TRAPPINGS OF POWER

BALLISTIC MISSILES IN THE THIRD WORLD

JANNE E. NOLAN

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Foreword

SINCE the beginning of the crisis precipitated by Iraq's invasion of Kuwait in August 1990, the threat posed by Iraq's arsenal of ballistic missiles has been the focus of international attention. In the opening days of the U.S.-led military counteroffensive beginning on January 16, 1991, Iraq launched ballistic missiles against population centers in Israel and military bases in Saudi Arabia. The attacks intensified the terror of the war and prompted renewed efforts by the multinational force to destroy Saddam Hussein's military machine.

The countries aligned against Iraq were prepared for attacks by chemically armed missiles, but Iraq's missile force proved to be of little military consequence. The missiles that survived the opening hours of Operation Desert Storm were conventionally armed, inaccurate, and unreliable. Most of those that were actually launched either were intercepted by American antimissile defenses or failed to hit vital targets.

But the political impact of the missiles was inestimable. The strikes symbolized Iraq's determination to prosecute the war no matter what the cost. By threatening to involve Israel, they created severe tensions and posed the risk that the multinational military coalition would be dissolved, and they underscored the potential vulnerability of all the states in the region to Iraqi aggression.

In this book, Janne E. Nolan argues that the use of missiles is a harbinger of the altered international security environment confronting the United States and its allies in the late twentieth century. Long believed to be a distant prospect, the adaptation of technological resources to missile development is already occurring in over a dozen developing countries, many of them long-standing regional antagonists. These capabilities present complicated challenges to American interests and foreign policy, challenges that have only begun to be explored as a result of the Iraqi crisis.

The author examines the evolution of the international technology market, surveys third world missile programs, and analyzes the military significance of ballistic missiles in potential third world combat. She also discusses the way in which domestic and international policy decisions are made to promote or restrain the export of military technology, and assesses the strengths and weaknesses of current policy. Finally, she emphasizes the need for institutional reforms to balance the requirements of protecting the technological edge on which the United States relies for its own security against the growing pressures of international militarization.

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BRUCE K. MAC LAURY
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CHAPTER ONE

The Challenges of Technology Diffusion

ON MAY 22, 1989, at a launch site on the Bay of Bengal, India successfully tested its first medium-range ballistic missile. Designated the Agni, the two-stage rocket was said to have a potential range of 1,500 miles, making it capable of reaching targets throughout Pakistan and in some parts of China.[1] In startled tones, Western commentators announced that India, one of the poorest nations of the world, had joined a technological elite: a demonstrated ability to produce and launch a ballistic missile had previously been the domain of only the United States, the Soviet Union, France, Britain, Israel, and China.[2]

The Agni test prompted instantaneous criticism from the Bush administration and Congress. Beginning in late 1988, American officials had tried to persuade New Delhi to cancel the Agni test, decrying the program as "a highly destabilizing development in the region."[3] Twenty-two senators were more strident in their criticism, denouncing India's actions in a letter to President Bush as being "in direct contradiction of U.S. and Soviet efforts to lessen global tensions by reducing ballistic missiles."[4] But from the standpoint of the Indian government and the hundreds of technicians and engineers who had worked for decades to modernize India's military-industrial capacity, the success of the Agni test was "a milestone in the progress of Indian science and technology in general and defense research and development in particular."[5] After a patently cosmetic portrayal of the test as a scientific venture aimed at enhancing expertise in satellite technology, these officials made it clear that they considered U.S. efforts to interfere with India's obvious military aspirations impertinent and patronizing.[6]

Ironically, the Agni program owed its genesis to India's adaptation of

the civilian space technology and technical assistance that the Soviet Union, the United States, France, and Germany had provided since 1962. And the test took place just one week before meetings scheduled between American and Indian officials to discuss ways the United States could expedite sales of advanced American technology to assist India's space program.[7] Indeed, one of the issues to be discussed was a pending request from New Delhi for an export license for technology pertinent to missile testing—the Combined Acceleration Vibration Climatic Test System (CAVCTS)—whose sale had been approved by the U.S. Commerce Department before the approval encountered opposition from the Department of Defense and the Central Intelligence Agency.[8] Despite its rhetorical outrage, then, the Bush administration rebuffed suggestions that the meetings should be cancelled or that the deepening American involvement in India's space modernization efforts be reconsidered.[9]

The stated policy of the United States is to prevent countries from importing technology needed to design and manufacture ballistic missiles, especially countries with incipient nuclear programs. On the surface, this principle is unassailable, supported as it is both domestically and by U.S. allies. But, as many previous efforts to impose security-related export controls have demonstrated, actual enforcement of measures to restrain the diffusion of technology is a far more complicated and politically challenging matter.[10]

Coincident with the uproar over the Agni, a U.S.-Japanese agreement to cooperate in developing an advanced fighter aircraft—the so-called Fighter Support–Experimental, or FS-X—was provoking protracted political controversy within Congress and among agencies in the executive branch. Originally heralded as a model of technological cooperation between close security partners, the FS-X contract now prompted vitriolic attacks from domestic critics of Japanese trading practices, who seized upon it as a symbol of the decline of American technological superiority. Given Japan's huge trade surplus with the United States, its relatively modest defense expenditures, and its continued success in dominating the international market in advanced technologies vital to U.S. commercial and security interests, opponents now believed an agreement to provide sensitive U.S. military technology would constitute a virtual surrender to an economic competitor.[11] Less in deference to the importance of the U.S.-Japanese security relationship than as a reluctant concession that even a bad deal was better than ceding the

contract to European firms, the Senate approved a modified version of the FS-X agreement by a narrow margin in mid-1989.[12]

Seemingly unrelated, the events surrounding the Agni test and the FS-X agreement actually shared important characteristics. Both highlighted the deteriorating ability of the United States to dictate or even to influence significantly the industrial and security policies of emerging regional powers. Faced with a growing number of competing foreign sources of advanced scientific and technical capabilities and with a weakening domestic economy, America is finding it can no longer rely on its technological preeminence to dominate the terms of its overseas relationships. The maturation of the international economy, a development Washington has aggressively fostered since World War II, has pushed the United States into a position of genuine interdependence as it enters the last decade of the twentieth century.

Technology Diffusion and U.S. Interests

The challenges posed by the Agni and the FS-X are microcosms of the more general kinds of challenges confronting U.S. policy as it adapts to the new international environment. Although Japan's technology is far more sophisticated than India's and the two countries represent quite disparate problems for U.S. policymakers, the experiences with both illustrate the need for America to redefine its role in a world in which technological and military accommodation with other sovereign nations is becoming less a matter of choice than of necessity and self-preservation. America's diminishing technological superiority in an environment of intensified economic and military competition suggests that its security and foreign policy will be linked with industrial and economic policy to an extent historically unprecedented.[13]

Believing that the United States somehow has been stripped unfairly of its technological dominance, growing numbers of politicians and analysts have been pressing for protectionist trade measures to try to regain the lost power. Trade barriers and punitive sanctions have figured prominently in debates about policy toward both Japan and India, albeit for different ends. The central, if unspoken, premise is that the United States can still command international change by threatening retrenchment and blocking access to advanced technology.

The crucial questions addressed in this study are whether such a

premise can serve as an effective basis for policy as the United States faces the global diffusion of military production capabilities; and if not, what alternative or additional instruments might be appropriate. The analysis in this book focuses in particular on the production of ballistic missiles in countries commonly classified as part of the third world.[14] Although America's technological rivalry with other advanced industrial nations has dominated most of the concern about waning U.S. power, the proliferation of high-technology goods and expertise in the third world is potentially as vital a factor in contributing to the change in America's global stature.

The underlying concern is how the United States will balance the imperatives for cooperation with allied and other nations against the enduring requirement to protect the technological edge on which its security has traditionally relied. This is, of course, a conundrum that has been part of U.S. policy throughout the postwar period. It is the leitmotif of the chronic controversies over how best to implement strategic trade controls against military adversaries without unduly penalizing economic interests. A preoccupation with preventing the diffusion of technology to the Soviet Union and Eastern Europe, however, has long overshadowed the problems posed by its diffusion to newly industrialized and industrializing countries. The export of U.S. military goods to the third world in the past forty years has been guided by the assumption that industrialized states would retain sufficient technological superiority to stay ahead of and to counter threats posed by the growing military capabilities of developing nations. Even as the size and quality of third world military forces increased, the assumption of technological stratification supported an implicit concept of stability.[15] Indeed, providing conventional armaments has traditionally been a principal means of dissuading states from pursuing nuclear ambitions and, as such, has itself been an instrument to ensure a continued military demarcation between states with nuclear weapons and those without them.

Structural changes in the international technology market, however, are testing the pertinence of these traditional policies. In the 1950s and early 1960s, U.S. military exports consisted of obsolescent weapons and materiel transferred to close allies. In the late 1960s and early 1970s, America provided more sophisticated weapon systems to nations outside NATO and began cooperative weapon production ventures with them. By the end of the 1970s the United States and other Western industrial countries had begun to sell the third world the same types of weapons

that they fielded with their own forces and to compete for contracts in which offering to share production processes was an essential quid pro quo for capturing third world markets.[16]

The ability of advanced countries to control the proliferation of technology so as to influence policies of third world countries has been eroded by their own domestic economic imperatives. The high cost of innovations critical to security has sometimes required them to engage in technology-sharing arrangements with other countries simply to produce weapons more cheaply. In addition, their dependence on foreign revenues has driven them to export military technologies to the third world. Finally, the progressive constriction of individual shares of the international arms market, spurred by the growing number of arms suppliers, has intensified pressures for industrialized countries to export more advanced equipment and more sophisticated technology-sharing arrangements to retain a foothold in needed markets.[17]

On their part, third world countries, perhaps more than thirty of them, have become determined to develop independent defense industries. Despite apparent diseconomies and dubious security advantages, they consider the ability to manufacture weapons a sine qua non of national sovereignty and a means of capturing technological resources to achieve overall modernization and international status. Notwithstanding their continued dependence on the advanced countries for the most sophisticated technologies, many developing nations have themselves become arms suppliers and are helping still other countries elude any strictures on military ambitions that the great powers may seek to impose.[18] And with the the progressive integration of Eastern Europe into the international economy, the number of industrialized countries seeking revenues from arms exports can be expected to rise even higher.

As the medium of exchange between industrial and industrializing countries has increasingly become technology rather than finished weapon systems, the importance of traditional instruments to control proliferation has progressively diminished. The ready availability of commercial technologies that have potential military applications, along with maturing third world defense industries capable of exploiting these applications, has made distinguishing between civilian and military exports more difficult. This is especially true for exports of space technology, which traditionally have not been subject to the same kind of political scrutiny as arms exports, despite their importance to indigenous missile programs in some developing nations.

Emerging defense technologies may make differentiating among military and civilian exports more difficult still. Technologies that are at the cutting edge of Western military modernization, including advanced information processing, composite materials, directed energy systems, and biotechnologies, are to varying degrees equally vital to civilian modernization. Advances in biotechnology for superlethal pathogens usable in biological warfare, for instance, can also be used to develop more cost-effective and efficient agricultural techniques and medicines. Although access to biotechnologies could destabilize regional military balances, the technologies could also improve stability in countries where poverty and disease are important determinants of social unrest.[19]

Even more pointedly for ballistic missile development, the advanced satellite reconnaissance capabilities that are so useful for weather prediction and crop surveys are also likely to be in high demand for military operations. In addition to improving targeting and accuracy, satellite intelligence can assure countries in range of an adversary's missile forces that they are not under attack or can give them warning of such an attack. Third world countries may increasingly perceive access to such intelligence and other modalities for command and control as necessary to mitigate unstable military conditions brought about by the growth of missile arsenals among regional rivals.[20]

The endurance of the international nuclear nonproliferation regime also may be strained by the global redistribution of high technology. Aside from their efforts to divert resources from civilian nuclear energy programs to military applications, states such as Taiwan and South Korea, whose nuclear programs were slowed by international intervention, have received compensation in the form of advanced conventional technologies. Many can now produce a variety of delivery systems that may be useful for carrying nuclear or other nonconventional munitions. In particular, the development of missiles by countries with the potential for producing nuclear weapons could very well accelerate nuclear deployments.[21]

Trends toward a more open international trading system may mean that the market for military technology could become more resistant to intervention by the governments of advanced industrial nations. Aside from complications posed by pressures of international competition, the effectiveness of trade barriers will be compromised by the declining share of technology that is under government control. Fiber optics, advanced composite materials, and other key components and processes

vital to modern military capability are increasingly based on technological innovations driven by and directed toward the commercial market.[22] As Ashton Carter has argued, "the overall trend is for defense to make up an ever smaller part of the global technological enterprise, and . . . the Department of Defense will have far less leverage over the nature of this enterprise."[23] Governments' influence over industry could further diminish as companies meld their commercial and defense sectors and join together as multinational enterprises.

The effects of technology dissemination for U.S. and international security will depend on the technology and country in question. To continue to exert influence in the third world, retain a competitive share of the global technology market, and protect its own security interests, the United States will have to devise policies that can capture the benefits of trade while retaining some control over technologies with military applications. This may require a new framework for international trade policy that can better balance the goals sought from military and dual-use exports with the necessity to control technologies whose international diffusion is deemed inimical to U.S. security interests. The transformation of East-West relations since 1985 has already prompted major alterations in the practices and institutions guiding trade with Eastern Europe. The implications of these changes for technology diffusion in the developing world, however, have yet to be reflected in new policy.

The premise that the West will inevitably retain power based on enduring technological stratification may thus be tested more severely in coming years. If current trends continue, the pace of diffusion may eventually vitiate the reliance of industrial countries on technological superiority to influence international events. The rapid transformation of technology from state-of-the-art to obsolescence may make the quest for advantage ever more elusive. And the possibility of any edge in quality may disappear if equipment widely available internationally begins to approximate the capabilities of recent innovations, or can at least interfere with the performance of such innovations. In other words, there may be a point of exhaustion in which an increment in technological superiority yields diminishing military returns.

The idea that the West can continue to subsidize its own military preparedness by helping smaller states prepare for war may hasten the point at which technological superiority ceases to be a decisive determinant of national influence. As developing countries' military

forces improve, any remaining international hierarchy may disappear. Thus, in the same way that the transfer of Western technology was thought to help the Soviet Union achieve military parity with the West, a more even distribution of military power will also result from the spread of technology from North to South. The consequences for international stability and U.S. interests will depend on the technology and its destination, but it is important to recognize that military powers that may not share common values with the West are emerging throughout the world.

The Case of Ballistic Missiles

The development of ballistic missiles by third world countries has been mistakenly portrayed by many observers as a distinctly new dimension of international politics.[24] But missile programs have been evident in some countries for many years, albeit on a limited scale. Attention is higher now because of Iraq's arsenal of ballistic missiles, which it used against Israel and Saudi Arabia during Operation Desert Storm in January 1991, Iran's and Iraq's use of ballistic missiles against population centers in the 1988 "War of the Cities," the emergence of the People's Republic of China as a missile supplier, evidence of missile production programs in South Africa, Iraq, and Libya, and Israel's flight test of a missile potentially capable of reaching targets in the Soviet Union.[25] Sixteen third world nations currently possess ballistic missiles, twelve of them developing or producing the systems domestically.[26] Even as the great powers embark on ambitious arms and force reductions, the quest for modern armaments in the developing world continues unabated.

The spread of missile technology to unstable regions of the world poses serious dilemmas for policymakers. The technical characteristics of ballistic missiles, including the speed with which they can reach targets, their invulnerability to defenses, their adaptability for delivering warheads of mass destruction, and their particular utility for preemptive military operations, make them inherently destabilizing in regions where combat is likely to occur.[27] Not coincidentally, most of the significant new missile producers are in the Middle East, the Persian Gulf, and South and Northeast Asia, all regions of chronic tension. (Argentina and Brazil are special cases because they are developing missiles largely for export.)

In addition to increasing regional tensions, proliferation may increase

the lethality and frequency of conflicts. Because of the close proximity of many potential combatants, even short-range systems could reach significant targets. Armed with chemical warheads or other nonconventional munitions, they could terrorize populations and, even with their limited accuracy, could have some effect against military targets such as airfields. Moreover, a latent or tested ballistic missile capability can spur adversaries to develop similar systems or acquire the means to destroy the rival's arsenal before it is used.

With the spread of longer-range ballistic missiles, local or regional military conflicts could have wider international consequences. Armed with nuclear, chemical, or even advanced conventional munitions, these systems could expand the scope of conflict well beyond the spheres of the combatant states. India, Israel, and Saudi Arabia, for example, already possess missiles that can reach targets in the Soviet Union.

Such systems in the possession of bellicose countries could also affect advanced countries' conduct of military operations, a possibility presaged by such incidents as Argentina's use of French-made air-to-surface missiles to attack British naval forces in the Falklands and Iran's missile attacks against U.S.-flagged Kuwaiti tankers in the Persian Gulf. As is clear from the ongoing crisis in Iraq, the growing sophistication of missile arsenals in countries that may be willing to risk attacking U.S. forces can complicate decisions about whether and when to intervene in regional conflicts. The arsenals have already prompted concern about the safety of Western military installations and forces overseas.[28] At a minimum, the United States and its allies might have to incur heavy costs to protect military assets—including hardening command centers, sheltering aircraft, building additional runways and launch pads, and adding to intelligence-gathering capabilities. In addition, the increasing range and capabilities of new missiles may pose the risk of attacks on U.S. territory by terrorists or lawless states, an argument used to promote the domestic deployment of U.S. defenses.

Perceptions of the dangers of ballistic missiles are also linked to concerns about their possible contribution to the proliferation of chemical and nuclear weapons. Iraq's breaking of the decades-long taboo on the use of chemical weapons in 1984, along with evidence of acquisition of chemical weapons by more than a dozen other countries in the third world, has fueled alarm that combining these weapons with missile delivery has gained particular status as a valued instrument in military operations.[29] And many of the states that are developing ballistic missiles