry)
- MULTI-LATERAL
  - ✓ Political/diplomatic
  - ✓ Economic
  - ✓ Military (Presence, show of force, spec ops, surgical CF, quarantine/ blockade, force entry)
  - ✓ Preemption/Prevention (spec ops, surgical CF)
  - ✓ Retaliation (spec ops, surgical CF, force entry)
- INTERNATIONAL ORGANIZATIONS
  - ✓ United Nations (mil ops as above)
  - ✓ Regional Organizations (mil ops)
  - ✓ NGOs (propaganda, HA)

Phase III: Option Selection/Implementation

- CREDIBILITY
- ALIENATION/INTERNATIONAL OPINION
- LIMIT DAMAGE TO INTERNATIONAL RELATIONSHIPS
- LEADERSHIP ROLE
- PRACTICALITY
- PROPORTIONALITY
- DISCRIMINATION (HIGH/LOW)
- DETERRENT FOR FUTURE EVENTS
- EFFECTIVENESS
- CONTRIBUTION TO POST-CRISIS STABILITY/SETTLEMENT/RESOLUTION
- TECHNOLOGIES
- VISIBILITY OF TARGET

FIGURE 5—1

defined by what type of WMD use has occurred and, as Chapter Two explained, how that weapon is used. A nuclear detonation in anger at Blue troops will elicit a certain type of response that will not be duplicated with a Grey chemical attack against another Grey player. And a surreptitious biological attack, as will be discussed later, may not attract any response for some time since the identity of the responsible party may be unknown.

It should be remembered, however, that employment of WMDs need not be equated with "explosion," since deterrence and compellance benefits can be gained from, among other things, the existence and/or development of a dual-use WMD infrastructure. In identifying the event, then, there are a range of possibilities that should be analyzed. These include the purchase of a fuel cycle element that may complete the cycle or advance it further along. The adversary may already have an advanced infrastructure, maybe even a virtual arsenal. Such purchases and development may constitute a surge in a crisis situation, or it may mean that the country has

(b)(5)

Event identification, of course, can also include the detonation of a device, though it will still need to be determined what was used and what the intended message was. This may be a particular problem as Blue attempts to distinguish between chemical or biological weapon use, and it will need to be determined whether the intent was for demonstrating

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PURSUANT TO 5 U.S.C. § 552 (b)(5)

THE FRAMEWORK APPLIED

A PRC-Taiwan Crisis

The case study of China in Chapter One of this Report offers descriptions of circumstances that might lead to a crisis involving the People's Republic of China and Taiwan wherein weapons of mass destruction, especially nuclear weapons, might be a significant factor. A declaration of independence by Taiwan is the conceivable catalyst for a crisis that would have great risk of an armed conflict between the two parties.

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A Pakistan-India-China Crisis

As described in the case study of India and Pakistan detailed in Chapter One, both countries have active nuclear programs. There has been at least one reported instance where there was fear that assuming an advanced nuclear weapons readiness posture had been directed. The dispute over Kashmir and Jammu, heightened by Hindu-Moslem violence in India, is, of course, the core issue likely once again to bring about open hostilities between these two antagonistic South Asian neighbors.

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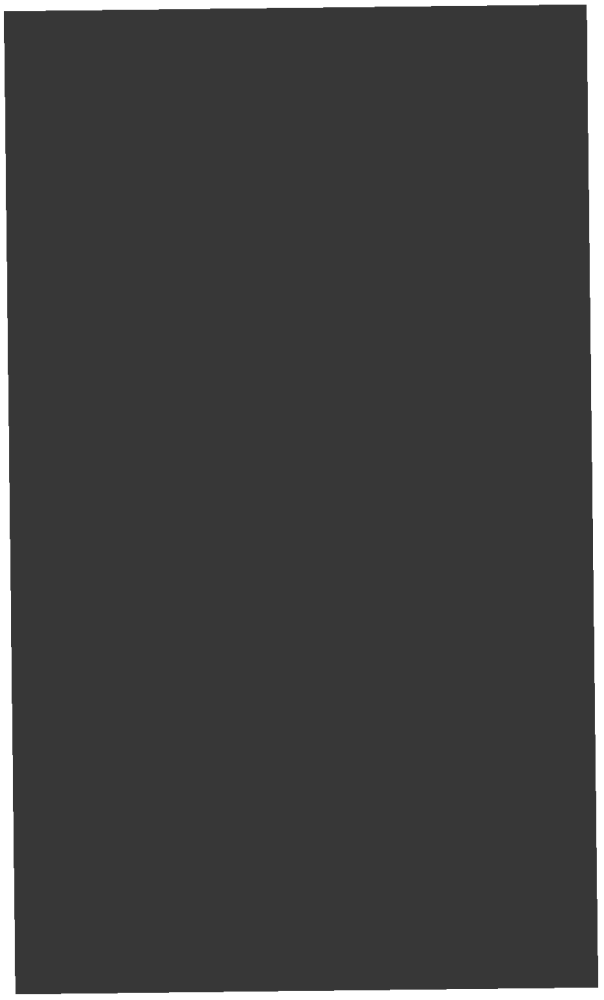
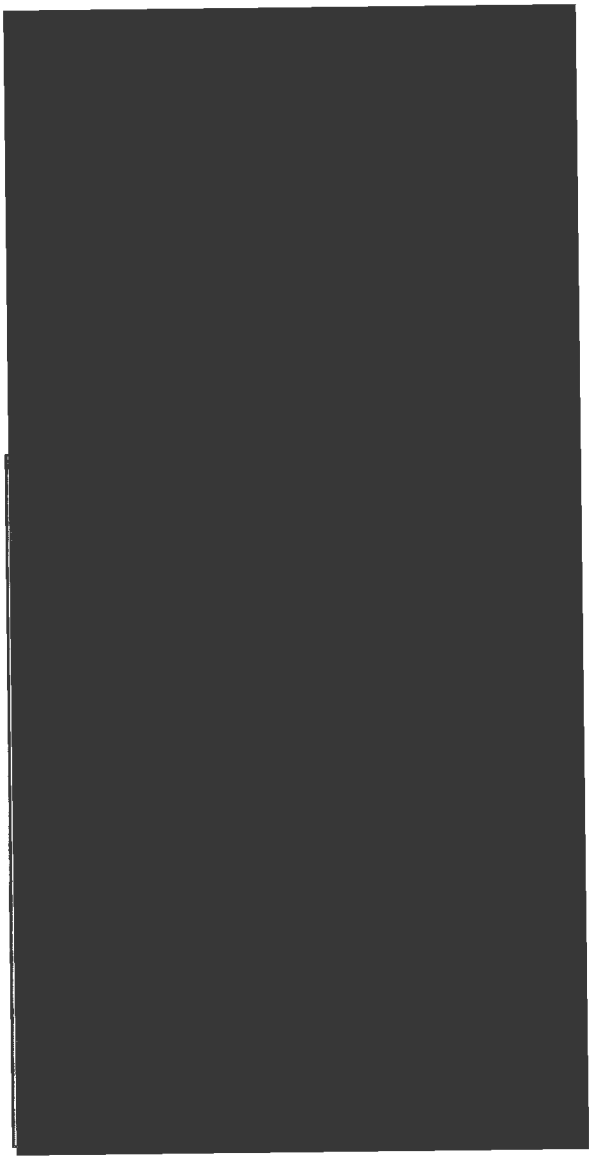


take a back seat to these concerns over North Korea. With the North Korean nuclear issue capturing so much interest, little attention is given to China's oft-voiced concerns about resurgent Japanese militarism, and little is said about others' concerns about what China may do about the Spratly Islands in the South China Sea or even about the PRC-ROC issue. The spotlight remains on North Korea. The North Korean economy is contracting and there are forecasts of economic collapse, but North Korea remains a star on the world stage and the center of much attention all stemming from its ability to keep the major players on the world scene acting in a play with the script largely written by North Korea.



A North Korea-U.S.-Japan Crisis

The case study of North Korea in Chapter One makes clear the volatility of the situation on the Korean peninsula and examines the complex factors in detail. The issues of whether North Korea has developed and assembled one or more nuclear weapons and why North Korea is so intransigent concerning inspection of its nuclear facilities remain unresolved. The one thing that the case study and the recent confrontations between North Korea and the U.S., the IAEA, and South Korea do make clear is that the matter of possession of nuclear weapons and the ability to deliver them have become a primary focus of security concerns on the Korean peninsula and more generally in northeast Asia. Concerns in the region about the modernization of the People's Liberation Army and even about the continuing nuclear weapons testing by the PRC

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PURSUANT TO 5 U.S.C. § 552 (b)(5)

Conclusion

The end of the Cold War has brought with it a reduction in the direct nuclear threat to the continental United States. Paradoxically, however, the threat from WMD employment to U.S. interests, allies, and regional security in general has increased. Making this problem more frustrating and worrisome, is the fact that WMD employment means more than an actual explosion. The latent deterrent and coercive effect of the existence and/or development of a dual-use WMD infrastructure is one of several "new," visible, and likely methods of employment in the future. Further, during the Cold War the U.S. was more aware of, and prepared for, nuclear threats from, in particular, the Soviet Union. In the post-Cold War security environment, however, the U.S. must be prepared to repel and contend with myriad WMD threats from not only a growing number of nation states, but from the murky world of non-state actors, sub-national groups, and divisive political factions.

With such an unclear, confusing, and threatening international security environment, the WMD Planning Option Framework provides Blue decision makers in Grey Team wargames with an opportunity to "practice" their response in a given situation; to become more familiar with the vagaries of future WMD use and international security. Crises usually revolve around a plethora of information, some of which may be incomplete or redundant, a problematic dimension of real world situations that the Grey Team wargame scenario can simulate. This is not to say that one would deliberately hold back key information, but it does reflect the likelihood of successful, and failed, crisis and wartime deception operations. "Real" crises, therefore, could be emulated by flooding players with information — some accurate, some misleading — while the security planning options framework augmented the decision maker's capabilities to grapple with this problem. This would be accomplished by offering a means of assessing the crisis in the absence of complete information and measuring the impacts of implementing the desired response option.

In addition, Grey Team wargames correspond to the reality that response options are not necessarily going to be political and/or military alone. Instead, there will be other channels of communication to manipulate. Economic/ financial and humanitarian, for example, both of which will probably play a key role in the aftermath of any WMD crisis while the former could be used during a crisis to deescalate. Though these new channels did not form the focus of this study, the security planning option framework can accommodate these other modes of communication and offer them to Blue decision makers in Grey Team wargames.

Lastly, since the threats are diffuse, and the response options so varied, decision makers could, as with the problem of information overload, become inundated with options. In a WMD crisis or war, options and actions will have to be presented and decided upon extemporaneously, while the pros and cons of each will, similarly, be subject to expeditious analysis. Here, again, the WMD Planning Option Framework can assist, not by "rehearsing" response options — all crises are unique — but by offering decision makers the opportunity to become familiar with general categories of responses and criteria to measure the viability of a certain response in a given situation.