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PROLIFERATION MOTIVATIONS AND DYNAMICS

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Key Findings

While the security environment is likely to become more complex, unpredictable and dangerous, it is difficult to predict the pace and scope of future nuclear proliferation. A proliferation "cascade" or "stampede" is not inevitable; a number of factors -- drivers and inhibitors -- are most relevant:

- The outcomes in North Korea and Iran: If North Korea retains its assessed capabilities (weapons and plutonium) and/or there is no permanent dismantlement of its reactor or verification of its HEU/enrichment activities, other regional states could reassess their security situation and conclude that they require a corresponding nuclear deterrent. The same could occur if Iran is able to continue its enrichment program in defiance of the IAEA and Security Council. Incentives for proliferation would be even greater if North Korea and Iran were seen as not paying a high price for violating the NPT and acquiring nuclear weapons. However, success in thwarting the nuclear ambitions of Pyongyang and Tehran would significantly stem the tide of proliferation, although negotiated solutions perceived to give North Korea or Iran unwarranted economic or political benefits could create incentives for others to emulate their actions.
- The effectiveness of nuclear supplier states in stopping the spread of sensitive fuel cycle technologies, especially enrichment and reprocessing: Nuclear energy is likely to expand in both the industrialized and industrializing states. One key proliferation variable will be the willingness and ability of the supplier states to discourage the transfer of enrichment and reprocessing technologies. To shape the future of the nuclear enterprise in a manner that reduces the risk of proliferation will require cooperation among suppliers in areas such as fuel assurances, take-back, and spent fuel management.
- The effectiveness of traditional nonproliferation measures: IAEA safeguards, the Nuclear Suppliers Group, and other components of the NPT regime continue to contribute to nonproliferation objectives. To remain effective, however, they will need to evolve to meet the challenges and changed conditions of the emerging international environment -- political, economic, and security. One test will be the ability to focus heavily on states of concern, such as Iran, for example in the application of verification and monitoring approaches. If the key components fail to adapt, and the perception of a regime breakdown grows, the long standing norm against proliferation will erode further.

- The effectiveness of new counterproliferation measures: With the G-8 Partnership, the Proliferation Security Initiative, U.N. Security Council resolution 1540, and the Global Initiative to Combat Nuclear Terrorism, additional tools have been put in place to prevent, protect against, and respond to proliferation threats. These, and other innovative approaches, require wide participation and support through political and resource commitments. They also must be adaptive to meet the changing tactics of the proliferators. If effective, these tools may dissuade decisions to proliferate, and block those who choose to proliferate.

Nuclear proliferation may look different in the future, with a number of states posturing for potential breakout through the acquisition of nuclear energy programs:

- While the motives for proliferation have remained relatively constant, the pathways for future proliferation could be more circuitous and ambiguous than in the past. Some states may decide to stay technically compliant with their NPT obligations but position themselves through "peaceful programs" to move rapidly to weaponization if and when needed. In this way, the decision to proliferate is not a step function, less a switch than a rheostat. This dynamic will mean greater uncertainty and instability in security planning for many states as they observe others posturing for the future.

U.S. policies and capabilities will have a substantial effect on the future of proliferation:

- The United States has perhaps the single greatest role to play in determining future proliferation outcomes. At an individual country level, U.S. security commitments to friends and allies (conventional/nuclear and declaratory statements), if perceived as credible and reliable, can be effective in influencing national decisions to forgo independent capabilities. U.S. leadership in promoting effective sanctions against proliferators, and in ensuring the effectiveness of non- and counterproliferation activities and capabilities (such as implementation of UNSC 1540 and building PSI and GI capacities), are also key. The United States must also take into account how its policies and capabilities could encourage states such as Iran and North Korea to seek nuclear weapons as a means of protecting against U.S. conventional superiority and goals of regime change.

Aggressive ideology and extremism as part of the broader proliferation equation:

- Proliferation should be viewed not in isolation, but in the context of the overall international setting. Fundamentalism and extremism provide incentives for proliferation on a state and non-state level. Our national and international strategies must deal with this dimension of the challenge to be successful in the long term.

As we develop new strategies and tools for strengthening non- and counterproliferation, we must think through the wild cards/shocks that could substantially shape the proliferation outcome:

- The future of proliferation could be greatly affected by significant events, such as the dissolution of -- or traumatic political upheaval in -- Pakistan, the emergence of new non-state suppliers like the A.Q. Khan network, or North Korea selling nuclear capabilities to state customers such as Syria. The biggest wild card – with major but unpredictable effects on proliferation dynamics – would be the use of nuclear weapons, either by states or terrorists. Dealing with these challenges will require a comprehensive strategy beyond traditional nonproliferation measures, drawing on all national and international means.

Are we approaching a nuclear tipping point?

Defiance of the international community by North Korea and Iran over their nuclear programs, revelations about A.Q. Khan's illicit network, the growing availability globally of sensitive technologies, the anticipated expansion of nuclear energy worldwide, and the pursuit of nuclear weapons by al-Qaeda and other terrorist groups have given rise to predictions about nuclear tipping points, dominoes, and proliferation cascades. This paper seeks to identify some of the key factors – drivers and inhibitors -- that will determine whether, as the 21st century unfolds, we will be living in an increasingly proliferated and dangerous world.

Such a world would look much different from what we are used to, especially in recent decades when relatively few countries are believed to have made a decision to embark on a nuclear weapons program. Countries possessing nuclear weapons today made their decisions long ago. India, Pakistan, and Israel, for example, made their nuclear choices between 30 and 50 years ago. And decisions by Iraq, North Korea, and Iran to pursue the bomb came over two decades ago. Indeed, over the past 40 years, more countries abandoned nuclear weapons programs than initiated them. Argentina and Brazil gave up their nuclear ambitions in the transition from military to civilian rule. South Korea and Taiwan were pressured by the United States to end their covert programs. South Africa built a half dozen nuclear weapons before deciding on the eve of majority rule to dismantle them. Ukraine, Kazakhstan, and Belarus sent their nuclear inheritance to Russia and joined the NPT as non-nuclear weapon states. Iraq's program became moribund in the wake of the 1991 Gulf War, and Colonel Qaddafi terminated Libya's quest for the bomb when confronted with evidence of his black market procurement efforts.

While of historical interest, the numbers of state programs ended and begun in the past may provide little insight into what the future holds. Prospects for, and threats from, nuclear proliferation today may be the greatest we have ever faced.

North Korea and Iran

The most serious and immediate challenge to the global nonproliferation regime is the nuclear programs of the DPRK and Iran. Those two countries pose serious security threats to their regions and beyond, in large part because of their track records of

provocative behavior but also because of the unpredictable and ideological character of their regimes. It is noteworthy that it was Iran's nuclear activities – rather than living with Israel's nuclear program for over 40 years – that prompted the interest of many Arab states in nuclear power programs that would give them future strategic options. Similarly, after living in the Cold War shadow of Soviet and Chinese nuclear capabilities, Japan accelerated its missile defense cooperation with the U.S. and started debating the possible need for conventional pre-emptive strike capabilities after North Korea tested ballistic missiles and a nuclear weapon in 2006.

In addition to posing acute regional security threats, the North Korean and Iranian programs could severely undermine the NPT and the broader nonproliferation regime. Unlike India, Israel, and Pakistan, which never joined – and therefore never violated – the NPT, North Korea and Iran joined the Treaty, cynically pursued nuclear weapons in violation of it, and were caught cheating. If they persist with their nuclear weapons programs in the face of international pressures, they will set a much more damaging precedent than did the countries that never became parties to the NPT.

There is wide agreement that the outcome of current efforts to roll back North Korea and head off Iran will have a major impact on prospects for proliferation in the remainder of the century. If one or both cannot be stopped, the likelihood of other countries pursuing nuclear weapons, especially neighbors who feel threatened, will substantially increase. Conversely, success in ending North Korean and Iranian programs will make it easier to stem the proliferation tide.

But it is not just whether those programs continue or are stopped that will have an impact on prospects for proliferation in the future. Those prospects may also depend on how the programs are stopped or how the international community reacts to a failure to stop them.

Many experts are highly skeptical that effective agreements ending the nuclear weapons programs of North Korea and Iran can be achieved. But even assuming that such agreements can be reached, some believe that, if North Korea or Iran gains major economic or political benefits in exchange for ending nuclear programs pursued in violation of their international obligations, other countries may be more inclined to follow their example, assuming that, even if they are caught, they will not be penalized but instead will be rewarded for later agreeing to stand down. Others maintain that the main factor affecting the nuclear choices of other countries would be whether the nuclear programs of North Korea and Iran had been verifiably terminated and no longer posed a security threat, not how they had been terminated. According to this view, decisions on whether to embark on a costly and potentially risky nuclear weapons program would be based on compelling security factors and not on the expectation, following a nuclear deal with North Korea or Iran, that such a program could be used as a bargaining chip.

In the case of failure to stop North Korea or Iran, there is wide agreement that the likelihood of further proliferation would be decreased by the perception that one or both had been heavily penalized and, conversely, would be increased by the perception that

they had paid little or no price. But there are differing views on how this general proposition applies in specific cases. For example, the short-lived sanctions that followed the 1998 nuclear tests by India and Pakistan are seen by some as making further proliferation, including by North Korea and Iran, more likely. Others, however, believe that the differences between the various cases are so great – especially between responsible, non-NPT India and rogue, NPT-cheater Iran – that treating a country like India more favorably (e.g., engaging in civil nuclear cooperation) would not necessarily send the signal to Iran and other potential NPT violators that they could pursue nuclear weapons without paying a high price.

Future pathways to acquiring nuclear weapons

None of the first eight nuclear weapon states – the original five plus India, Israel, and Pakistan – were ever non-nuclear weapon states party to the NPT and all, therefore, were able to acquire fissile material production capabilities and produce weapons-grade material and nuclear weapons without having to report their nuclear activities or accept IAEA inspections. However, North Korea, Iran, and all other future aspirants to the nuclear club joined the NPT and therefore put their programs under the scrutiny of the IAEA's monitoring system. This has influenced (in the cases of North Korea and Iran) and will continue to influence the pathways they take toward a nuclear weapons capability.

To acquire nuclear weapons, today's nuclear aspirants can try to conduct a clandestine program or they can pursue overt "peaceful" fuel-cycle capabilities with the intention of withdrawing from the NPT at some future point – or both. Either path carries risks. A covert program runs the risk of detection, either by the IAEA or national intelligence capabilities. While the IAEA monitoring system has clearly failed at times in the past, such as in Libya, it nevertheless raises significantly the chances of detection. An overt fuel-cycle program would generate suspicions of a country's intentions, and NPT withdrawal would confirm those suspicions and produce a potentially strong internationally reaction. So the challenge for any would-be nuclear weapon state today is how to proceed from a decision to acquire nuclear weapons to the realization of that goal without getting caught early or becoming the target of pressures and penalties. While the Security Council to date has not imposed meaningful sanctions on Iran in the face of Teheran's defiance, the prospect for such action has been a factor in Iranian tactics.

Given this challenge, "going nuclear" in the future may be much less straightforward than seeking to produce, test, and weaponize capabilities in the shortest possible period of time. Instead, aspiring nuclear powers may chart a more cautious, incremental, and ambiguous course, which could take several forms or a combination of them:

- *Relying on dual-use facilities*. Rather than rely exclusively on dedicated, weapons-related facilities, nuclear aspirants may opt for overt, ostensibly civilian plants that can be replicated clandestinely or used to produce fissile materials after NPT withdrawal.

- *Hedging.* Without taking a final decision to pursue nuclear weapons, states may open up future options by obtaining the necessary infrastructure and trained personnel to attain "latent" nuclear weapons capabilities. Hedging may be NPT compliant (overt enrichment plant) or not (undeclared nuclear experiments).

- *Settling for less*. States may decide their minimum goals can be achieved through nuclear programs that stop short of full weapons capabilities. Some may believe that testing nuclear devices is not needed for deterrence. Others might even calculate that an NPT-compliant breakout capability would satisfy their prestige objectives, provide options for the future, and even give them a modicum of deterrence (because others would assume they could soon produce, or may already have covertly produced, nuclear weapons).

- *Maintaining ambiguity*. Some states, even those widely assumed to be possessing nuclear weapons, may see advantage in preserving some ambiguity about their capabilities, in part because ambiguity can avoid triggering strong reactions by others (e.g., Israel not wishing to put pressure on Arab neighbors to follow suit).

North Korea and Iran are examples of the paths that 21st century nuclear aspirants may take. Both have been willing to accept tactical pauses in their programs to achieve concessions and assistance or to avoid penalties (e.g., North Korea's 1994 freeze on plutonium production; Iran's suspension of uranium conversion/enrichment while negotiating with the EU3), while lurching ahead at other times (North Korea's 2006 nuclear test; Iran's breaking the enrichment suspension in 2005). Both will try to keep the world guessing whether they are genuinely willing to forgo nuclear weapons. The DPRK may hope to cap its now declared nuclear capability (i.e., settle for a small nuclear arsenal without further testing) in exchange for energy and other benefits, perhaps while pursuing a clandestine HEU program. Even under the optimistic assessment that it is willing to give up its nuclear weapons programs completely, it would want to prolong the dismantlement process as much as possible and give itself options to bail out at any stage.

Iran's path forward is even murkier. Once it masters centrifuge enrichment, it may pursue a parallel covert program or accumulate large stocks of low-enriched uranium overtly with the intention of breaking out later. Alternatively, it may choose to follow the example of North Korea, withdraw from the NPT, and declare itself to be a nuclear weapon state. Or it is conceivable that, if Iran believes it would pay a high price for withdrawing from the NPT or getting caught cheating again, it could content itself with acquiring a Japanese-type latent capability and keeping options open for the future.

Such new pathways could have a major impact on proliferation dynamics in the years ahead. At a minimum, the uncertainties associated with these 21st century pathways are likely to feed anxieties about the intentions of North Korea, Iran, and others and lead to nuclear hedging strategies on the part of those who feel most threatened. The acquisition of the technical infrastructure for such hedging capabilities, especially fuel-cycle facilities, would both reduce significantly the amount of time needed to produce

nuclear weapons and increase the difficulty of verifying that a hedging capability was not becoming an actual nuclear weapons capability.

Is there a proliferation group dynamic?

So far, the proliferation of nuclear weapons to additional states has been a slow process and has occurred one state at a time – with each new member of the club pursuing the bomb for its own reasons, whether an acute security concern, the desire for greater international status, an interest in regional hegemony, and so forth.

In recent years there has been growing concern both that the pace of proliferation will accelerate and that several states will pursue nuclear weapons concurrently. Terms such as nuclear tipping point, chain reaction, and cascade are increasingly used to express a fear that we may now be heading toward a new and much more dangerous stage of the proliferation process in which a wave of additional countries suddenly march toward the nuclear threshold together.

One possible cause of a nuclear cascade would be the arrival of a new, potent security threat affecting a range of countries at the same time. Today the prospect of a nuclear-armed Iran poses such a threat. The fact that close to ten Middle East countries have suddenly declared their intention to pursue civil nuclear energy programs is not a coincidence – and the expressed desire of those countries to diversify their sources of energy is not a convincing or sufficient explanation of why they have taken an interest in such programs practically in unison. A nuclear-armed North Korea could also light the fuse of proliferation, motivating Japan, South Korea, and even Taiwan to acquire counterbalancing capabilities.

It is not just concerns about Iran and North Korea that could motivate neighbors in their respective regions to re-consider their own nuclear options. Initially provoked by Tehran or Pyongyang, those neighbors could end up motivating one another. Such a regional dynamic could operate both in the Middle East and Northeast Asia. Thus, fear of the Persian bomb could prompt an Arab government to pursue a nuclear option, but considerations of pride, prestige, and regional influence could then motivate other Arab governments to follow suit. In Northeast Asia, some Japanese say their country would be more likely to go nuclear if South Korea or a reunified Korea possessed nuclear weapons than if only North Korean had the bomb. Similarly, some South Koreans say that a Japanese nuclear weapons program would substantially increase the likelihood that they would acquire nuclear weapons. Moreover, if Japan moves toward nuclear weapons, it could in turn lead China to substantially expand its nuclear arsenal in even greater numbers than it is pursuing today.

"Proliferation pessimism" could be another source of a proliferation group dynamic. In the past, nuclear aspirants had their own particular security, political, and other reasons for seeking the bomb. In the future, the expectation that the nonproliferation regime may unravel and that more and more countries may opt for nuclear weapons could provide a very different motivation for countries to pursue nuclear

weapons or at least a hedging strategy – the fear that, if they wait too long, they may find themselves at a severe disadvantage relative to others who had moved earlier. This motivation could affect several countries concurrently.

So, will such group dynamics lead to a sudden wave of proliferation? While there are plausible reasons why states in coming years might move toward nuclear weapons in groups, we are unlikely to see the kind of nuclear stampede some have predicted. Concerns about North Korea and Iran (as well as China's military build-up and other factors) will no doubt prompt several countries to think seriously about acquiring their own nuclear deterrent, but actually making the decision to go nuclear and following through with the necessary resources and discipline over a sustained period of time is another story. Much of what we've seen to date, especially from Iran's neighbors, may be more an effort to send a signal of concern and demonstrate that they also have options than a firm indication of an intention to proceed down the nuclear path.

Even if several of these countries do decide to proceed and to commit the required time and energy, they are likely to move down the nuclear path at very different rates. Japan and South Korea could produce their own nuclear weapons relatively quickly – although perhaps not as quickly as often assumed. Other countries, lacking the necessary nuclear infrastructure, such as most countries of the Middle East, could take years to reach the goal of an indigenous nuclear weapons capability.

This estimate, however, is based on the traditional path to a nuclear weapons capability, which could be shortened considerably if a country was able to purchase fissile material or a weapon from an external supplier, state or non-state. North Korea, for example, has stated in the past that it might be willing to transfer sensitive materials to a third party. While its spokesmen later denied this statement, North Korea is the world's number one exporter of missiles and missile technology, and the cases of uranium hexafluoride found in Libya and the possibility of nuclear cooperation with Syria raise the concern that its irresponsible export behavior could extend into the nuclear realm, including with non-state actors.

Role of the United States

The United States has traditionally been a major factor in proliferation motivations and dynamics, and that will remain the case. Assurances to allies and friends around the world that the U.S. is committed to their security have often been critical in reducing their incentives to acquire nuclear deterrents of their own. This will especially be true in the next decade or so because most of the countries that feel threatened by the prospect of a nuclear-armed North Korea or Iran – Japan, South Korea, Egypt, Saudi Arabia, the UAE, Turkey, and others – are friends of the U.S. and have relied heavily on America for their security, including on the U.S. "nuclear umbrella."

If U.S. security assurances, and particularly the U.S. extended nuclear deterrent, remain credible (and U.S. nuclear forces remain reliable, effective, and safe), the

probability of those countries going nuclear or even seeking a hedging capability will be substantially reduced. But if their confidence in the reliability of the U.S. as a security partner erodes, the likelihood of their deciding to pursue their own nuclear capability will dramatically increase.

The value and strength of American security assurances depend on a wide range of factors. Many of those are military/technical, such as defense cooperation in areas like air and missile defense, U.S. force deployments in the region, and the quality and quantity of U.S. conventional and nuclear forces available for the defense of U.S. friends and allies. But equally or even more important are political factors, including declaratory policies, perceptions of U.S. willingness to come to the defense of a threatened friend, and the state of the overall bilateral relationship between the U.S. and its security partner. (The requirements of extended deterrence are explored in greater detail in another paper prepared for the conference.)

While most experts agree that U.S. security assurances play a major role in reducing incentives for **U.S. friends and allies** to go nuclear, there is less agreement on the role of U.S. military forces and policies in discouraging **U.S. adversaries** from pursuing or maintaining nuclear weapons capabilities. Many experts believe that a robust U.S. nuclear and conventional force posture, including the perceived readiness to use military force in support of non- or counter-proliferation goals, can have the effect of dissuading unfriendly governments from pursuing nuclear weapons programs, persuading such governments to give up any existing programs, and pressuring non-compliant governments to come into compliance. They cite Qaddafi's renunciation of weapons of mass destruction programs in the wake of the U.S. invasion of Iraq and the exposure of its nuclear program through the PSI-interdiction of the BBC China as evidence that strong U.S. military capabilities and coercive policies can effectively address proliferation threats.

Others experts maintain that threatening U.S. policies and rhetoric, especially in the absence of U.S. willingness to offer positive inducements, can reinforce the determination of hostile regimes to pursue or retain nuclear weapons capabilities. They argue, for example, that harsh rhetoric, reluctance to engage bilaterally, and the perception that the U.S. favored regime change hardened Tehran's resistance to forgoing enrichment. Some also contend that superior U.S. conventional military capabilities may be more of a stimulus for other countries to acquire a nuclear deterrent than the size or quality of U.S. nuclear forces.

Relationship between vertical and horizontal proliferation

An important and much debated issue is whether, and how, the nuclear weapons capabilities and policies of the U.S. and other nuclear powers – regarding, for example, nuclear force levels, declaratory policy, modernization programs, and attitudes toward arms control measures– affect prospects for the acquisition of nuclear weapons by additional states.

There is broad agreement that efforts by the U.S., Russia, and other nuclear weapon states to reduce their forces and accept arms control constraints will have little if any direct effect on the willingness of countries like North Korea and Iran to forgo nuclear weapons capabilities. Their motivations for acquiring and retaining nuclear weapons have little to do with the quantities and qualities of the nuclear forces of existing nuclear weapon states – and further progress by the nuclear powers toward meeting their NPT Article VI obligation to pursue nuclear disarmament cannot be expected to alter those motivations.

Views differ, however, on whether the nuclear capabilities and policies of the U.S. and other nuclear powers can affect the nuclear decision-making of countries not yet embarked on nuclear weapons programs – both their decisions on whether to start a nuclear weapons program of their own and, perhaps just as importantly, on their decisions whether to support stronger non- and counter-proliferation measures that could make it more difficult and costly for other countries to acquire and maintain nuclear weapons programs.

Some experts believe that progress in lowering nuclear force levels and reducing reliance on nuclear weapons would pay significant dividends in the fight against proliferation. They believe that demonstrating that nuclear weapons will play a progressively reduced role in the future will decrease pressures on additional states to acquire them out of fear of finding themselves at a severe disadvantage in a more proliferated world. In addition, they maintain that further steps to implement Article VI would help restore balance between NPT nuclear and non-nuclear weapon states (NNWS) in implementing the Treaty and hopefully increase the receptivity of NNWS to additional non- and counter-proliferation measures (e.g., sanctions, restrictions on transfers of sensitive technologies, more rigorous verification arrangements). Such measures, according to this view, could even have an indirect effect on countries like North Korea and Iran by making it more costly and difficult for them to continue their programs.

Other experts dispute these claims. They believe that the willingness of countries to support more rigorous nonproliferation controls and enforcement measures will be driven not by abstract notions of balance in meeting NPT obligations but by their own assessments of the merits of the particular measures and specific threats. Moreover, they say that some steps to reduce force levels or otherwise constrain nuclear capabilities (e.g., CTBT) could adversely affect prospects for curbing nuclear proliferation by raising concerns among U.S. friends and allies about the effectiveness of the U.S. extended deterrent.

Domestic factors

Domestic factors have traditionally played an important role in determining whether particular countries pursue and achieve nuclear weapons capabilities. Successful nuclear weapons programs often require strong domestic champions, whether individuals or organizations, that can command the necessary resources and energies over a

prolonged period of time. For example, the sustained support of its nuclear scientific elite was critical to the success of India's nuclear program, whereas the absence of a comparable lobbying force in Egypt after the 1960s helps explains why Cairo's early flirtation with a nuclear weapons capability never got very far.

Domestic considerations can be a key driver of nuclear weapons programs. For Kim Jong-il and the mullahs of the Islamic Republic of Iran, nuclear weapons are a source of legitimacy for regimes otherwise lacking in it. In Iran, Ahmadinejad clearly regards his uncompromising position on the nuclear issue as a way of bolstering his domestic support. In the DPRK, where Kim Jong-il's rule depends heavily on keeping his military satisfied, a nuclear weapons program may well be seen as essential to regime survival. Moreover, the North's nuclear program has been used repeatedly as a coercive tool to extort "assistance" from other countries willing to pay blackmail.

The record is mixed on the relationship between democracy and interest in nuclear weapons. On the one hand, democracy can make it less likely that a country will pursue or keep nuclear weapons. In Japan, the public's "nuclear allergy" remains a significant constraint on any Japanese government that may wish to move towards a nuclear weapons capability. Moreover, the openness of Japanese and South Korean societies today, especially with their freedom of the press, would probably make it difficult for those countries to keep a clandestine nuclear program secret for very long. And in Argentina and Brazil, nuclear weapons programs pursued under military governments were abandoned in the transition to civilian rule.

On the other hand, the record also provides ample evidence that democracy and nuclear weapons programs are far from incompatible. In Israel and India, both vibrant democracies, nuclear weapons programs are highly popular. In India, the 1974 and 1998 nuclear tests were occasions for national celebrations, and today the argument against the U.S.-India deal that resonates most strongly with the Indian public is the charge that it will constrain India's strategic programs. In Egypt, the absence of democracy has helped keep the country non-nuclear, as autocratic leader Hosni Mubarak has kept a firm lid on the nuclear aspirations of some of his countrymen. It is interesting that, as the leadership transition approaches in Cairo, Mubarak's son Gemal may be using his advocacy of a civil nuclear power program as a means of winning popular support. And if free elections were held today in Egypt, it is very possible that the currently outlawed Muslim Brotherhood, which is on record as supporting nuclear weapons, could come to power.

Enablers and inhibitors

The motivations for acquiring nuclear weapons – such as seeking to deter external threats, enhancing prestige, bolstering claims to regional hegemony, and consolidating domestic support – have largely remained constant in recent decades. A new motivation, mentioned earlier, is the fear of being left behind in a world of many nuclear weapon states. But while the basic motivations have not changed very much, the factors that influence whether a motivated state will decide to pursue nuclear weapons and whether it will succeed – enablers and inhibitors – will continue to evolve. Previous sections of this

paper discussed several of the key factors, including the nuclear programs of North Korea and Iran, increased latency and ambiguity in future nuclear pathways, the role of the United States, and domestic considerations. Below are a variety of additional factors. Among the key **enablers** of proliferation today and in the future are:

- the potential dramatic growth of nuclear power worldwide, with the prospect of the spread of nuclear fuel-cycle capabilities under national control;

- the increasing number of countries around the world capable of manufacturing proliferation-sensitive items, and the growing availability of nuclear technologies, equipment, and materials on the world market;

- the remaining limitations and weaknesses of IAEA verification capabilities, especially with respect to large-scale fuel-cycle facilities and undeclared facilities and activities in countries that do not adhere to the Additional Protocol;

- the failure so far to enforce compliance by states such as North Korea and Iran that have violated the NPT, and the perception that the costs of defying the international community and pursuing nuclear weapons are manageable;

- the tendency of the major powers often to give priority to national goals (e.g., securing sources of energy, promoting commercial interests, strengthening bilateral relations) over nonproliferation goals and the resulting lack of P-5 unity in addressing proliferation challenges;

- strains in bilateral relationships between the U.S. and traditional security partners and concerns that the U.S. may reduce its military presence and security commitments in Northeast Asia and the Middle East; and

- the perception that the NPT and broader nonproliferation regime are eroding.

Among the key **inhibitors** of nuclear proliferation today are the following:

- increased measures, such as those proposed by the U.S. and Russia, to shape the future growth of nuclear energy in a way that meets energy and environmental goals and reduces the risks of proliferation, by discouraging the spread of enrichment and reprocessing technologies through such means as offering fuel supply assurances and spent fuel take-back arrangements to countries that forgo their own fuel cycle programs;

- efforts to impede access of hostile regimes to sensitive equipment, materials, and technologies by tightening restrictions on transfers of proliferation-sensitive items, upgrading nuclear security in Russia and elsewhere, removing HEU from potentially vulnerable research reactor sites worldwide, strengthening means of interdicting illicit nuclear shipments (PSI, CTR, CSI, assistance in border security);

- threat reduction assistance programs, including personnel re-direction programs, that can reduce the availability of technology and expertise in world markets, both to state and non-state actors, and provide a window into terminated programs to ensure that they remain terminated;

- efforts to prevent, protect against, and respond to acts of nuclear terrorism, such as through the Global Initiative to Combat Nuclear Terrorism, led by the U.S. and Russia and endorsed by over 60 states;

- notwithstanding strains in some bilateral relationships, continued confidence by key friends and allies that U.S. security assurances remain reliable;

- continuing inability of some technologically challenged countries (e.g., Saudi Arabia) to build indigenous facilities to produce fissile materials; and

- improved intelligence and verification technologies and capabilities, both in terms of national and international (e.g., IAEA Additional Protocol) capabilities.

In addition to enablers and inhibitors, there are **wild cards** that could dramatically affect the likelihood and dynamics of nuclear proliferation in the future. The most significant of such wild cards is the use of nuclear weapons, either by states or terrorists. In neither of these cases are the implications for additional proliferation predictable. Much would depend on the consequences of nuclear use in specific cases. The "successful" use of nuclear weapons by a state – for example, use in self-defense that results in the prompt termination of armed conflict without horrendous casualties or destruction – could enhance the likelihood of additional states acquiring a nuclear deterrent. But the use of nuclear weapons with catastrophic effects – a massively destructive nuclear exchange – could produce universal revulsion toward nuclear weapons and lead to resolute efforts to stop proliferation and reduce or eliminate existing nuclear capabilities. Any use of nuclear weapons by terrorists would be seen as catastrophic. But its impact on future state proliferation – whether states would view their acquisition of nuclear weapons as relevant to this new threat – is unclear.

Additional wild cards include the takeover of Pakistan by militant Islamists, the collapse of the North Korean regime, the emergence of new black market nuclear networks, a major accident at a civil nuclear facility that puts the brakes on a nuclear renaissance, and the sale or transfer by states of nuclear weapons or fissile materials to other states or non-state actors.