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Beyond Nonproliferation: Secondary Supply, Proliferation Management, and U.S. Foreign Policy

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The paradox of an impoverished state developing and exporting increasingly capable missile systems bears witness to the steady increase in the number and capabilities of secondary, often less developed, proliferation suppliers. This "secondary proliferation" is largely unaffected by traditional nonproliferation tools, although in some cases they may slow, raise the financial or political cost of, or otherwise stigmatize development of weapons of mass destruction. This article addresses both the supply motivations and the behavior of the three most significant secondary suppliers (Russia, China, and North Korea), as well as the various U.S. policy responses designed to mitigate these activities.

On June 25, 1999, the 9,600-ton North Korean cargo vessel *Ku Wol San* was intercepted at the Indian port of Kandla. Acting on intelligence, Indian customs agents boarded the ship when it arrived at the port to offload a payload including 13,000 tons of sugar. Along with the specified cargo, Indian authorities reportedly found that an additional 148 crates listed as "water purification machinery" on the ship's manifest instead contained precision machine tools, Scud missile blueprints, and additional missile components [1]. Rather than an ultimate destination of Malta, as the North Korean government claimed, the cargo's likely destination was Pakistan—a state that in 1998 tested the Ghauri medium range ballistic missile (MRBM), a close copy of the North Korean Nodong [2].

This drama unfolded concurrent with a tension-laden, much-anticipated (but ultimately unrealized) test of a North Korean *Taepodong-2* missile [3]. After the initial August 1998 test launch of its Taepodong-1 MRBM predecessor, which reportedly attempted to send the Kwongmyonsong-1 satellite into orbit, Pyongyang has continued its ballistic missile research and development efforts. It continues to be both a net importer of technological assistance from China and other states and a beneficiary of cooperative efforts with other, less developed, yet increasingly capable, states engaged in ballistic missile– and weapon of mass destruction (WMD)–related research and development. The brazen behavior of this "rogue" state seized the agendas of the G-8 and ASEAN (Association of Southeast Asian Nations) meetings in June and July 1999 and sparked an intensive round of high-level Japanese–South Korean–American diplomatic and military activities.

The paradox of an impoverished state developing, and exporting, increasingly capable missile systems bears witness to the steady increase in the number and capabilities of secondary, often less developed, proliferation suppliers. The term "proliferation supplier"

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refers to an exporter of WMD or missile delivery systems, their constituent enabling or production technologies, or the requisite material or expertise necessary to their development or production. This "secondary proliferation" occurs in the shadows of international regimes designed by the advanced industrial states to prevent, or at least retard, the spread of militarily sensitive technologies with prospective WMD applications. Although the proliferation challenges stemming from Russia and China are today greater, the trend line only reinforces a central conclusion of the congressionally mandated Commission to Assess the Ballistic Missile Threat to the United States (the Rumsfeld Commission): The threat posed by these emerging capabilities is "broader, more mature and evolving more rapidly" than previously reported intelligence community estimates indicated, and the United States "might well have little or no warning" before operational deployment of WMD-capable ballistic missiles in regions of concern [4].

This has wide-ranging implications for U.S. policies designed to combat WMD proliferation. Traditional nonproliferation tools are unlikely to ultimately prevent or roll back WMD proliferation in all countries of concern, although they may continue to slow, raise the financial or political cost of, or otherwise stigmatize WMD development in some cases. The security realities of the emerging threat environment place an evident premium on a counterproliferation "plan B." This article addresses both the WMD supply motivations and behavior of the three most significant secondary suppliers (Russia, China, and North Korea), as well as the various U.S. policy responses designed to mitigate these activities. The increasing scope and pace of WMD transfers, particularly at the level of secondary suppliers, suggests that the United States—and the international community more generally—will have to cope with increasingly a problem of proliferation management [5].

Key Proliferation Suppliers of Concern

Recalling a litany of WMD proliferation–relevant events in 1998, Director of Central Intelligence (DCI) George Tenet articulated several key concerns: nuclear tests conducted in South Asia; "continued concerns" over Iraq's WMD programs; "accelerated missile development" in Iran, North Korea, Pakistan, and India; and a "broader availability" of biological and chemical technologies with possible weapons applications. In February 1999 congressional testimony, Director Tenet argued that "there is a continued and growing risk of surprise" resulting from such central concerns as "the security of Russian WMD materials, increased cooperation among rogue states, and more effective efforts by proliferants to conceal illicit activities" [6]. Although 1998 was certainly a banner year for WMD proliferation activities, it may not represent a unique occurrence but rather an underlying trend unfavorable to the pursuit of traditional nonproliferation objectives. Director Tenet testified in early 2000 that this picture "has become even more stark and worrisome" since that time, in part because particular countries who traditionally have been net technology importers "may step up their roles as 'secondary suppliers' " [7].

Although National Intelligence Estimate 95-19 called "foreign assistance"—the transfer or cooperative development of technologies with possible weapons-related applications—a "wildcard," the Rumsfeld Commission found that "extensive technical assistance" is readily available from external sources [8]. In substantial agreement with this assessment, DCI Nonproliferation Center (NPC) Director John Lauder labeled foreign assistance a "fundamental factor behind the growth in the missile threat," a backdrop against which the continuing proliferation of chemical and biological weapons "takes on more alarming dimensions." Although the intelligence community has identified more

than 50 states of proliferation concern as suppliers, conduits, or potential proliferants, "at least" 16 states currently have active chemical weapons programs, and "perhaps" a dozen are pursuing offensive biological weapons programs [9]. As in the past few years, Russia, China, and North Korea topped the list of key proliferation suppliers in 1998 and 1999 [10].

Russia

Russia has been a principal supplier of military and dual-use technology for many years, and many of its key clients—whether Iran, India, China, or others—are also countries of proliferation concern. Russian export behavior is motivated by a variety of factors. A primary rationale, of course, is financial. The Ministry of Atomic Energy generates considerable revenue with its foreign ventures, and both the Russian Space Agency and the state arms-export agency *Rozvooruzhenie* bring in substantial income and in some cases may help sustain Russia's weakened defense and nuclear industries. In conjunction with this export push, Russian officials argue that conventional weapons sales do not violate international agreements, and that other commercial transactions, such as Russian space-launch and nuclear assistance to India, are also valid under international law. At times, weapons sales are intended to advance larger Russian foreign policy considerations and may yield some influence over the foreign and defense policies of friendly states [11]. Despite the possible negative strategic implications of some exports, short-term profit is a powerful lure; Stephen Blank argues that such "strategic myopia" is widespread [12].

Moscow leaders routinely argue that complaints levied against Russia for its export of military and dual-use items are politically motivated. Some, such as Ministry of Atomic Energy spokesman Vyacheslav Syachev, perceive a hypocrisy in U.S. actions—such as its backing of the light water reactor deal envisioned under the Agreed Framework with North Korea—and declare that "competition ... makes [the United States] speak of mythical Iranian nuclear threats, which are not confirmed by facts" [13]. Others, including Minister of Atomic Energy Yevginy Adamov, allege a darker U.S. motivation for pressing the Iranian nonproliferation agenda: "They want to tie us up with hand-outs, with credits which must be paid back by us and our future generations. We want to earn our money properly. So, we intend to fight aggressively for our markets wherever that does not damage our country's interests and its defence policy" [14]. Similarly, Yuri Savelyev, rector of the Baltic State Technical University, argues that if Russia does not provide the technical assistance sought, "North Korea and China are ready to offer Iran help with new rocket programs" [15].

In the Iranian case, U.S. officials long have been concerned about Tehran's unconventional ambitions. Iranian efforts to acquire nuclear weapons and other WMDs and develop ballistic missile launch vehicles are well documented [16], and Russian–Iranian cooperation in this area has been analyzed extensively [17]. Discouraging Russia from engaging in sensitive technology transfers to Iran has been discussed since 1994 at almost every presidential summit and biannual vice-presidential meetings, through quarterly meetings of special envoys, and during a variety of meetings between U.S. and Russian secretaries (as well as deputy and undersecretaries) of state, secretaries of defense, and national security advisers and periodic interactions between other senior officials. The U.S. Congress has pressed a variety of bills in an effort to help stem these cooperative efforts or otherwise thwart Iranian ambitions, including the Iran–Iraq Arms Nonproliferation Act, the Iran–Libya Sanctions Act, the Iran Missile Proliferation Sanctions Act, the Iran Nuclear Proliferation Prevention Act, and others. Moreover, there are frequent

amendments to various authorization and appropriations bills that seek to curtail or reduce the amount of foreign assistance or cooperative threat reduction funds available to Russia, as a result of Russian arms transfers or other unfavorable measures. These often require that the president make appropriate certifications regarding Russian compliance with nonproliferation, arms control, or curtail egregious arms sales or, instead, require the president to exercise a certification waiver on national security grounds. Although *politically* expedient, it is evidently a *technical* impossibility to make some certifications, given the information circulated by a variety of official U.S. government publications and statements by senior officials [18].

To help combat the enigma of Russian proliferation to Iran, the Clinton administration has attempted to offer an array of lucrative carrots to Russian entities. These include space launches and participation in other space-related activities as nonproliferation carrots for the Russian leadership [19]. These perks translate into approximately $50 to $100 million per space launch with a 20-launch ceiling through 2000, and approximately $400 million for participation in additional international space projects through that time. Not surprisingly, this often is supported by NIS-affiliated (New Independent States) scholars and government officials, as well as participants in the domestic U.S. aerospace industry; others take a harder stance [20]. Moreover, should the 1994 U.S. deal with Russia for the purchase of 500 metric tons of highly enriched uranium be completed successfully, Russia also will earn an anticipated $12 billion over a 20-year period. Other lucrative carrots include more than half of the more than $3 billion in Cooperative Threat Reduction aid; the vast majority of almost $1 billion in U.S. assistance for enhanced material protection, control, and accounting; and several hundreds of millions in additional security-related programs sponsored by the U.S. government since 1992 [21]. Finally, the United States also has provided some $2 billion in humanitarian, technical, and economic aid and has been instrumental in helping Russia secure multiple tranches of loans through the International Monetary Fund over this same period. Clearly, many of these do not attempt directly to curtail Russian–Iranian technological cooperation or the transfer of missile, nuclear, or other sensitive technology to Iran. Some, such as Project Sapphire (with Kazakhstan), Operation Auburn Endeavor (with Georgia), and related "preemptive acquisition" projects have been explicitly undertaken and justified on the basis of alleged Iranian efforts to acquire fissile material or other sensitive, WMD-relevant technologies. Nevertheless, the aggregate picture illustrates the scope and scale of financial interactions that, in a worst case scenario, may be called into question should U.S.–Russian relations sour to the point of discontinued cooperation even on matters of common security interest.

Beginning in 1995, senior U.S. and Israeli government officials also periodically offered sensitive intelligence to the senior leadership of the Russian government in an effort to stem Russian transfers. Despite the risk to intelligence sources and methods, intelligence sharing between the U.S. and Russian special envoys chartered with resolving this cluster of issues became commonplace by 1997. According to the first U.S. envoy, Ambassador Frank Wisner, "for their own interests, the Russians are getting serious about closing the gap between what they've said repeatedly and what's actually happening" [22]. The second U.S. envoy, Ambassador Robert Gallucci, suggested that U.S. information-sharing activities appeared to pay off: "Steady progress" was evident from the summer of 1997 through the summer of 1998. The Yeltsin administration was persuaded to institute "catch-all" export controls in January 1998. Moreover, the Russian government announced several months later that it would investigate nine of "a dozen or so" Russian "entities" identified by U.S. intelligence for the proliferation activities. In all, it appeared that there was a "smaller and smaller number of problem cases" [23].

The underlying presumption of U.S. intelligence-sharing activities in this area appears to be one of a benign but weak Russian state that is either unaware of the activities of companies or commercial enterprises engaged in transfers or simply unable to prevent these transactions. Such a perception is widespread. Richard Speier argues that Russia "is either incapable of controlling such exports, or is unwilling to control them, or both" [24]. Former Director of Central Intelligence James Woolsey takes the argument one step further, suggesting that an individual in the Russian context today could be simultaneously an executive in a major Russian firm, a Russian intelligence officer operating under cover, and a senior member of a Russian organized crime group [25]. The specter of a quasiprivatized, obviously weak or incapable state opens the possibility that sensitive Russian technologies or technical know-how could leak either without the knowledge of the relevant Russian authorities or with the tacit complicity of the relevant government officials. Nevertheless, Victor Mizin assesses that "there is no such thing as a private or independent defense manufacturing facility. . . . [T]hey are tightly controlled by the Ministry of Defense." Thus, if groups are "constantly undermining" the regimes that should regulate Russian–Iranian contacts in the missile area, at least a degree of state complicity is suspect [26]. Kenneth Timmerman concludes that "we have been duped . . . and duped again" [27].

Still, the Federal Security Service and other organs of the Russian government occasionally have acted on the intelligence provided. For instance, in 1997 the Federal Security Service reportedly canceled a contract for missile motor development between Iran and the Scientific Production Association; foiled an effort to pass classified materials on aviation engineering, probably from the Central Aerohydrodynamic Institute; and expelled a representative of the Iranian embassy in Moscow for allegedly attempting to obtain missile design documentation [28]. In 1998, Azerbaijani customs officials seized 22 tons of maraging steel allegedly of Russian origin bound for Iran [29]. To date, however, only First Deputy Prime Minister Yuri Maslyukov has acknowledged formally that at least some of the shared data relating to instances of sensitive Russian exports "have turned out to be true" [30]. (Maslyukov later was censured for his comments, which were subsequently "clarified.") This exception proves the general rule: The official, stated position of the Russian government is to not transfer sensitive, WMD-related materials to Iran, and senior Russian officials consistently have maintained that "Moscow has not transferred to Iran or any other country missile or nuclear technologies in violation of the prevailing international regime" [31]. Given this steadily deteriorating political context, site-specific sanctions—which although *politically* useful are of questionable *practical* utility—such as those currently in place against a number of Russian "entities" may be even less useful ahead.

To the extent that it once existed, the window of opportunity that permitted good-faith efforts by senior Russian and American officials appears to have closed. Ambassador Gallucci candidly argues that by January 1999, "progress [had] come to a halt." The bilateral working groups no longer meet as often, nor are they as effective. The much-vaunted internal Russian investigation into the nine firms of concern has produced no identifiable results. And work continues at Bushehr, despite continued U.S. concerns with the reactor's net proliferation potential, its possible utility as a cover for "unauthorized" transfers, or its links to other, supposedly unrelated, Iranian activities such as uranium enrichment. Indeed, despite an abundance of open-source information to suggest otherwise, then–Russian Prime Minister Sergei Stepashin argued that "nobody has proved that it is Russia who supplies missile technologies to Iran" immediately preceding his July 1999 meeting with Vice President Al Gore—a meeting that culminated with an agreement to allow Russia an additional four commercial space launches by the end of

2000 [32]. Other senior Russian officials also clamor for supporting documentation (often based, of course, on sensitive information) and roundly dispute U.S. claims of continuing missile proliferation or related assistance to Iran [33]. Russian nongovernmental specialists also sometimes make these claims: "There is not a single confirmed fact of a leakage of critical materials and technologies from Russia to Iran: there are no grounds therefore to question the official Russian position" [34]. Others are more sanguine: "There is information that individual Russian enterprises are indeed affiliated with such collaboration. But there is no information regarding state deliveries, or deliveries sanctioned by state structures, of technologies or hardware in violation of the Missile Technology Control Regime (MTCR) to Iran. Moreover, there is evidence that the Russian authorities are working seriously to avert unsanctioned deliveries of missile hardware or individual assemblies or mechanisms to Iran" [35].

It is less likely a problem of insufficient information sharing or of evidentiary shortfall than it is a matter of the Russian "government's commitment, willingness, and ability to curb proliferation-related transfers," according to the Central Intelligence Agency [36]. Others argue more bluntly that Russia retains a policy of "selective proliferation" [37]. Russia is a member of the relevant supplier-oriented proliferation regimes but is at the same time in the midst of a severe economic crisis and has questionable political cohesion and will. Many close observers simply do not believe then–Russian Prime Minister Yevginy Primakov's statement that Russia is "doing everything to prevent leakage of weapons of mass destruction" and is "abiding by absolutely every international standard concerning export" [38]. Nor does the National Intelligence Council, which asserted in September 1999 that Russian missile assistance "continues to be significant" [39]. There are no tangible indicators that this has positively changed on President Vladimir Putin's watch. Rather, he argued in June 2000 that "we are now convinced that the missile threat from so-called 'problem countries' in the Middle East or the Asia region ... does fundamentally not exist, neither today nor in the forseeable future" [40].

China

"Communist China's nuclear, chemical, biological, and missile proliferation," say Representatives Edward Markey (D-MA), Benjamin Gilman (R-NY), and Christopher Cox (R-CA), "has made it the Wal-Mart of international nuclear commerce" [41]. Although consistently emphasizing Chinese progress on nonproliferation affairs, the Clinton administration does not expressly repudiate such a judgment. Assistant Secretary of State Robert Einhorn judges that China has "not shown sufficient restraint in transfers of missile equipment and technology, dual-use chemicals and chemical production equipment, and conventional arms," and its longstanding aid to Pakistan's nuclear weapons development program is well known. Moreover, given its lack of "effective" export controls, "even when China wanted to show restraint, its ability to show restraint has sometimes been inadequate" [42]. NPC Director John Lauder assesses that contemporary Chinese proliferation-related export behavior "is a mixed picture" in which "we see more signs of progress on nuclear and chemical matters than on missile assistance" [43]. With particular respect to the latter, although Chinese leaders have pledged verbally to adhere to the terms of the MTCR, State Department Senior Advisor for arms control and international security John Holum acknowledges that "there's a dispute about the specifics" of this understanding and "the issue remains unresolved" [44].

The technological cooperation of the People's Republic of China (PRC) with and assistance to both Pakistan and Iran is particularly extensive, and Chinese export behav-

ior clearly has furthered various WMD-related programs in each state. With respect to Pakistan, the Central Intelligence Agency judges that in 1998 China "provided extensive support in the past to Pakistan's WMD and ballistic missile programs," and, as such, should "continue to be monitored closely" [45]. With respect to Iran, China remained a "significant supplier" of products relating to missile and chemical development programs in 1998. Moreover, although a 1997 pledge to not engage in any new nuclear cooperation with Iran "appears to be holding," the intelligence community "will continue to monitor [this] carefully" [46].

Beijing often publicly advocates the "complete prohibition and thorough destruction" of chemical and biological weapons. The Chinese government argues that the "prevention of proliferation is not in itself the ultimate goal" and often has rejected arguments that might "restrict or harm economic, scientific and technological development in developing countries" or "impair the independence and sovereignty of any nation." It considers the volume of its exports "limited" and proclaims that its conventional arms transfers are regulated by three principal concerns: The export of such weapons "should help the recipient nation increase its appropriate defence capacity"; the transfer "must not impair peace, safety or stability regionally or globally"; and the weapons trade should not "interfere in sovereign states' internal affairs" [47].

Interpreting this official Chinese stance, former U.S. ambassador to China James Lilley suggests that PRC export behavior has been justified "for decades, even centuries," first by "high sanctimonious rhetoric," second by *Realpolitik*, and finally by "victimization" [48]. In his view, arms transfers generate revenue for China's defense establishment, encourage political support from significant regional states such as Iran, and remind the United States and others that the PRC is an important player on the world scene. In parallel, former Deputy Assistant Secretary of Defense Mitchell Wallerstein concludes that China emphasizes the "foreign-policy and commercial gains of sharing sensitive technology with proliferant states" and continues to uphold an "ambivalent" nonproliferation policy pending a conclusive national decision regarding China's interests in meeting global nonproliferation norms. Until then, the Chinese leadership appears to find it necessary to "balance its obligations" under the international arms control and nonproliferation regimes to which it belongs and its "perceived need to use exports—including many that are WMD-related—to sustain its domestic defence industries" [49].

Gordon Oehler and Bates Gill offer a geostrategic interpretation of China's proliferant behavior. According to former NPC Director Oehler, the PRC has regarded Pakistan as a "counterbalance" to India—a state that declares China to be the underlying rationale for its development of nuclear weapons. As such, the PRC "has held back few weapons and technologies in support of this relationship" [50]. Similarly, Gill argues that the effective collapse of the Sino–Soviet relationship in the late 1960s, coupled with an increased U.S. presence in Southeast Asia, prompted the Chinese leadership to step up its diplomatic efforts to "establish friendly relationships in the developing world." By the 1980s, Iran's "revolutionary policies and strong stand against outside influence meshed well" with China's efforts to both maintain independence from the superpowers and build Chinese regional influence [51]. In the view of Daniel Byman and Roger Cliff, strategic concerns "include a desire to strengthen foes of China's rivals and to expand China's political influence in regions such as the Middle East and Southeast Asia" [52]. Frank Gaffney takes the geostrategic argument further. In his view, China's arms sales are not only a vehicle to generate hard currency, pay for oil imports, and gain influence but also "part of a larger and more ominous pattern of hostile behavior," an ingredient in the PRC "campaign to diminish America's presence and influence in Asia" [53].

The United States has engaged in extensive bilateral dialogue with the Chinese government on nonproliferation issues. Successive secretaries of state and other senior State Department and White House officials often discuss such concerns, and they often are deliberated at the presidential level. In a fundamental sense, China is "indispensable" to global nonproliferation efforts; the administration, in turn, routinely argues that countering the spread of WMD is among the highest of post–Cold War U.S. national security objectives [54]. In the past several years, China joined the Nuclear Nonproliferation Treaty and acquiesced to its indefinite and unconditional extension, signed and ratified the Chemical Weapons Convention, ratified the Comprehensive Test Ban Treaty, and most recently joined the Zangger Committee. Robert Einhorn suggests that although China's "past record on proliferation has been a source of serious concern," these developments constitute "a marked positive shift in China's nuclear nonproliferation policies and practices" [55]. Similarly, the State Departments John Holum argues that over the past decade, China has made "enormous progress" on nonproliferation issues broadly [56]. Nevertheless, China is not a member of the Nuclear Suppliers Group, Australia Group, or MTCR, although Beijing asserts that it abides by the guidelines and parameters of the last [57]. Although on balance China's official nonproliferation positions have evolved positively from a decade ago, many analysts argue that its lack of membership particularly in the Nuclear Suppliers Group and the MTCR are important omissions that call into question the degree to which it intends to uphold global nonproliferation norms [58].

Although the extent of progress in declared Chinese policy is noteworthy, the implementation of such appears to have varied considerably. Several high-profile cases embody continuing concerns over its export behavior [59]. Between 1994 and 1996, China is known to have sold approximately 5,000 ring magnets, a special industrial furnace, and high-technology diagnostic equipment to unsafeguarded nuclear facilities in Pakistan. In the 1980s, Beijing reportedly provided Pakistan a proven nuclear weapon design and additional assistance to this end. China also has a longstanding pattern of aiding Iranian nuclear facilities. As with Pakistan, Chinese technicians have provided technical assistance, Chinese companies have sold reactor and related components, and, although the deal ultimately was withdrawn, the Chinese agreed to sell Iran a uranium conversion plant. Moreover, the record suggests that China has sold to Pakistan and, despite official denials, apparently continues to sell, short-range missile components and production equipment, if not intact weapons systems [60]. Similarly, in the past few years China transferred a significant number of C-802 antiship cruise missiles and separately provided sophisticated ballistic missile guidance systems, computerized machine tools, and telemetry assistance to Iran. Beijing also apparently has provided considerable chemical weapons–related assistance [61].

Taken together, China's net performance over the past decade suggests a pattern of export transfer that clearly does not reflect the spirit, let alone the letter, of its many recently professed nonproliferation intentions. Although Beijing probably has accepted the rationale that WMD proliferation may, at least in certain cases, threaten its security interests, Chinese practices "remained inconsistent" with prevailing global nonproliferation norms throughout the early post–Cold War era [62]. And, although the U.S. government has—as in the Russian case—imposed sanctions on select Chinese "entities" rather than on the state itself for proliferation-related activities, some analysts have argued pointedly that "the argument that China's arms transfers are not under Beijing's control is fallacious." China's own policy on the subject requires that "major transfer items and contracts must be . . . approved by the State Council and the Central Military Commission" [63].

Unfortunately, the manifest disconnect between Chinese nonproliferation policy and practice is matched by an apparent gap between declared U.S. nonproliferation goals vis-à-vis China and the degree to which the United States has acted to achieve those objectives. Although nonproliferation concerns—or issues of any functional nature, such as trade or human rights—should rightly be subordinated to larger U.S. regional and country-specific foreign policy concerns, the Clinton administration appears consistently to have pressed commercial over proliferation-related concerns in its dealings with China. United States law—particularly the relevant components of the Arms Export Control Act, the Iran–Iraq Nonproliferation Act, and the Nuclear Nonproliferation Prevention Act—mandates U.S. export sanctions, a curtailment of export–import loan assistance for a specified period of time, and related actions if the president determines that China has engaged in proliferant behavior.

In light of such evident Chinese nonproliferation violations as those referenced previously, the Clinton administration arguably should have imposed sanctions and taken additional measures as required by U.S. Law. Only in rare cases, however, have sanctions been applied. In August 1993, for instance, the Clinton team followed the Bush administration's 1991 actions in imposing so-called MTCR category II sanctions against Chinese companies for transferring to Pakistan M-11 missile components (rather than intact missiles, a determination that would have mandated stronger category I sanctions). Similarly, sanctions were imposed for Chinese chemical weapons–related transfers in May 1997. In practice, such "determinations"—the responsibility for which has been delegated to the Under Secretary of State for Arms Control and International Security Affairs—often either have not been made or have been lengthy, drawn-out processes resulting in informal decisions not to sanction. For example, when the National Intelligence Council concluded that Pakistan "has Chinese-supplied M-11 short-range ballistic missiles"—a clear indicator that complete systems had been transferred—State Department spokesman James Foley reported that "we have not reached a conclusion that the requirements for a category one finding of sanctionability have been met," and that "an intelligence judgment is not in and of itself necessarily a sufficient basis for a sanctionability determination under U.S. law" [64].

Chinese leaders often denied knowledge of China's transfer of ring magnets, M-11 components and production equipment, and other nuclear and missile assistance to Pakistan; disputed that the "mythical" transfers, sales, or other aid violated any international agreement; and insisted that such actions would not be repeated in the future. In turn, U.S. officials often justified the lack of trade action on the basis of the Chinese leadership's ignorance of the questionable activities, differing U.S. and PRC interpretations of bilateral agreements and multilateral regulations, concerns over the weakness of China's export control system, and pledges that Chinese export behavior would improve in the affected areas. Senate Foreign Relations Committee Chairman Jesse Helms says he regrets the "appalling legal hijinks of the Administration in trying to avoid sanctioning Communist China," and is concerned by President Clinton's own admission that U.S. sanctions laws place "enormous pressure . . . to fudge on an evaluation of the facts" [65]. Moreover, in those comparatively few cases in which decisions have been made to take appropriate trade action, the sanctions often have been lifted far in advance of the requisite 2-year timeframe, generally after a Chinese pledge to improve its behavior. According to former NPC Director Gordon Oehler, however, Chinese leaders "have a very poor record of living up to their commitments" to the United States [66].

Many analysts also question an apparent discrepancy between the administration's comparatively hard line against China with respect to bilateral trade relations and conflict

over intellectual property rights, and its apparent willingness to accept Chinese pledges that often subsequently appear to be violated. Supporting evidence is compelling: The president has issued 13 "national interest" waivers from the larger-scale Tiananmen sanctions for space-launch purposes and has decontrolled computer-related exports to China significantly since 1993 [67]; has been notably reluctant to impose mandatory sanctions and, to this end, routinely has failed to complete the underlying administrative process by which determinations are made; often has raised to impossible levels the evidenciary bar (or repeatedly allowed the relevant officials to do so) by which the specific intelligence used to make determinations is judged; and often has accepted Chinese pledges in the face of condemning evidence that should suggest otherwise.

Although suggestive, if not a smoking gun, such gamesmanship clearly contrasts with steps taken to embark on a trade war with China over intellectual property rights and other commerce-related issues in the mid-1990s, or its steadfast lobbying for both Permanent Normal Trade Relations with China and that state's entry into the World Trade Organization. Also noteworthy is the administration's push to implement the 1985 U.S.–PRC Nuclear Cooperation Agreement, which required (among other things) a presidential certification that China "has provided clear and unequivocal assurances to the United States that it is not assisting and will not assist any non-nuclear weapons State, either directly or indirectly, in acquiring nuclear explosive devices or the materials and components for such devices." Despite the lucrative potential of the Chinese market for nuclear reactors in the years ahead—estimated by private industry to be worth at least $15 billion through 2010—Presidents Reagan, Bush, and, until recently, Clinton did not make this certification. In January 1998 preparations for a trip to China, however, President Clinton judged that Beijing's "clear assurances" on nuclear nonproliferation were "sufficiently specific and clear." By contrast, CIA Director George Tenet testified just 2 weeks later that the "jury is still out on whether the recent changes are broad enough in scope and whether they will hold over the longer term" [68].

Although the lack of an effective export control system in China helps explain some of its proliferation behavior, Robert Einhorn argues that China's "problematic record on exports can largely be attributed to conscious decisions by Chinese leaders to pursue policies deemed to be in China's national interest" [69]. But it is unclear exactly how this judgment squares with sanctions determinations such as those relating to the transfer of ring magnets. In that case, senior State Department officials concluded that the most senior Chinese leaders were simply unaware of the actions of the China Nuclear Energy Industry Corporation—a subsidiary of the state-owned China National Nuclear Corporation—which made the sale. In short, Gary Milhollin concludes that although the State Department "has a policy of engaging the Chinese," the Chinese "do not have a policy of engaging the State Department" [70].

North Korea

According to NPC Director John Lauder, "there is little positive that can be said about North Korea, the third major global proliferator, whose incentive to engage in such behavior increases as its economy declines" [71]. Pyongyang, a beneficiary of significant and sustained Chinese and Soviet assistance, engaged in missile development for indigenous use even prior to the 1970s and has sold missile components or technology to such states as Libya, Syria, and Egypt for years. Today, the roster of clients associated with the DPRK's (Democratic People's Republic of Korea) increasingly sophisticated ballistic missile development program also includes Pakistan and Iran, states with declared inten-

tions to acquire and proven track records in developing WMD and more technologically advanced missile delivery vehicles [72]. North Korea, a state bordering on economic collapse, reportedly earns between $100 million and $500 million dollars from Scud-B and Scud-C exports annually [73].

The Rumsfeld Commission highlighted the increased missile trade among various lesser-developed states as a key source of post–Cold War proliferation concern [74]. This "secondary" network of proliferation suppliers continues to develop, and North Korea—both a WMD demand and supply state—is a central player. Thus, even as it continues to import select raw materials necessary to develop ballistic missiles, it also exports missile-related equipment, components, and materials [75]. Although the Central Intelligence Agency concluded that the DPRK does "not require significant outside assistance to produce ballistic missiles or weapons of mass destruction," there is mounting evidence that WMD-related technology transfers and information sharing are often two-way streets [76]. The spectrum of cooperative possibilities is quite broad, and there is some evidence to suggest that North Korea, Iran, and Pakistan have engaged in a number of areas: On the one hand, secondary proliferants may elect to split the financial burden of missile development efforts, share test data, or otherwise leverage contributions through a virtual economy of scale. On the other, proliferants may opt to cooperate across technology areas. Although Pyongyang transferred the relevant technology to Pakistan to help develop the Ghauri MRBM, Islamabad reportedly in return has assisted North Korea with uranium enrichment technology [77]. Moreover, North Korea (and, surely, others as well) receives inadvertent assistance through open trade with Japan and other states. One investigation found, for instance, that 30% to 40% percent of the semiconductors in North Korean missiles came from Japan—a state that feels increasingly threatened by North Korea's improving missile capabilities [78].

Hard-currency earnings appear to be a primary rationale for North Korean missile exports, according to the official North Korean press agency: "Missile export is aimed at obtaining foreign money we need at present" [79]. Other motivations, however, are also evident. Although the DPRK for the first time acknowledged exporting missiles, their constituent components, and associated production technology only in 1998, such activities today appear to be a badge of national pride. According to a North Korean government press release, "The USA is mistaken if its thinks that it can 'check' the DPRK missile development through 'cooperation' with other countries. . . . [T]he 'missile issue' . . . is a matter which belongs to the sovereignty of the DPRK from A to Z" [80]. The National Intelligence Council estimated in September 1999 that the DPRK "may expand sales" over the next several years [81]. The Air Force National Air Intelligence Center reportedly warned the following October that North Korea offered to sell the government of Sudan a complete Scud missile assembly factory [82].

Separating rhetoric from reality is always difficult with North Korea, but it appears that survival concerns trump sovereignty issues, which past behavior suggests might be overcome for the right price. In 1996, the United States offered to negotiate an end to sanctions in exchange for an agreement by Pyongyang to halt the indigenous development and continued export of ballistic missiles [83]. During the fourth round of missile talks between U.S. and North Korean officials in March 1999, DPRK representatives offered to suspend missile exports for a 3-year period in exchange for annual cash payments of $1 billion from the United States [84]. Subsequently, Pyongyang suggested that "if the United States really wants to prevent our missile export, it should lift the economic embargo as early as possible and make a compensation for the losses to be caused by discontinued missile export" [85]. Says Yu Suk Ryul, "Pyongyang's aim is a U.S. guarantee not to undermine its system . . . it's the only scenario for the North's survival" [86].

At other times, North Korea appears to be motivated more by tactical rather than strategic concerns. As former North Korean Army Colonel Choi Ju-hwal testified in 1998, the DPRK joined the NPT "to earn more time for the development of nuclear weapons" [87]. Similarly, General John Tilelli, former–Commander of U.S. forces in Korea, argues that North Korea's development of asymmetric capabilities and its willingness to proliferate that threat beyond the peninsula "is an obvious attempt to bolster their bargaining position," as well as gain hard currency [88]. Others echo this interpretation, charging that, as with the August 1998 test launch of the Taepodong-1, Pyongyang often turns to the "missile card" or "nuclear card" to increase its bargaining leverage vis-à-vis the United States, South Korea, and Japan [89]. In addition to the technical data gained from the test, such an event also may have been intended to show off its wares for export purposes, display its military might, or otherwise influence the foreign policies of neighboring states.

Over the past several years, the United States has extended a variety of diplomatic and technological incentives in an effort to curb North Korea's WMD development efforts and export behavior. The 1994 Agreed Framework promised the provision of two light-water reactors and several hundred thousand tons of heavy fuel oil for several years. Moreover, although it did not result in the establishment of normal diplomatic relations, that agreement led to direct U.S.–DPRK negotiations for the first time and a continuing dialogue on various issues, including missile exports. Although the agreement may have led to a suspension at least in some North Korean efforts relating to nuclear weapons development, the stigma of "rewarding" a state with manifest supply- and demand-side proliferation problems remains unpopular, especially on Capitol Hill. At the same time, the United States obviously pursues a foreign policy course that is at odds with Pyongyang's declared objectives. It maintains a large troop presence on the Korean Peninsula, upholds its deterrent posture, and remains, in effect, committed to the military defense of South Korea. On occasion, the United States has imposed 2-year export sanctions on specific North Korean companies, such as the North Korean Mining Development Trading Corporation, which was penalized in May 1998 for its assistance to Pakistan in support of the Ghauri missile. These sanctions are purely symbolic, given that the United States does not currently export goods to North Korea. In any case, none of these actions—positive or negative—has led to a curtailment in North Korea's ballistic missile development or export behavior.

Secretary of State Madeleine Albright suggested in January 1999 that "restraint on missiles is essential if North Korea is to enjoy good relations with nations in its region and improve its standing in the world" [90]. U.S. negotiators in Geneva received in late 1999 what one State Department official called a "high-quality *de facto* missile moratorium" from their North Korean counterparts [91]. But the DPRK responded that those who describe the act as a "concession" and claim "a complete stop in missile development" equate to "political swindlers who have insidious political purpose" [92]. The North Korean news service also subsequently proclaimed that "missile development is an issue of national sovereignty," as well as a "self-defense measure we take to protect ourselves from the continued menace of the United States" [93].

Although some observers may view the historic June 2000 North–South summit as a major turning point in North Korea's foreign policy, it is too soon to conclude that a major shift in the DPRK's missile development and proliferation policies also has occurred. As in prior years, Pyongyang reportedly offered in July 2000 to halt missile exports for $1 billion per year in economic aid, a condition that U.S. officials rightly dismiss [94]. Also in July, Russian President Vladimir Putin announced that Kim Il Sung was willing to halt

North Korea's missile development programs in exchange for satellite launch assistance. But after drawing considerable international attention, the North Korean leader declared that they had only discussed the matter "laughingly," and that "the smaller a nation is, one should strongly keep its pride and confront the powerful big nations. . . . [W]hy would I need bigger countries? If I sit here in Pyongyang, many powerful nations come to me" [95]. These recent North Korean "offers" underscore that even after the United States partially lifted the 50-year-old embargo on trade with North Korea in June, and despite reduced diplomatic isolation, Pyongyang remains unwilling to declare its unconditional termination of ballistic missile technology development, deployment, or export [96].

Although State Department officials routinely declare that the United States and the DPRK have an "understanding"—not, they emphasize, a verifiable or enforceable "agreement"—that the DPRK "will not test any long-range missiles, including satellites, during ongoing discussions to improve relations," it is likely that a North Korean judgment that the United States has not been forthcoming with "proper" or timely compensation ultimately will spoil the deal [97]. Advocates of a more comprehensive approach also must persuade such skeptical legislators as Representative Christopher Cox, who concludes that "there is no abatement in missile development, and furthermore, there is still ongoing work on the development of the nuclear warheads themselves" [98]. In this context, the domestic political acceptability of the *understanding* ultimately may prove to be as tenuous as the substance of the diplomatic arrangement itself.

Secondary Supply: WMD Proliferation Implications

Today, the two most significant suppliers of WMD-related technology perceive incentives to proliferate, and the United States and other concerned states have proven unable to prevent many significant proliferation-related transactions in recent years. Russia is either unable or unwilling to exercise effective controls over its sensitive technologies, and China continues to export for both commercial and larger strategic purposes. Moreover, an emerging network of less developed suppliers exists beyond the reach of traditional regimes intended to encourage supplier restraint and clearly grows stronger over time. Evident technological cooperation and information sharing between North Korea, Iran, and Pakistan add a significant new dimension to the proliferation equation [99]. Even as the supply of proliferation-relevant goods and services from technologically advanced states continues under the Wassenar Arrangement with less restriction than under its Cold War era counterpart, the growing specter of secondary supply constitutes a nonproliferation future that is likely to be significantly unlike the past. There are at least four significant large-scale implications of continued secondary supply.

First, although their respective efforts in many cases build toward similar postsupply end results, the motivations guiding the three most significant proliferation suppliers vary considerably. The contemporary Russian case poses the difficult post-Soviet challenge of a weak state that may be incapable of regulating the outward flow of WMD-related technologies. Some analysts argue that the Russian government is willing but unable to exercise authoritative jurisdiction over its constituent components. Others conclude that the Russian government acts in a sufficiently capable manner but is unwilling to adequately regulate or sufficiently discourage the flow of sensitive proliferation-related technologies. Given this analytic discrepancy, and against a backdrop of frequent and continuing senior leadership changes, ascribing a coherent and sustained motivation set to the Russian government is problematic. In either case, however, Russian entities appear to be largely motivated by profit in a cash-strapped environment. Even if Russian officials are,

as then–Prime Minister Primakov suggested, "doing everything" to prevent technology leakage, such efforts are clearly inadequate. Despite official Russian assurances, it would be prudent to expect further transfers of technology and continued cooperation—whether direct and state-sanctioned or indirect and state-unaware—with states of proliferation concern, as well as a modest to minimal official Russian response to such activities ahead [100]. There is little reason to suggest that the pattern of transfer, denial, pledge restraint, but instead continue transfers identified by Aaron Karp will abate in the near term [101].

The Chinese case also may raise in part the question of relative state strength. The nature and number of military, energy, industry, and other state actors in the Chinese collective decision making process implicitly challenge the unified nature of the state apparatus. Yet, although the leadership may be unaware of some individual transactions, the aggregate pattern of Chinese export behavior suggests at a minimum some complicity on the part of key officials. Despite progress in declared Chinese nonproliferation policy over the past several years, implementation continues to lag behind. One possibility is that the Chinese leadership has not yet truly made a final national commitment to uphold global nonproliferation norms and is at the same time torn between three competing principles: first, adopting responsible and restrained policies that appropriately reflect (in the eyes of the international community) China's increasing status as a regional and global power; second, using selective proliferation to advance perceived Chinese security interests toward a limited number of states; finally, relying on exports as a means to raise much-needed revenue. As such, this case affords the judgment that although Chinese officials believe that proliferation in some cases may affect long-term PRC security interests adversely, selective proliferation may continue with their tacit approval if not active support into the future.

Although Russia and China almost certainly will continue to be the most significant suppliers of WMD-related technology for the next several years, the rise of North Korea as a net proliferation supplier embodies a new category of challenges facing the nonproliferation regime. It exists today at the center of a web of less developed but ever more technologically capable states with WMD ambitions. It benefited from substantial Chinese and Russian, as well as Libyan and Syrian, assistance in developing ballistic missiles and WMD capabilities; North Korea in turn has aided both the Pakistani and Iranian missile development programs. Moreover, it is likely that North Korea has benefited from the technological advances made by these states as a result of the assistance provided; leveraging technological lessons learned in some cases probably save, what are otherwise costly but often necessary development and testing activities for next-generation systems. North Korea's steadfast refusals to curtail sensitive weapons-related technology exports, its ongoing WMD and missile development efforts, the continuing prospect of warfare on the Korean peninsula, and the possibility of an ultimate North Korean state collapse together place the DPRK at the top of the list of rogues—both as an individual actor and as part of a larger network of secondary suppliers—to watch closely in the years ahead.

Second, as Defense Intelligence Agency Director Vice Admiral Thomas Wilson has argued, "the prospects for limiting proliferation are slim" [102]. As a manifest result of both willing suppliers and wanting consumers, WMD and their associated missile delivery vehicles will continue to spread. In most cases, individual transfers, sales, or other proliferation-relevant assistance will not challenge global nonproliferation norms severely. In aggregate, however, there is a notable—and increasing—gap between nonproliferation rhetoric and empiric reality. The cumulative effect of individual, item-specific transactions fundamentally alters the international security landscape. A determined proliferant

can benefit from a diversity of suppliers and from different technological approaches to achieve a similar weapons-development end point [103]. Over time, proliferant states might amass a weapons capability far in excess of what individual suppliers would permit otherwise, and of which the relevant authorities sometimes may be unaware.

For instance, Russia and China appear to agree formally with the United States that Iran should not become a nuclear weapons state. Yet Iranian attempts to acquire a Russian-built gas centrifuge plant or a Chinese uranium reprocessing facility, periodic access to Russian or Chinese nuclear know-how, and other relevant nuclear cooperation and assistance should be viewed as incremental steps in a deliberate, long-term Iranian process to acquire nuclear weapons. This "creeping proliferation" implies aggregate capabilities that exceed particular, often uncoordinated transactions by the relevant technology suppliers. Russian and North Korean assistance to Iran's ballistic missile development efforts is a clear case in point. Their individual efforts helped Iran "save years" in the research, development, testing, and evaluation process associated with the Shahab-3 MRBM, which was tested successfully in 1998 [104]. Moreover, an increasing indigenous technological sophistication on the part of many proliferation demand states, along with foreign assistance (technology and knowledge transfers as well as commercial sales) to these states from a rising number of willing suppliers, suggests that nonproliferation optimism is not well placed for the long term. Rather, the trend line suggests, as Lieutenant General Patrick Hughes, then director of the Defense Intelligence Agency, testified in February 1999, that the threat posed by regional powers armed with WMDs will continue to increase. Looking ahead, Hughes sees that "several rogue states will likely join the nuclear club, chemical and biological weapons will be widely proliferated, and the numbers of longer-range theater ballistic and cruise missiles will increase significantly" [105].

Third, although appropriate U.S. and international policy responses to supplier states should flow from an identification of the nature of their respective motivations, their performance in the Russian, Chinese, and North Korean cases is instructive. Despite specific, periodic small-scale successes, neither intelligence sharing nor the withholding of such, nor diplomatic pressure or engagement, nor economic sanctions or incentives have proven successful in eliminating many of the sales, transfers, or assistance offered by these key proliferation suppliers. Although this is almost certainly a function of the manner of *implementation* as much as the conceptual *design* of U.S. and international policies designed to stem WMD proliferation, the underlying trend line is nonproliferation–unfriendly in-aggregate.

Proliferation prevention and rollback may be achievable on occasion, and the many traditional diplomatic, economic, and other nonproliferation measures (including select, case-specific incentives and disincentives) should continue in a concerted effort to slow or otherwise impede the spread of such weapons and technologies. At the same time, however, such tools should be applied on a case-by-case basis and, to the extent possible, be fine-tuned to the particular motive structure of the suppliers or demand states in question. With respect to space launch, for instance, it makes little sense to continue conditioning such lucrative contracts on positive Russian or Chinese proliferation behavior that consistently fails to materialize; frequent backpedalling on such conditions only serves to undermine the credibility of the United States as it proclaims and pursues larger nonproliferation goals. Similarly, repeated refusals or nondecisions to make mandatory sanctions "determinations," the often symbolic application of export sanctions to specific foreign companies that have little (if any) commercial dealing with the United States, and the otherwise unclear or inconsistent application of U.S. law together raise the specter of

movable and subjective nonproliferation goalposts. Such actions also call into question the extent to which articulated U.S. proliferation goals are subordinated in practice to alternative foreign policy concerns rhetoric notwithstanding.

Finally, if supply is unlikely to be prevented successfully, and demand is likely to continue, it is time for the United States and the international community to prepare for a postproliferated world. Although U.S. foreign policy traditionally has interpreted WMD proliferation as a diplomatic problem, this approach suggests placing a relatively greater emphasis on the military operational dimension of such. Projecting ahead, one important consequence of continued proliferation supply is its contribution to a resurgent set of security dilemmas in South Asia, the Middle East, and East Asia—turbulent regions in which the United States, U.S. forward-deployed forces, and U.S. friends and allies maintain important security equities. The prospective offense–defense spiral effect of the ongoing spread of WMD in these regions foreshadows that such weapons will continue to spread, at increasingly capable levels and in greater quantities, in the years ahead. As such, U.S. officials must anticipate that WMD-related technologies will remain a central feature of the international security arena and that determined proliferants who are both willing and able to commit sufficient resources and effort will over time be likely to achieve their proliferation-related objectives.

This clearly places a premium on a well-developed counterproliferation "plan B," with ample investment in active defense, passive defense, and counterforce capabilities and a redoubled effort with respect to activities designed to help "internationalize" counterproliferation among key U.S. regional friends and allies. Although progress has been made in each of these areas since former Secretary of Defense Les Aspin launched the Defense Counterproliferation Initiative in 1993, further progress in each of these areas is imperative. One hopeful aspect of a robust counterproliferation program is its underlying deterrent calculus: that even if states such as Iran or North Korea are ultimately able to succeed in their WMD quest, they would be denied the battlefield advantage of using such weapons.

Notes

1. Reports vary: Some assert 148 crates as described above, others 177. See Steven Mufson, "In the Fight Against Weapons of Mass Destruction, All the News Is Bad," *International Herald Tribune*, 20 July 1999; Julian West, "Pakistan Arms Link To North Korea Hardens Attitudes Over Kashmir," *London Daily Telegraph*, 11 July 1999, p. 1; Delhi All India Radio Network, "North Korean Missile Cargo for Pakistan Confirmed," Foreign Broadcast Information Service (hereafter, FBIS), 10 July 1999; "Dangerous Cargo," *The Hindu*, FBIS, 8 July 1999; "India—missile components seized from ship," *The Hindu*, 4 July 1999; "India—seized components meant for nuclear weapons," *The Hindu*, FBIS, 5 July 1999; BBC Summary of World Broadcasts, "North Korea 'tight-lipped' about ship detained in Indian harbour," PTI News Agency, New Delhi, 9 July 1999.

2. See Joseph S. Bermudez, Jr., "The Rise and Rise of North Korea's ICBMs," *International Defence Review* 32, no. 7 (1 July 1999); idem., "Analysis: A Silent Partner," *Jane's Defence Weekly*, vol. 29, no. 20, 20 May 1998; David C. Wright, "An Analysis of the North Korean Missile Program," vol. III, Commission to Assess the Ballistic Missile Threat to the United States, Washington, DC, 15 July 1998, pp. 345–355; *Executive Summary of the Report of the Commission to Assess the Ballistic Missile Threat to the United States* (hereafter, Rumsfeld Commission), Washington, DC, 15 July 1998, pp. 11–18.

3. Michael Dutra and Guarav Kampani, *North Korea: A Second Taep'o-dong Test?* Monterey, CA: Center for Nonproliferation Studies.

4. Rumsfeld Commission, p. 5.

5. See Lewis A. Dunn, *Containing Nuclear Proliferation*, Adelphi Paper 263, London: International Institute for Strategic Studies, 1991; Peter D. Feaver, "Optimists, Pessimists, and Theories of Nuclear Proliferation Management," *Security Studies*, vol. 4, no. 4, Summer 1995, pp. 754–772.

6. Statement of Director of Central Intelligence George J. Tenet before the Senate Armed Services Committee, 2 February 1999, p. 1.

7. Statement of Director of Central Intelligence George J. Tenet before the Senate Select Committee on Intelligence, 2 February 2000, pp. 1–2.

8. Rumsfeld Commission, p. 6. See also Robert D. Walpole, "North Korea's Taepo Dong Launch and Some Implications on the Ballistic Missile Threat to the United States," presentation to the Center for Strategic and International Studies, 8 December 1998; General Accounting Office, "Foreign Missile Threats: Analytic Soundness of National Intelligence Estimate 95-19," GAO/T-NSIAD-97-53, 4 December 1996.

9. Unclassified Statement for the Record by Special Assistant to the DCI for Nonproliferation John A. Lauder to the Commission to Assess the Organization of the Federal Government to Combat the Proliferation of Weapons of Mass Destruction, 29 April 1999, pp. 1, 3.

10. Director of Central Intelligence, "Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions," 1 January through 30 June 1999 (see also 1 January through 30 June 1998 and 1 July through 31 December 1998), pp. 8–9. See also National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015," unclassified summary, September 1999. Because of space limitations, this article emphasizes Russia, China, and North Korea and does not deal directly with other states that supply potentially proliferation-relevant technology.

11. This has also been a long-standing rationale for U.S. security assistance and arms transfers to foreign countries. See Duncan L. Clarke, Daniel B. O'Connor, and Jason D. Ellis, *Send Guns and Money: Security Assistance and U.S. Foreign Policy*, Westport, CT: Preager, 1997, esp. ch. 5.

12. Stephen Blank, "Yevgeny Primakov and Russia's Proliferation Strategy: What We Should Expect," *The Monitor*, vol. 4, no. 4, Fall 1998, p. 9. Russian Foreign Minister Andrei Kozyrev also underscored this view in 1995, arguing: "We must be sure that we are really taking into account all the circumstances.... We must implement only projects that meet our long-term interests. This means that the economic situation should not make us lean to this side or that." See "Kozyrev Rejects US Attempts to Pressure Russia," *ITAR-TASS*, 4 April 1995.

13. "Russia Will Deliver Reactors to Iran—Ministry Staffer," *ITAR-TASS*, 14 April 1995.

14. Interestingly, at the same time, Minister Adamov also declares that he is "sure that that country [Iran] is trying to develop nuclear weapons." Ekho Moskvy Radio (Moscow), BBC Summary of World Broadcasts, 13 May 1998.

15. Patrick E. Tyler, "A Case Shows Russia's Quandry In Preventing Leaks Of Arms Lore," *New York Times*, 10 May 2000. See also "Sanctions Imposed Against Russian," *Washington Times*, 25 April 2000.

16. See, for instance, Anthony H. Cordesman, *Iran's Military Forces in Transition: Conventional Threats and Weapons of Mass Destruction*, Westport, CT: Praeger, 1999; Michael Eisenstadt, *Iranian Military Power: Capabilities and Intentions*, Policy Paper No. 42, Washington, DC: Washington Institute for Near East Policy, 1996, esp. pp. 9–34, 103–112; Andrew Koch and Jeanette Wolf, "Iran's Nuclear Procurement Program: How Close to the Bomb?" *The Nonproliferation Review*, Fall 1997, pp. 123–135; Aaron Karp, "Lessons of Iranian Missile Programs for U.S. Nonproliferation Policy," *The Nonproliferation Review*, Spring/Summer 1998: 17–26.

17. See Ivan Safranchuk, "Scientific Notes No. 8: The Nuclear and Missile Programs of Iran and Russian Security—The Framework of Russian-Iranian Collaboration," FBIS, 5 May 1999; Cordesman, *Iran's Military Forces*, esp. pp. 63–68, 312–316, 372–378; Stuart D. Goldman, Kenneth Katzman, and Zachary S. Davis, "Russian Nuclear Reactor and Conventional Arms Transfers to Iran," Congressional Research Service Report for Congress 95-641F, 23 May 1995; Bill Gertz,

Betrayal: How the Clinton Administration Undermined American Security, Washington, DC: Regnery, 1999, pp. 167–192; Committee on Governmental Affairs, Subcommittee on International Security, Proliferation, and Federal Services, *The Proliferation Primer*, Washington, DC: United States Senate, January 1998, pp. 17–30; Vladimir Moskvin, "The Russian-Iranian Conundrum and Proliferation Concerns," *The Monitor*, vol. 5, no. 1–2, Winter–Spring 1999, pp. 8–13; Fred Wehling, "Russian Nuclear and Missile Exports to Iran," *The Nonproliferation Review*, Winter 1999, pp. 134–143.

18. See, for instance, Lauder testimony, op cit; U.S. Congress, *The Proliferation Primer*, op cit; Director of Central Intelligence, "Report to Congress," *op. cit.*; U.S. Congress, House Committee on International Relations, hearing on Russian Weapon Sales to Rogue Nations, 106th Cong., 1st sess., 25 March 1999; Office of the Secretary of Defense (hereafter, OSD), *Proliferation: Threat and Response*, Washington, DC, November 1997, pp. 47–48.

19. See Alexander A. Pikayev, Leonard S. Spector, Elina V. Kirichenko, and Ryan Gibson, *Russia, the US and the Missile Technology Control Regime*, Adelphi Paper No. 317, London: International Institute for Strategic Studies, 1998; testimony of John D. Schumacher before the U.S. House, Science Subcommittee on Space and Aeronautics, 13 July 1999; Williams, "U.S., Russia Trade Gibes," p. A23; Bill Gertz, "U.S. ties satellite deal with Russia to Iran; Pushes Moscow to end missile transfers," *Washington Times*, 10 March 1998, p. A6.

20. Although motivations vary considerably, supporters of such an approach include Victor Mizin ("Russia's Missile Industry and U.S. Nonproliferation Options," *The Nonproliferation Review*, Spring–Summer 1998, pp. 36–47). See also Victor Zaborsky, "U.S. Missile Nonproliferation Strategy Toward the NIS and China: How Effective?" *The Nonproliferation Review*, Fall 1997, pp. 88–94; testimony of Roald Sagdeev before the U.S. House, Science Subcommittee on Space and Aeronautics, 13 July 1999; testimony of John McMahon before the U.S. House Committee on International Relations, 25 March 1999. Others, such as Kenneth Timmerman, Henry Sokolski, and Richard Speir, favor a harder line toward U.S.–Russian space-launch cooperation. See U.S. Congress, Hearing on Russian Weapon Sales; U.S. Congress, Senate Governmental Affairs Subcommittee on International Security, Proliferation, and Federal Services, hearing on Proliferation of Weapons From Russia, 105th Cong., 1st sess., 5 June 1997.

21. Jason D. Ellis, *Defense by Other Means: The Politics of U.S.-NIS Threat Reduction and Nuclear Security Cooperation*, Westport, CT: Praeger, in press; Monterey Institute of International Studies and Carnegie Endowment for International Peace, *Nuclear Successor States of the Soviet Union: Status Report On Nuclear Weapons, Fissile Material, and Export Controls No. 5*, Washington, DC: Carnegie Endowment, March 1998.

22. Steven Erlanger, "U.S. Gets Russia's Firm Vow to Halt Missile Aid to Iran," *New York Times*, 16 January 1998, p. 8.

23. Remarks of the Honorable Robert Gallucci to the seventh annual nonproliferation conference of the Carnegie Endowment for International Peace, Washington, DC, 11–12 January 1999. Reportedly, the companies to be investigated by Russian authorities were Glavkosmos, Baltic State Technical University, Grafit State Scientific Research Institute, Polyus Scientific Research Institute, Tikhomirov Instrument-Building State Research Institute, Komintern Plant, Russian Scientific and Production Center, MOSO, and Evropalas 2000. See Scott Parrish and Fred Wehling, *Institutions Suspected by the Russian Government of Violating Export Control Legislation*, Monterey, CA: Center for Nonproliferation Studies 26 August 1998.

24. U.S. Congress, Hearing on Proliferation of Weapons.

25. Oral statement of R. James Woolsey in U.S. Congress, Hearing on Russian Weapons.

26. Remarks of Victor Mizin to the seventh annual nonproliferation conference of the Carnegie Endowment for International Peace, Washington, DC, 11–12 January 1999. Alternatively, Anthony Cordesman argues that "private and state-owned firms may not be fully honoring the agreements of the Russian government." See Cordesman, *Iran's Military Forces*, p. 377.

27. Testimony of Kenneth R. Timmerman before the U.S. Congress, House Science Subcommittee on Space and Aeronautics, hearing on the Iran Nonproliferation Act, 106th Cong., 1st sess., 13 July 1999.

28. K. Petrov, "More and More Work for Counterintelligence: Spies and Terrorists Unabated," *Krasnaya Zvezda*, 18 November 1997, p. 3; A. Sashin, "Fewer and Fewer Iranians in Russia," *Kommersant-Daily*, 18 November 1997, p. 7; "Russia Does Not Encourage the Collaboration of its Enterprises with Iran in the Missile Field," *Eksport Obychnykh Vooruzheniy*, No. 10–11, 1997, p. 6; "A Citizen of Iran Wanted to Buy the Secrets of Russian Missiles," *Segodnya*, 15 November 1997, p. 1. (All as cited and discussed by Safranchuk, "Scientific Notes No. 8," pp. 21, 41–42.) Russian Space Agency chief Yuri Koptev acknowledges contacts between "certain organizations" in Russia and Iranian representatives but declares that "all attempts" to supply Tehran with Russian missile technologies "were cut short by the state." See "Russia Refuses to Acknowledge the Fact of Having Supplied Missile Technologies to Iran," *Segodnya*, in *Defense and Security*, 28 January 1998. See also Wehling, "Russian Nuclear and Missile Exports," p. 139.

29. Michael R. Gordon and Eric Schmidt, "Washington Queries Moscow Crackdown on Iran," *Moscow Times*, 28 April 1998, p. 4.

30. Simon Saradzhyan, "Maslyukov Says U.S. Right on Iran Leaks," *Moscow Times*, 22 January 1999, p. 1.

31. Prime Minister Victor Chernomyrdin, quoted in "The Regime Was Not Being Violated," *Rossiyskaya Gazeta*, 26 February 1998, p. 2, quoted in Safranchuk, "Scientific Notes No. 8," p. 10.

32. *Washington Post*, 25 July 1999, p. B4.

33. The Russian Federal Security Service argued that the U.S. decision to impose sanctions against three Russian institutions in January 1999—Mendeleyev University, Moscow Aviation Institute, and the Scientific Research and Design Institute of Power Technology—resulted from a "misunderstanding, or, probably, oversight of the American secret services." To wit, "those organizations have committed no violations of international export control rules intended to bar proliferation of mass-destruction weapons." Vladimir Isachenkov, "Russian Spy Service says U.S. Counterparts Didn't Do Their Homework," Associated Press, 14 January 1999. See also "Russia defends technology export controls after US sanctions," *Agence France Press*, 13 January 1999; Daniel Williams, "U.S., Russia Trade Gibes Over Iran; Kremlin Vows 'Tough' Reply to American Sanctions, Threats," *Washington Post*, 15 January 1999, p. A23.

34. Vladimir Orlov, "Russia, Iran, Iraq and Export Controls: Facts and Conclusions," *The Monitor*, vol. 4, no. 2–3, Spring–Summer 1998, p. 31.

35. Safranchuk, "Scientific Notes No. 8," p. 20.

36. Director of Central Intelligence, "Report to Congress," 1 July through 31 December 1998, p. 9. Similarly, others suggest that "despite official statements . . . some sales have and are taking place." There are "indications that Moscow is not fully capable of controlling personnel and institutions." See OSD, *Proliferation: Threat and Response*, p. 41.

37. Stephen Blank, "Proliferation and Counterproliferation in Russian Strategy," *The Korean Journal of Defense Analysis*, vol. 11, no. 2, Winter 1999, pp. 149–189.

38. "Primakov reassures Netanyahu on technology exports to Iran," *Interfax*, BBC Summary of World Broadcasts, 23 March 1999.

39. National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015," p. 7. See also Bill Gertz, "Russia Sells Missile Technology to North Korea," *Washington Times*, 30 June 2000, p. 1; "Israel Tells Russia of Concern About Transfer of Nuclear Know-How to Iran," *Agence France Presse*, 8 June 2000.

40. Foreign Broadcast Information Service, "Putin: NMD Would Affect Other Disarmament Agreements," interview with Russian President Vladimir Putin by Georg Gafron and Kai Diekmann, *Hamburg Welt am Sonntag*, 11 June 2000. Similarly, Putin and Chinese President Jiang Zemin issued a joint statement at a July 2000 summit meeting arguing that "the pretext of a missile threat is totally unjustified." See Associated Press, 18 July 2000. This contrasts considerably with the statement Putin signed in June 2000 with President Bill Clinton, which asserted that "the international community faces a dangerous and growing threat of proliferation of weapons of mass destruction and their means of delivery . . . a potentially significant change in the strategic situation and the international security environment." See Associated Press, "Joint Statement by Clinton, Putin," 4 June 2000.

41. Edward J. Markey, Benjamin A. Gilman, and Christopher Cox, "China and Nuclear Trafficking," *Washington Post*, 29 October 1997, p. A23. Because of space limitations, this article does not address concerns relating to China's demand-side, or "vertical," proliferation behavior.

42. U.S. Congress, House Committee on International Relations, hearing on the *Implementation of the U.S.–China Nuclear Cooperation Agreement*, 105th Cong., 2nd sess., 4 February 1998.

43. Lauder testimony, *op cit*., p. 2. Although this language is similar to the 1997 and 1998 DCI reports, the CIA judged that China was the "most significant supplier of WMD-related goods and technology to foreign countries" in the last half of 1996. See Director of Central Intelligence, "The Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions," July–December 1996, p. 5.

44. Matt Forney, "Cohen's China Talks Will Feature Delicate Issue of Weapon Exports," *Wall Street Journal*, 10 July 2000, p. 24; Eric Eckholm, "U.S.–China Talks Don't Resolve Issue of Pakistan Missile Aid," *New York Times*, 9 July 2000.

45. Director of Central Intelligence, "Report to Congress," p. 8. See also Bill Gertz, "Chinese Ship Arms Parts to Pakistan," *Washington Times*, 4 June 1998, p. 1; Gertz, *Betrayal*, pp. 135–167; U.S. Senate, *The Proliferation Primer*, pp. 3–16.

46. Director of Central Intelligence, "Report to Congress," pp. 2, 3. See also Bill Gertz, "China assists Iran, Libya on missiles," *Washington Times*, 16 June 1998, p. 1; Con Coughlin, "China Helps Iran To Make Nerve Gas," *London Daily Telegraph*, 24 May 1998, p. 1; R. Jeffrey Smith, "China's Pledge to End Iran Nuclear Aid Yields U.S. Help," *Washington Post*, 30 October 1997, p. 1; Bill Gertz, "China aided Iran chemical arms," *Washington Times*, 30 October 1997, p. 1; Peter Baker and Helen Dewar, "Clinton Renews China's Trade Status," *Washington Post*, 4 June 1998, p. 4.

47. Information Office of the State Council of the People's Republic of China, "White Paper—China: Arms Control and Disarmament," November 1995, pp. 2, 3, 8. See also Li Daoyu, "Foreign Policy and Arms Control: The View From China," *Arms Control Today*, December 1993, pp. 9–11; Sha Zukang, "Some Thoughts on Non-Proliferation," remarks to the 7th annual non-proliferation conference, Carnegie Endowment for International Peace, Washington, DC, 11–12 January 1999. In July 1998, the Chinese government reiterated this basic stance: "[N]ecessary measures should be adopted to apply effective international control to the transfer of sensitive materials and technologies in order to prevent the proliferation of weapons of mass destruction and their carriers. However, at the same time, China holds that international efforts to prevent such proliferation should follow the principle of fairness and rationality, and opposes a double standard whereby anti-proliferation is used as a pretext to infringe upon the sovereignty of other countries and harm normal international cooperation and exchanges in the fields of economy, trade, science and technology." See Information Office of the State Council of the People's Republic of China, "China's National Defense," Beijing, July 1998, p. 5.

48. U.S. Congress, Senate Governmental Affairs Subcommittee on International Security, Proliferation, and Federal Services, hearing on Weapons Proliferation in China, 104th Cong., 2nd sess., 10 April 1997. See also Koro Bessho, *Identities and Security in East Asia*, Adelphi Paper 325, London: International Institute for Strategic Studies, 1999, esp. pp. 27–37.

49. Mitchell B. Wallerstein, "China and Proliferation: A Path Not Taken?" *Survival*, vol. 38, no. 3, Autumn 1996, pp. 58–61, 64–65. For a discussion particularly on the commercial motivations of China's conventional arms transfers, see Eden Y. Woon, "Chinese Arms Sales and U.S.-China Military Relations," *Asian Survey*, vol. 29, no. 6, June 1989, pp. 601–618; Richard A. Bitzinger, "Arms to Go: Chinese Arms Sales to the Third World," *International Security*, vol. 17, no. 2, Fall 1992, pp. 84–111; Karl W. Eikenberry, *Explaining and Influencing Chinese Arms Transfers*, McNair Paper 36, Washington, DC: National Defense University, February 1995.

50. U.S. Congress, Senate Committee on Foreign Relations, hearing on the Proliferation of Chinese Missiles, 105th Cong., 2nd sess., 11 June 1998. See also Ming Zhang, *China's Changing Nuclear Posture: Reactions to the South Asian Nuclear Tests*, Washington, DC: Carnegie Endowment for International Peace, 1998, pp. 9–17; OSD, *Proliferation: Threat and Response*, p. 12.

51. Bates Gill, "Chinese Arms Exports to Iran," *Middle East Review of International Affairs*, vol. 2, no. 2, May 1998, pp. 1–4. Gill predicts that the future holds a "diminishing strategic and political rationale for Sino-Iranian ties," resulting from (1) a growing strategic partnership between China and Russia; (2) a strengthened international hand for the PRC in relation to the United States and other Western powers; (3) the availability of alternative arms sources, such as Russia; and (4) China's growing dependence on foreign energy sources (that may encourage the PRC to privilege Persian Gulf stability to secure access to oil).

52. Daniel Byman and Roger Cliff, *China's Arms Sales: Motivations and Implications*, MR-1110-AF, Santa Monica, CA: RAND Corporation, 1999, pp. x–xi, 7–30.

53. Frank J. Gaffney, Jr., "China Arms the Rogues," *Middle East Quarterly*, September 1997, p. 39.

54. John Holum, special Department of State briefing on trip to China, Washington, DC, 9 April 1998.

55. U.S. Congress, *Implementation of the U.S.-China Nuclear Cooperation Agreement*.

56. Holum, Department of State briefing, *op. cit.*

57. Director of Central Intelligence George Tenet cautions, however, that "the annex of the MTCR [is where] the real teeth are that operate against transfer of missile technology, and the Chinese have not yet agreed to support that." See U.S. Senate Committee on Foreign Relations, hearing on Proliferation Threats and Policy Formulation, 106th Cong., 2d sess., 21 March 2000.

58. See, for instance, Zachary S. Davis, "China's Nonproliferation and Export Control Policies: Boom or Bust for the NPT Regime?" *Asian Survey*, vol. 35, no. 6, June 1995, pp. 587–603; Wallerstein, "China and Nonproliferation," pp. 58–66; Wendy Frieman, "New Members of the Club: Chinese Participation in Arms Control Regimes, 1980–1995," *The Nonproliferation Review*, Spring/Summer 1996, pp. 15–30.

59. See, generally, OSD, *Proliferation: Threat and Response*, pp. 11–12; U.S. Congress, *The Proliferation Primer*, pp. 3–17; Shirley A. Kan, *Chinese Proliferation of Weapons of Mass Destruction: Current Policy Issues*, Congressional Research Service Issue Brief 92056, 1 June 1998, esp. pp. 2–8; Cordesman, *Iran's Military Forces*; Andrew Koch and Jennifer Topping, "Pakistan's Nuclear-Related Facilities," Monterey, CA: Center for Nonproliferation Studies, 1998.

60. As recently as July 2000, Secretary of Defense William Cohen indicated after a meeting with Chinese President Jiang Zemin that "Chinese officials have indicated that they are complying with their agreements that *missiles* are not being transferred to Pakistan . . . [T]he question that has to be resolved, in terms of whether *technology* itself is being transferred, that's precisely why these discussions have been under way" (emphasis added). See Bill Gertz, "Beijing Hits U.S. For Role In Killing Of Israel Deal," *Washington Times*, 14 July 2000, p. 1. See also "China Denies Aid Went To Missiles," Associated Press, 5 July 2000; David E. Sanger and Eric Schmitt, "Reports Say China Is Aiding Pakistan On Missile Project," *New York Times*, 2 July 2000, p. 1.

61. A useful review of these and related proliferation-related activities is Shirley A. Kan, *Chinese Proliferation of Weapons of Mass Destruction: Current Policy Issues, Issue Brief* 92056, Washington, DC: Congressional Research Service, 5 June 2000.

62. Davis, "China's Nonproliferation and Export Control Policies," p. 595.

63. Byman and Cliff, *China's Arms Sales: Motivations and Implications*, pp. xii, 31–44.

64. National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015," p. 3; U.S. Department of State Daily Press Briefing, 14 September 1999.

65. U.S. Congress, *Proliferation of Chinese Missiles*.

66. *Ibid*.

67. U.S. Congress, House of Representatives, *Report of the Select Committee on U.S. National Security and Military/Commercial Concerns with the People's Republic of China*, 1999, vol. 9, pp. 3, 47–53. See also U.S. Congress, Senate Select Committee on Intelligence, *Report on Impacts to U.S. National Security of Advanced Satellite Technology Exports to the People's Republic of China, and Report on the PRC's Efforts to Influence U.S. Policy*, 106th Cong., 1st sess., May 1999.

68. Kan, *Chinese Proliferation of Weapons of Mass Destruction*, pp. 9–10. See also U.S. Congress, House Committee on International Relations, hearing on the Implementation of the U.S.-China Nuclear Cooperation Agreement: Whose Interests Are Served? 105th Cong., 1st sess., 7 October 1997. With respect to missile proliferation, the Intelligence Community's view is clearer: "China continues to contribute to missile programs in some countries." See National Intelligence Council, "Foreign Missile Developments and the Ballistic Missile Threat to the United States Through 2015," p. 10.

69. U.S. Congress, *Weapons Proliferation in China*. The Chinese government stated in 1995 that it "strictly controls transfers of military equipment and related technologies and has established a appropriate administrative organization and operating mechanism to achieve this goal." See Information Office of the State Council of the People's Republic of China, "White Paper," p. 8. Nevertheless, others conclude that the PRC system "diverges most in areas related to implementation," although progress in this area was evident in 1997–1998. See Richard T. Cupitt and Yuzo Murayama, "Export Controls in the People's Republic of China, 1998," University of Georgia, Center for International Trade and Security, 1998, p. 27.

70. U.S. Congress, *Weapons Proliferation in China*.

71. Lauder testimony, *op. cit.*, p. 2.

72. For one detailed accounting of North Korean missile trade, see Peter Saracino, ed., *CNS Resources on North Korea's Ballistic Missile Program: Chronology of North Korea's Missile and Trade Developments*, Monterey, CA: Center for Nonproliferation Studies, September 1998. See also Peter Hayes, "The Two Koreas and the International Missile Trade," in William C. Potter and Harlan W. Jencks, *The International Missile Bazaar: The New Suppliers' Network*, Boulder, CO: Westview, 1994, pp. 129–162.

73. North Korean missile and other weapon exports reportedly made up about 30% of North Korea's total exports between 1980 and 1993, earning approximately $20.4 billion. See "US, N. Korea Hold Missile Talks in NYC," Reuters, 11 June 1997; "N. Korea said capable of making 100 missiles a year," *Japan Economic Newswire*, 25 September 1996; "Scud missiles reportedly being exported to Iran and Syria," Yonhap News Agency, BBC Summary of World Broadcasts, 26 September 1996; "NK Earns $100 Million Annually from Missile Exports," *Korea Times*, 1 April 1999; "North Korea earns 100 million dollars a year from missile exports," *Agence Press France*, 1 April 1999.

74. Rumsfeld Commission, pp. 11–18. See also Dennis Dragovic, "Missile Network Grows," *Defense News*, 12 July 1999, p. 12; Jennifer G. Hickey, "Missiles Alive," *Insight on the News* (Washington Times Corporation), 22 March 1999, pp. 46–47.

75. Director of Central Intelligence, "Report to Congress," p. 9.

76. Director of Central Intelligence, "Unclassified Report to Congress on the Acquisition of Technology Relating to Weapons of Mass Destruction and Advanced Conventional Munitions," 1 January–30 June 1998, p. 4. See also OSD, *Proliferation: Threat and Response*, p. 4; U.S. Congress, *The Proliferation Primer*, pp. 32–34.

77. Bill Gertz, "Pyongyang working to make fuel for nukes," *Washington Times*, 11 March 1999, p. A1. At other times, the DPRK appears to trade in-kind. One example of this is its reported provision of military training to the Democratic Republic of Congo in exchange for access to a local uranium mine. See Michael Dynes, "North Korea Trains Kabila Troops," *London Times*, 12 October 1999. With respect to other recent Congo acquisitions, it appears that Iran sold the Kabila government Scud-B and Scud-C missiles late in 1999. See Bill Gertz, "Iran Sold Scud Missiles to Congolese," *Washington Times*, 22 November 1999, p. 1.

78. Nicholas D. Kristof, "North Korean Missile Parts Said To Be From Japan," *New York Times*, 9 July 1999. See also "Ministry Investigates Japanese Parts in North Korean Submarine," Kyodo News Service, BBC Worldwide Political Monitoring, 18 May 1999.

79. KCNA News Agency, quoted in "North Admits Sale of Missiles Abroad," *Los Angeles Times*, 17 June 1998, p. A16. See also U.S. Congress, Senate Governmental Affairs Subcommittee on International Security, Proliferation, and Federal Services, hearing on North Korean Missile Proliferation, 105th Cong., 1st sess., 21 October 1997.

80. "Spokesman says USA 'mistaken' thinking it can 'check' missile development," KCNA News Agency (Pyongyang), BBC Summary of World Broadcasts, 13 March 1999. See also "Pyongyang Defies U.S. On Right To Test Missile," Associated Press, 9 August 1999.

81. National Intelligence Council, "Foreign Missile Developments," p. 10.

82. Bill Gertz, "North Korea Continues to Develop Missiles," *Washington Times*, 28 October 1999, p. 1.

83. Bill Gertz, "U.S. Will Pull Sanctions if Pyongyang Halts Missile Program," *Washington Times*, 5 June 1996, p. A20. Of course, the United States reached an agreement with North Korea in 1991 to make the Korean Peninsula nuclear weapons–free, even as the leadership deliberately continued its pursuit of nuclear weapons. See oral statements of Paul Wolfowitz and James Lilley in U.S. Congress, House Committee on International Relations, hearing on U.S. Policy Toward North Korea and the Expectations for an Upcoming Review by Former Defense Secretary William Perry, 106th Cong., 1st sess., 24 March 1999.

84. Bill Tarrant, "U.S. Warns N. Korea Against Further Missile Tests," Reuters, 31 March 1999. Pyongyang has previously demanded $1 billion from Israeli Prime Minister Yitzhak Rabin for halting its arms exports to the Middle East. See "Rabin: Earlier Talks with N. Korea over Missiles Were 'major mistake'," *The Jersalem Post*, 18 December 1994, p. 2.

85. KCNA News Agency, quoted in Kevin Sullivan, "N. Korea Admits Selling Missiles; Move Seen as Test of U.S. Embargo," *Washington Post*, 17 June 1998, p. A1. See also Jim Lea, "NK Lobs New Threats," *Pacific Stars and Stripes*, 30 July 1999, p. 1.

86. George Wehrfritz with B.J. Lee and Hideko Takayama, "Launching Paper Missiles," *Newsweek*, 25 January 1999, p. 40. See also Ralph B. A. DiMuccio and Kym-Gu Kang, "The Irony of U.S. Policy towards North Korea," *Peace Review*, June 1998, pp. 275–280.

87. U.S. Congress, *North Korean Missile Proliferation*. See also Peter James Spielman, "North Korea Played Nuclear Card To Meet U.S. On Equal Footing," Associated Press, 13 August 1994.

88. U.S. Congress, Senate Committee on Armed Services, hearing on CINC Posture, 106th Cong., 1st sess., 4 March 1999.

89. "Japan Report Says North Korea Launched Missile to Increase 'Bargaining Power'," Kyodo News Service, BBC Worldwide Monitoring, 17 February 1999; "Missile Launch Was Wrong Way For North Korea To Make Its Point," *Nikkei Weekly*, 7 September 1998; "Analysis—Pyongyang's Missile Test Will Backfire," *Asia Pulse*, 2 September 1998.

90. Sarah Jackson-Han, "North Korea Faces Critical Choice in 1999: Albright," *Agence France Press*, 21 January 1999.

91. Senior Department of State official, interview by author, Washington, DC, 21 September 1999. Reports vary as to whether the moratorium encompasses both testing *and* export activities. The North Korean news service suggested months after the fact that Pyongyang "announced a moratorium on satellite launch while the high-level talks are under way" with a view "to creating an atmosphere favourable to Washington." See KCNA, "U.S. Urged to Take Step for Total and Substantial Lift of Sanctions," 21 June 2000.

92. Jim Lea, "Lifting U.S. Sanctions Not A Benefit, N. Korea Says," *Pacific Stars and Stripes*, 7 October 1999, p. 4.

93. Jim Lea, "NK Says Foal Eagle Is Reason For Missiles," *Pacific Stars and Stripes*, 19 October 1999, p. 3.

94. *Ibid*. See also Robert J. Einhorn, "Toward Constructive Relations With North Korea," *International Herald Tribune*, 9 June 2000. Similarly, the North Korea policy review team led by former Secretary of Defense William Perry argued that "a policy of trading material compensation for security would only encourage the DPRK to further blackmail, and would encourage proliferators worldwide to engage in similar blackmail." See Perry's unclassified "Review of United States Policy Toward North Korea: Findings and Recommendations," Washington, DC, 12 October 1999, p. 6.

95. Doug Struck and Joohee Cho, "N. Korean Missile Offer Not Serious," *Washington Post*, 15 August 2000, p. 1. See also "Putin Says Pyongyang Offers to Give Up Rockets," Reuters, 19

July 2000; Doug Struck, "U.S. Weighs N. Korean Offer," *Washington Post*, 22 July 2000, p. 1; David Hoffman, "Russian Outlines Some Options In N. Korean Missile Program," *Washington Post*, 23 July 2000, p. 19; "Cohen Skeptical Of North Korea's Missile Offer," Associated Press, 24 July 2000; Michael Richardson, "Russia Assured U.S. On North Korea Missile Program," *International Herald Tribune*, 28 July 2000, p. 1.

96. Rather, a North Korean Foreign Ministry spokesman remarked following the U.S. lifting of the trade embargo two days prior: "The U.S. should not confine itself to symbolic partial lifting of sanctions on trade and investment," and that "if the U.S. honors our sovereignty and free choice and sincerely works toward improved bilateral relations" North Korea would "move in good faith and work to clear the U.S. of its worries." Although one unnamed senior State Department official reportedly viewed the cryptic news statement as a "positive statement of the commitment to the moratorium"—which U.S. officials apparently interpret as covering the flight-testing of long-range missiles—the North Korean news agency only specifies a "moratorium on satellite launch while high-level talks are under way." See KCNA, "U.S. Urged to Take Step;" John Lancaster, "U.S., N. Koreans Trade Goodwill Gestures," *Washington Post*, 22 June 2000, p. 19; Jane Perlez, "North Korea's Missile Pledge Paves The Way For New Talks," *New York Times*, 22 June 2000; "N. Korea Extends Ban on Missile Tests," *St. Petersburg Times*, 22 June 2000.

97. "North Korea: Nation Says It Will Launch Missiles When Necessary," *Washington Times*, 1 October 1999, p. 12. North Korean criticism of perceptibly slow U.S. action in the Agreed Framework is one parallel. See Jim Lea, "North Korea Blasts U.S. For Dragging Feet On Agreement," *Pacific Stars and Stripes*, 26 October 1999, p. 4.

98. See Toni Marshall and Bill Gertz, "House Republicans See N. Korea As Nuke Threat," *Washington Times*, 4 November 1999, p. 1.

99. Although lesser-developed and non-Western states have developed and transferred technology in the past, the trend line appears to privilege or favor an acceleration of such events. See Potter and Jencks, eds., *The International Missile Bazaar*; William C. Potter, ed., *International Nuclear Trade and Nonproliferation*, Lexington, MA: Lexington Books, 1990. One possible representation of the interplay between secondary suppliers and demand states is a likely increase in Pakistani–Saudi Arabian cooperation. See Jane Perlez, "Saudi's Visit To Arms Site In Pakistan Worries U.S.," *New York Times*, 10 July 1999, p. 7; Toni Marshall and Bill Gertz, "Visit to Pakistani Facility Raises Missile-Buying Question," *Washington Times*, 6 August 1999.

100. One possible model for future Russian activities relating to sensitive exports is the case of the illicit and allegedly non–state-sanctioned transfer of missile gyroscopes and accelerometers to Iraq in 1995. See Vladimir Orlov and William C. Potter, "Mystery of the Sunken Gyros," *Bulletin of the Atomic Scientists*, vol. 54, no. 6, November/December 1998.

101. Karp, "Lessons of the Iranian Missile Program," p. 23.

102. Vice Admiral Thomas R. Wilson, statement before the Senate Select Committee on Intelligence, 2 February 2000.

103. This is one clear lesson of the Iraqi WMD development efforts. See David Kay, "Denial and Deception Practices of WMD Proliferators: Iraq and Beyond," *The Washington Quarterly*, vol. 18, no. 1, Winter 1995; David Albright and Khidir Hamza, "Iraq's Reconstitution of its Nuclear Weapons Program," *Arms Control Today*, October 1998, pp. 9–15.

104. Statement of Director of Central Intelligence George J. Tenet as prepared for delivery before the Senate Armed Services Committee hearing on Current and Projected National Security Threats, 2 February 1999, pp. 2–3; Rumsfeld Commission, p. 13.

105. Lieutenant General Patrick M. Hughes, "Global Threats and Challenges," statement for the record, 2 February 1999.