

Testimony Before
The Committee on Foreign Relations
United States Senate
Wednesday, April 26, 2006

Assessing the India Deal¹

Ashton B. Carter

Co-Director, Preventive Defense Project
John F. Kennedy School of Government
Harvard University

During a state visit to Washington in July of 2005, Indian Prime Minister Manmohan Singh and U.S. President George W. Bush announced a potentially far-reaching “strategic partnership” between what will probably be the 21st century’s most powerful democracies. To inaugurate what came to be known as the India Deal, Bush abruptly fulfilled a thirty-year quest by Delhi to be recognized as a sixth “legitimate” nuclear power, alongside the five victors of World War II. In March of 2006, in a reciprocal visit to India, Bush settled most of the remaining details of the nuclear part of the India Deal in Delhi’s favor.

Debate in both Washington and Delhi has swirled around the nuclear aspects of the India Deal. This is understandable, since preventing nuclear war and terrorism is the highest American national security priority in this era, as Bush himself has acknowledged. The decade has already witnessed a stunning defeat for the United States in North Korea’s runaway nuclear program. The same could be unfolding more slowly in Iran. Meanwhile, an unbowed Osama bin Laden has declared to his followers that obtaining weapons of mass destruction is a “religious duty.”

Indeed, if the nuclear aspects of the India Deal are assessed in isolation, one must conclude that the Deal was a bad one for the United States. Washington recognized Delhi’s nuclear status in return for little in the way of new steps by India to combat nuclear proliferation and terrorism that Delhi was not already committed or inclined to give, and for almost no technical restraints on India’s growing nuclear arsenal. Through the U.S. concession, the nonproliferation regime also paid a palpable, although probably manageable, price to its integrity and support.

¹ An edited version of this statement will appear in the July/August issue of *Foreign Affairs*.

But it would be a mistake to assess the India Deal in a nuclear-only frame. President Bush and his key advisors were clearly looking through a wider lens, and so should the public and the U.S. Congress, which must amend U.S. nonproliferation laws that forbid the policies Bush agreed to. Viewed through such a wider geopolitical lens, the Deal has the United States giving the Indians what they have craved for so long – nuclear recognition – in return for a strategic partnership between Washington and Delhi as the two democracies face similar potential challenges from China, Pakistan, Iran, and elsewhere in the coming decades. In short, Washington gave on the nuclear front to get something on the non-nuclear front. Powerful arguments can be made that strategic partnership with India will prove to be in the deep and long-term U.S. security interest. Indo-U.S. partnership seems not only logical but eminently achievable in India's democracy: in an influential 2005 Pew Research Center poll of 15 leading nations, India reported the highest proportion of favorable views of the United States at 71%. A nuclear-recognition *quid* for a strategic-partnership *quo* is therefore a reasonable framework for an India Deal.

However, as a diplomatic transaction the India Deal as negotiated by President Bush is quite uneven. First of all, a U.S.-Indian strategic partnership would seem to be in Delhi's interest as well as America's. So why pay them for it? Second, the Deal is uneven in its specifics – what the U.S. gives is spelled out quite clearly, but what India gives in return is vaguer. Third, the Deal is uneven in timing – the United States gave its big *quid* of nuclear recognition up front, but what it stands to get in return from partnership with India lies further out in the uncertain future.

Rebalancing the Deal

Despite the Deal's flaws, Congress should not attempt to renegotiate the Deal to win a more balanced version than the Bush administration obtained. The big U.S. card of nuclear recognition has already been played and cannot be taken back by Congress at this point without casting a lasting cloud over the whole idea of Indo-U.S. partnership. Haggling over some of the details of the implementation of the nuclear parts of the Deal is unlikely to restore much of whatever lost reputation for nonproliferation consistency that the U.S. has already suffered, and would probably be viewed as grudging and punitive in Delhi. The result would be to undermine the goodwill that was supposedly the whole purpose of giving nuclear recognition in the first place.

Rather than subtracting from the Indian side of the ledger in an effort to rebalance the India Deal, Congress should instead emphasize what the U.S. expects on its side of the ledger to give meaning to the new "strategic partnership." The United States should expect India to join it in countering any destabilizing effects China's future rise might have on Asian security; assisting in any emergency in Pakistan such as radicalization of its government or loss of control of its nuclear weapons; reversing traditional Indian opposition to controls on transfer of nuclear technology and especially using its diplomatic clout against potential proliferators like Iran; growing its military-to-military relationships, including arms cooperation, to match in time those the United States has

with its closest allies; and giving preferential treatment to the U.S. defense and nuclear industries when the Indian government makes investments in these sectors.

To see how the ledger can be rebalanced over time, one needs first to consider what India already got from the Deal on the nuclear front, and its repercussions for the nonproliferation regime; second, to prescribe the broader benefits the United States should aim to get from strategic partnership from India in coming decades; and third, to assess the chances that U.S. expectations will actually be met.

What Delhi Got

India obtained defacto recognition of its nuclear weapons status: the United States will behave, and urge others to behave, as if India were a nuclear weapons state under the Nuclear Nonproliferation Treaty (NPT). The U.S. will not deny it most civil nuclear technology or commerce, nor require it to put all of its nuclear facilities under International Atomic Energy Agency (IAEA) safeguards – only those it declares to be civil. India can now import uranium, which has been a bottleneck in its nuclear program. It is worth noting that even if the Bush administration wished to make India a formal Nuclear Weapons State under the NPT (which it refused to do), it probably could not persuade all the other signatories of the NPT to agree to the change (such amendments require unanimity).

Besides the new access to technology, nuclear recognition grants an enormous political benefit to India. With one stroke India joins the United States, Russia, China, Great Britain, and France as “legitimate” wielders of the power and influence that nuclear weapons confer. The Deal allows India to transcend the nuclear box that has for so long defined and constrained its place in the international order, hopefully jettison at last its outdated Non-Aligned Movement stances and rhetoric, and occupy a more normal and modern place in the diplomatic world. Critics of the Deal contend that India’s past and likely future behavior do not warrant this free pass. Proponents predict that with the nuclear issue (which the Bush administration describes as the “basic irritant” in Indo-U.S. relations) out of its psychological way, India will pivot from detractor of much of the international order, including especially the nonproliferation regime, to responsible stakeholder. Both sides agree that nuclear recognition is huge.

The Deal has naturally been popular in India. Supporters of Congress Party Prime Minister Singh have emphasized Bush’s nuclear recognition and downplayed any sense that India has taken on important obligations in return. Criticism from the opposition Bharatiya Janata Party (BJP) has been narrow and technical and probably reflects chagrin that a Congress Party government and not the BJP secured the Deal. The other source of criticism has been leftists in the Left Front parties. They are wedded to the old politics of the Non-Aligned Movement which was overtaken by the end of the Cold War, but they are unlikely to be able to block the Deal.

Measuring the Impact of Nuclear Recognition for India

Previous U.S. administrations have adopted the stance that India's nuclear arsenal, first tested in 1974, is illegitimate and should be eliminated, or at least sharply constrained. They have done so for two reasons: First, India's nuclear arsenal is watched closely by arch-rival and nuclear-armed Pakistan and by China, with which India has fought no fewer than three wars since its independence from Great Britain. Recognizing the Indian arsenal, the argument went, might spur its open growth and thus an arms race in South Asia. Second, Washington wanted to stick strictly to the principles underlying the NPT: that signatories would get the benefits of international standing and peaceful nuclear commerce, but those like India that stood outside the regime would not. Compromising these principles would, it was feared, give heart to nuclear aspirants that they could "end run" the NPT if only they waited thirty years like India; it would also dishearten the many countries that were not about to go nuclear but which loyally supported the NPT against new proliferators.

But a stance is not a policy. As policy, elimination of India's arsenal became increasingly unrealistic as Pakistan went nuclear in the 1980s, and then more so when India tested five bombs underground and openly declared itself a nuclear power in 1998. As the Bush administration conducted its nuclear negotiations with India in the fall of 2005 and spring of 2006, it ultimately abandoned efforts by nonproliferation specialists to attach further conditions to the Deal that would constrain India from increasing its nuclear arsenal further. The U.S. insisted that the Deal is a broad strategic agreement, not an arms control treaty. For example, some have argued that India should be required to stop making fissile material for bombs now like the other acknowledged nuclear powers have done rather than wait for the negotiation of an international Fissile Material Cutoff Treaty. Others contend that India should have to place more of its nuclear facilities under IAEA safeguards, to prevent diversion of fissile materials from its nuclear power program to its nuclear weapons program. Yet others would have India sign the Comprehensive Test Ban Treaty rather than abide, as it has since 1998, by a unilateral moratorium on further underground testing of its nuclear arsenal.

The Indian government, with strong public support, has resisted all these efforts to constrain its future nuclear arsenal in technical ways. If the objective of U.S. proponents of these ways of rebalancing the India Deal is to prevent Indian arms racing with Pakistan and China, then that important goal would be better pursued in non-technical ways. India has stated its intention to pursue a "minimum deterrent" rather than an all-out arms race. The Bush administration has encouraged this path, and can now make it an expectation of India as a responsible member of the nuclear club. But if the objective of seeking additional constraints on India's nuclear program is to "take back" some of the gain India got from nuclear recognition, then such a grudging move is likely to backfire. Indians will understandably view such a move as inconsistent with Bush's whole intent to use nuclear forgiveness as a way to open the way for strategic partnership.

The second impact of nuclear recognition for India has to do with the integrity of the NPT regime and is more serious, though probably manageable. It is inconceivable that North Korea's Kim Jong Il pays much heed to the internal consistency of the NPT regime as he calculates how far he can get with his nuclear breakout. North Korea's

governing ideology is less communism than a fanatical embrace of autarky and “self-reliance,” including open defiance of international norms like the nonproliferation regime. North Korea’s tolerance for international ostracism is legendary. If Kim’s nuclear program can be stopped at all at this point, it will be through a tough and focused diplomacy of sticks and carrots in which the NPT will play little part. Likewise, after 1998 Saddam Hussein simply ceased paying attention to the NPT.

Iran’s cat-and-mouse game with the EU-3, the U.S., and the IAEA over its recently-revealed nuclear program bespeaks at least a smidgen of sensitivity to international opinion as embodied in the NPT. Nuclear recognition for India gives Teheran a new talking point: If India gets a free pass, why not Iran which is also an important nation with an ancient culture? But like North Korea, Iran’s nuclear program has deeper roots in its sense of security threat and Persian pride. Against these the NPT will not weigh in very heavily. Besides, for now Teheran denies it is seeking a nuclear arsenal at all but only nuclear power, so it will be hard-pressed to use India as a precedent for its current diplomatic position.

The impact of the Bush-Singh deal on the “rogues” is therefore minimal. Its main impact will be felt among two other groups of countries. First, there are the “in-betweens” – states that are not rogues but that flirt with nuclear status. In the recent past the in-betweens have included South Africa, Argentina and Brazil, the post-Soviet states of Ukraine, Kazakhstan, and Belarus, South Korea, Taiwan, and (only recently joining this category) Libya. These in-betweens turned away from nuclear weapons for many reasons specific to their own individual circumstances, but in each of these cases the lasting international ostracism threatening them if they stood outside the NPT regime was an influential factor for both governments and their people. Nuclear recognition for India suggests that forgiveness will eventually come to proliferators who wait, and tomorrow’s in-betweens – Brazil comes to mind – might be tempted by the Bush-Singh precedent.

The most nonproliferation damage, curiously, might be done among the stalwarts of the regime: governments that have no nuclear ambitions at all but that faithfully uphold the rules, and the nuclear powers that already enjoy a privileged place in it. These groups not only provide political support to discourage in-betweens and confront rogues, they provide vital and direct technical support by denying critical exports to those who infringe the NPT’s rules. The Nuclear Suppliers Group (NSG), in particular, coordinates controls on exports by the nations with advanced nuclear power technology. The NSG was created through U.S. leadership, and it is the U.S. that has long stood against backsliding by member governments that come under pressure from their nuclear industries to sell technology abroad more liberally, including especially to India. Now all of a sudden the United States has decided to change policy, and others too might consider themselves free to pick and choose where they apply the nonproliferation rules – the Chinese with Pakistan, the Russians with Iran, and some European vendors everywhere.

Damage-limitation from the Bush-Singh deal must therefore center on the in-betweens and stalwarts. A plan for doing so was a logical part of the U.S. diplomatic initiative, but it is clear that the Bush administration did not have one until after the Deal

was concluded, still less did it consult widely before Bush made his dramatic *volte-face* in July 2005. But most of the nations whose adherence to the NPT regime is critical will either support the Deal or acquiesce in it. First, most accept the U.S. argument that India's nuclear nonproliferation behavior has been good – there have apparently been no Indian A.Q. Khans -- and that India's possession of nuclear weapons is an established fact and cannot be reversed. Second, all can see that India is hardly a rogue state, but a stable democracy likely to play a large and constructive role in the world of the 21st century. Third, many will regard India's thirty years in the "penalty box," which exacted a heavy price from Delhi in both prestige and technology, as sufficient to make the point that the regime's adherents are serious about enforcing its norms. These arguments have won over many in the international nonproliferation community, notably IAEA Director General and Nobel Laureate Dr. Mohamed ElBaradei. And so while there is some grumbling within the NPT regime over the Deal, a revolt or collapse is not likely, and the damage to the regime can be limited.

As critics have exaggerated the nonproliferation costs of the nuclear part of the India Deal, so also its proponents have exaggerated its benefits in terms of energy security and nuclear security. Bush administration spokesmen have defended the Deal's nuclear power provisions as critical to stopping India's rise from posing an oil and environmental crisis. But this claim does not survive close scrutiny. Energy security is terribly important to both India and the United States. All want India's huge population to satisfy its energy needs, which will grow faster than its GDP, increasing as much as fourfold within 25 years, without contributing further to dependence on Middle East oil, pollution, and global warming. But the arithmetic does not support the case that nuclear power will add up to make the critical difference for India, though it can and should play a role. For the foreseeable future, electricity generation in India will be dominated by coal burning whereas nuclear plants (which today produce only 3% of India's electricity) will remain a single-digit contributor even under the most extravagant projections of U.S.-assisted nuclear expansion in India. Indian coal is plentiful but of poor quality and highly polluting. Burning coal more cheaply and more cleanly will do more than any conceivable expansion of nuclear power to aid India's economy and the environment. India's share of world oil consumption will grow from 3% to 4% over the next twenty years. But nuclear power does nothing to address the principal Indian oil consuming sector – cars and trucks – since these don't run off the electrical grid and won't for a long time. Finally, the type of assistance the United States is best positioned to provide to India's nuclear generation capacity (light water reactors operating on low-enriched uranium fuel) is at odds with the Indian establishment's uneconomical vision of a civil nuclear power program built primarily around breeder reactors.

The administration also claims the Deal will require India to improve its laws and procedures for controlling exports or diversions of sensitive nuclear technology – preventing an Indian A.Q. Khan. But at the same time, the administration acknowledges India's apparently excellent record of controlling nuclear exports (though not always ballistic missile exports). India is already bound by the U.S.-sponsored U.N. Security Council Resolution 1540 which requires such good conduct, so on paper at least Dehli has sold the same horse a second time in the Deal. In any event, the United States is

justifying the Deal's nuclear recognition to other nations around the world on the grounds that India's nuclear proliferation behavior is already exemplary. It will be difficult for the U.S. to argue this point both ways at the same time.

What Washington Should Get

What is it then that the United States might expect from the "strategic partnership" in return for the nuclear recognition it conferred upon India?

First and foremost, the United States should expect India to serve as a potential future Asian counterweight to China. Though no one wants to see China and the United States fall into strategic competition, neither can anyone rule this out. The evolution of U.S.-China relations will depend on the attitudes of China's younger generation and new leaders, on Chinese and U.S. policies, and on unpredictable events like a crisis over Taiwan. It is reasonable for the United States to hedge against a downturn in relations with China by improving its relations with India, and for India to do the same. But for now both are intent on improving their relations and trade with China, not antagonizing China. Neither government will wish to talk publicly, let alone take actions now, pursuant to this shared – but hypothetical and future – common interest.

Second, the U.S. will want Indian assistance in a range of possible contingencies involving neighboring Pakistan – another common interest that is awkward for either party to the Deal to acknowledge. Pakistan, alongside Russia, belongs at the very center of urgent concern about nuclear terrorism. Terrorists cannot make nuclear bombs unless they obtain enriched uranium or plutonium from governments that have made these materials. The exposure of the A.Q. Khan network in Pakistan makes clear that Pakistan has to be regarded as a potential source of such materials – whether by theft, sale, diversion by internal radical elements with access to bombs or materials, change of government from Musharraf to a radical regime, or some sort of internal chaos. Which version of the A.Q. Khan story is more alarming – that the government and military of Pakistan was unaware of what he was doing, or that they were aware and permitted it? Either way it illustrates a serious danger. Were there to be a threat or incident of nuclear terrorism originating in Pakistan, the United States would want to act in concert with as many regional players as possible, including India.

The Pakistan contingency is even more difficult than the China counterweight contingency for the newly-minted strategic partners in Washington and Delhi to acknowledge. India seems intent on improving its relations with Pakistan – despite last year's bombings in Delhi and their impact on Indian public opinion – and a rapprochement between these long-time antagonists is in the U.S. interest. The United States, for its part, has important interests at stake with the Musharraf government – among them supporting the search for Osama bin Laden and other terrorists on Pakistani territory, arresting the growth of radicalism in Pakistan's population, and stabilizing Afghanistan – and can ill afford the perception of a "tilt towards India." For now, therefore, the Pakistan contingency, like the China counterweight, remains a hypothetical and future benefit of the India Deal.

Third, and most urgently, India should be expected to weigh in against Iran's nuclear ambitions and to compromise to a considerable extent its friendly relations with Iran in the interests of nonproliferation. Whether Delhi does this will be the clearest test of whether nuclear recognition "brings India into the nuclear mainstream," as the Bush administration predicts, or whether India persists in its pre-Deal (actually, Cold War) positions of rhetorical support for the spread of nuclear fuel-cycle activities (uranium enrichment and plutonium reprocessing). India's September 24, 2005 and February 4, 2006 votes with the United States and its European partners in the IAEA Board of Governors, finding Iran in noncompliance with its NPT obligations and referring the matter to the United National Security Council were a welcome suggestion that India will support the international campaign to curb Iran's nuclear ambitions. But India's willingness truly to join the nuclear club, reversing old non-aligned habits and putting its diplomatic shoulder to the wheel in the case of Iran and other urgent counterproliferation efforts will be an early and major test of the value of strategic partnership and its new status.

Fourth, the United States should expect a continued intensification of Indo-U.S. military-to-military contacts, ultimately envisioning joint action in operations outside of a United Nations context. India has historically refused to join the United States military in operations that were not mandated and commanded by the United Nations. In the future, when the United States needs partners in disaster relief, humanitarian intervention, peacekeeping missions, or stability operations, the United States can reasonably expect India to cooperate. Judging from the evolution of U.S. security partnerships in Asia and Europe (especially NATO's expanded membership and Partnership for Peace), anticipation of joint action can lead first to joint military planning, then progressively to joint exercises, intelligence sharing and forging of a common threat assessment, and finally to joint capabilities. This is the path foreseen for a deepening U.S.-India strategic partnership in the defense field. Additionally, there could be occasions when access for and, if needed, basing of U.S. military forces on Indian territory would be desirable. At first this might be limited to port access for U.S. naval vessels transiting the Indian Ocean and overflight rights for U.S. military aircraft, but in time it could lead to such steps as use of Indian training facilities for U.S. forces deploying to locations with similar climate (the way German training areas were used for forces deploying to the Balkans). Ultimately, India could provide U.S. forces with "over-the-horizon" basing for Middle East contingencies of the sort preferred by Saudi Arabia and other Gulf states.

Fifth, the United States will expect preferential treatment for U.S. industry in India's civil nuclear expansion and modernization of its military. The authors of the India Deal might have anticipated preferential treatment for U.S. industry in construction of Indian nuclear reactors and other civil power infrastructure made possible by the Deal. But there are two barriers to realization of this U.S. benefit. First, the United States must secure preferential access for its nuclear industry at the expense of Russian and European suppliers who are also seeking access to the Indian market. Second, the United States will also need to persuade India to focus its nuclear power expansion on light water reactors, not the exotic and uneconomical technologies (e.g., fast breeders) that the Indian nuclear scientific community favors. This benefit should therefore not be

exaggerated. India is expected to increase the scale and sophistication of its military, in part by purchasing weapons systems abroad. In view of its concessions in the India Deal, the United States can reasonably expect preferential treatment for U.S. vendors relative to Russian or European vendors. Early discussions have included the F-16 and F-18 tactical aircraft and the P-3C Orion maritime surveillance aircraft.

Will the United States Get the Benefits of the India Deal?

The list above is a very substantial – even breathtaking -- set of potential benefits to the United States of a strategic partnership with India. How realistic is it?

Some of the items on this list reflect common national interests of India and the United States. The United States might therefore have had many of these benefits without having to pay the nonproliferation costs associated with nuclear recognition for India. Most of the items on the list are also hypothetical and lie in a future that neither side can predict – this is certainly the case with regard to the China counterweight and Pakistan contingency items. Other items on the list, like Iran’s nuclear program, will unfold sooner. The United States can certainly hope that India will behave as a true “strategic partner” in the future across all the items on this list. But there is a risk that when the United States comes to ask India to do something it is reluctant to do, that it comes to regret having played its big diplomatic card – nuclear recognition – so early in the process.

India, as befits a great nation on its way to global prominence, will have its own opinions about this list. Some American proponents of the India Deal have compared it to Nixon’s opening to China – a bold move based on a firm foundation of mutual interest, but more a leap of trust than a shrewd bargain. Mao and Nixon, however, had a clear and present common enemy – the Soviet Union – not a hypothetical set of possible future opponents. But the real difference between the Nixon/Kissinger deal and the India Deal is that India, unlike Mao’s China, is a democracy. No government in Delhi can turn decades of Indian policy on a dime or commit it to a broad set of actions in support of U.S. interests – only a profound and probably slow change in the views of India’s elites can do this. India’s bureaucracies and diplomats are fabled for their stubborn adherence to independent positions regarding the world order, economic development, and nuclear security. Proponents of the India Deal suggest that these positions will yield to the grand gesture of nuclear recognition by the United States. This expectation is naïve. Americans view the change of long-standing and principled nonproliferation policy to accommodate India as a concession. Indians view it as acknowledgement of something to which they have long been entitled. This is not a durable basis for a diplomatic transaction.

It is therefore premature to judge whether the expectations of this strategic partnership as apparently foreseen on the U.S. side are shared by India and will, in fact, materialize. The Deal itself was premature. The risk with a hastily prepared diplomatic initiative is that disenchantment will set in on both sides. At this point, the United States,

including the Congress, can only do its best to ensure that its benefits are fully realized -- by both parties.

THE HONORABLE ASHTON B. CARTER

Dr. Ashton Carter is Co-Director (with former Secretary of Defense William J. Perry) of the Preventive Defense Project, a research collaboration of Harvard's Kennedy School of Government and Stanford University, and he teaches national security policy at the Kennedy School where he is Ford Foundation Professor of Science and International Affairs.

Dr. Carter served as Assistant Secretary of Defense for International Security Policy during President Clinton's first term. His Pentagon responsibilities encompassed: countering weapons of mass destruction worldwide, oversight of the U.S. nuclear arsenal and missile defense programs, arms control, controls of sensitive U.S. exports, policy regarding the collapse of the former Soviet Union (including its nuclear weapons and other weapons of mass destruction), and chairmanship of NATO's High Level Group. He oversaw military planning during the 1994 crisis over North Korea's nuclear weapons program; was instrumental in removing all nuclear weapons from the territories of Ukraine, Kazakstan, and Belarus; directed the establishment of defense and intelligence relationships with the countries of the former Soviet Union when the Cold War ended; and participated in the negotiations that led to the deployment of Russian troops as part of the Bosnia Peace Plan Implementation Force. Dr. Carter oversaw the multi-billion dollar Cooperative Threat Reduction (Nunn-Lugar) program to support elimination of nuclear, chemical, and biological weapons of the former Soviet Union, including the secret removal of 600 kilograms of highly enriched uranium from Kazakstan in the operation code-named Project Sapphire. Dr. Carter also directed the Nuclear Posture Review and oversaw the Department of Defense's (DOD's) Counterproliferation Initiative. He directed the reform of DOD's national security export controls. His arms control responsibilities included the agreement freezing North Korea's nuclear weapons program, the extension of the Nuclear Nonproliferation Treaty, the negotiation of the Comprehensive Test Ban Treaty, and matters involving the START II, ABM, CFE, and other arms control treaties.

Dr. Carter was twice awarded the Department of Defense Distinguished Service Medal, the highest award given by the Department. For his contributions to intelligence, he was awarded the Defense Intelligence Medal. In 1987 Carter was named one of Ten Outstanding Young Americans by the United States Jaycees. He received the American Physical Society's Forum Award for his contributions to physics and public policy.

A longtime member of the Defense Science Board and the Defense Policy Board, the principal advisory bodies to the Secretary of Defense, Dr. Carter continues to serve DOD as an adviser to the Secretary of Defense, a consultant to the Defense Science Board, and a member of the National Missile Defense White Team. In 1997 Dr. Carter co-chaired the Catastrophic Terrorism Study Group with former CIA Director John M. Deutch, which urged greater attention to terrorism. From 1998 to 2000, he was deputy to former Secretary of Defense William J. Perry in the North Korea Policy Review and traveled with him to Pyongyang. In 2001-2002, he served on the National Academy of Sciences Committee on Science and Technology for Countering Terrorism and advised on the creation of the Department of Homeland Security. In 2003 he was a member of the National Security Advisory Group to the U.S. Senate Democratic Leadership, with William Perry, Gen. Wesley K. Clark, Madeleine Albright, and others.

In addition to his public service, Dr. Carter is currently a Senior Partner of Global Technology Partners, Chairman of the Advisory Board of MIT's Lincoln Laboratories, a member of the Draper Laboratory Corporation, and a member of the Board of Directors of Mitretek Systems. He is a consultant to Goldman, Sachs and the MITRE Corporation on international affairs and technology matters, and speaks frequently to business and policy audiences. Dr. Carter is also a member of the Aspen Strategy Group, the Council on Foreign Relations, the American Physical Society, the International Institute of Strategic Studies, and the National Committee on U.S.-China Relations. Dr. Carter was elected a Fellow of the American Academy of Arts and Sciences.

Carter's research focuses on the Preventive Defense Project, which designs and promotes security policies aimed at preventing the emergence of major new threats to the United States. Carter and former Secretary of Defense William J. Perry co-authored *Preventive Defense: A New Security Strategy for America*, which identified and prioritized the threats to U.S. national security in the 21st century.

Before his latest government service, Dr. Carter was Director of the Center for Science and International Affairs at Harvard University's John F. Kennedy School of Government, and Chairman of the Editorial Board of *International Security*. Previously, he has held positions at the Massachusetts Institute of Technology, the Congressional Office of Technology Assessment, and Rockefeller University.

Dr. Carter received bachelor's degrees in physics and in medieval history from Yale University, summa cum laude, Phi Beta Kappa. He received his doctorate in theoretical physics from Oxford University, where he was a Rhodes Scholar.

In addition to authoring numerous articles, scientific publications, government studies, and Congressional testimonies, Dr. Carter co-edited and co-authored eleven books, including *Keeping the Edge: Managing Defense for the Future* (2001), *Preventive Defense* (1997), *Cooperative Denuclearization: From Pledges to Deeds* (1993), *A New Concept of Cooperative Security* (1992), *Beyond Spinoff: Military and Commercial Technologies in a Changing World* (1992), *Soviet Nuclear Fission: Control of the Nuclear Arsenal in a Disintegrating Soviet Union* (1991), *Managing Nuclear Operations* (1987), *Ballistic Missile Defense* (1984), and *Directed Energy Missile Defense in Space* (1984).