Chapter Three

RIGHT MAKES MIGHT: FREEDOM AND POWER IN THE INFORMATION AGE

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INTRODUCTION

Information Technology and World Politics

The locomotive of change in the new era of world politics is information technology. It propels reform and globalization and is increasingly crucial to national power. It has thus recast the relationship between politics and power. In essence, military power now depends on information technology and thus on the openness, freedom, and global integration that spawn and sustain that technology. Consequently, the world's great powers will be, like the United States, free-enterprise nations, ruled by legitimate governments, motivated by shared interests in the health and security of the global economy, and at least loosely united against threats to those interests from lesser states and nonstate actors.

National power and standing will remain important, both as facts and ambitions. But the great powers will all be within the core political economy and will thus be partners, not rivals, of the United States and of each other. Their growing economic integration, unprecedented in kind, will make hegemonic struggles a high-cost, low-gain diversion from the pursuit of common core interests. Countries that remain closed and apart from the core, including those that are hostile to the core and its interests, will find it increasingly difficult to acquire or develop the information technology necessary to achieve modern power. Simply put: U.S. adversaries will tend to be weak;

[1]This paper is a shorter version of Gompert (1998).

U.S. friends will tend to be strong; and strong states will tend to be friendly.

Such a state of affairs could be considered optimistic, even utopian, were it not roughly the situation today: The military superiority of the United States is, in large part, a consequence of its lead in information technology, which results from its economic and political openness. Thus, the strongest democracy is the strongest power. The other leading democracies, Japan and the European Union (EU), trail only the United States in most important measures of actual and potential power.[2] Yet the three are essentially as congenial now as they were when Japan and Europe depended vitally on U.S. protection during the Cold War.

Thus, today's greatest powers are democratic, integrated economically, in harmony, and predisposed to confront common problems jointly. The view here is that this pattern will hold true generally, increasingly, and perpetually, owing above all to the effects of the information revolution. The need for and effects of information technology will cause aspiring great powers, historically a source of instability, to gravitate toward the interests and openness of the United States and the democratic core, rather than to challenge them. Consequently, the multipolar relationship among modern great powers will feature collaboration, common stakes, and compatible purposes, rather than hegemonic struggle, balance of power, and pecking-order politics. Post–Cold War relations among the United States, Japan, and the EU provide the model for relations among modern great powers generally.

The most important question in the new era is whether China's emerging power and strategy will conform to that template. The thesis here, applied to that particular question, is that China's paramount ambitions—stability and greatness—require reform, integration, and concert with the established powers. There is no other way to master the dominant technology, without which China cannot succeed.

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[2]The EU has the world's second-largest and best concentration of military power and the largest economy. In addition to being the closest technological rival of the United States, Japan could become a world-class military power within a short time of any (highly unlikely) decision to do so.

Even giant states that reject the core's interests and values, though potentially dangerous, will be chronically undernourished in the technology that counts the most. They will therefore lie outside not only the global economy but also the power structure of world politics. Such outlying states can still carve out military niches, disrupt international security, and defy even the United States in some circumstances. The broad-based military superiority of the United States and other democratic powers will not ensure complete, permanent security. But states that seek self-sufficiency or oppose the core's interests and values will find it much harder than it is for the great democracies to build and use modern military power, which increasingly depends on wider success with information technology. Consequently, the ability of such states to undermine international security will be limited, and the risks facing them will be great should they try. Instead of might making right, we will discover that right—as in open and free—makes might.

The underlying reason for the emerging convergence between democracy and power lies in the *nature* of information technology: It comes directly from and adds directly to human knowledge. Once thought of as a utility in need of regulation—at least in its telecom origins—it has proven to be the best way to tap human potential, especially if unregulated. Older technologies—metal bending, machine propelling, atom splitting—have been conducive to state power, even to coercive state power. But information technology is linked to the inventiveness, freedom, aspirations, and irrepressibility of the citizen. If anything, state power, in its traditional sense, can only retard this technology. The information revolution both liberates and requires liberation. As the U.S. experience shows, the freer the market, the greater the level of performance that information technology delivers.

Information technology has already revolutionized industrial operations. Information technology enables corporations to operate worldwide systems of production, distribution, and finance that form the anatomy of the integrated world economy. Consequently, U.S., European, and Japanese firms are investing wherever their technology has the best match with local labor. Thus, on a global scale, information technology thrives on open markets and boosts efficiency, productivity, and prosperity.

In the military realm, those who master information technology have the potential to multiply the lethality and mobility of their armed forces, such that they can trade in mass for quality and come out way ahead. To a far greater degree than mechanical technologies, information technologies can yield enduring military advantages only if they are flourishing in the economy and society at large. For the most part, the key technologies for the military—microelectronics, data networking, and software—are driven by the volume and requirements of civilian markets. Indeed, after the initial years of the "computer revolution"—the 1950s and 1960s—the military sector, even in the United States, has lagged the rest of the market, in part because it is sluggish, more rigid, and less open than other sectors and in part because it has become a relatively small segment. Only with vibrant private sectors and integration in the world economy will countries, however large and populous, be able to reap the benefits of the information revolution in military affairs and in their larger societies.

Implications

This reasoning, if right, has a bearing on how to regard the United States and the world's other current and future powers, especially Japan, the EU, and China.[3] The strength of the United States is not a transitory phenomenon of the immediate post–Cold War period but rather a natural result of the U.S. lead in exploiting the information revolution. Japan and Europe also satisfy the conditions of success in information technology—freedom and integration—and have the economic performance and military potential to show for it. Yet there is little danger that they will become America's strategic rivals, despite their size, the absence of a major common adversary, and their reduced security dependence on the United States. There is no hint of interest in a hegemonic challenge—if anything, the greater danger is that they will be free riders. As the stake Japan, the EU, and the United States share in the health and security of the integrated core economy increases, their cooperation ought to deepen. All

[3]India could also become a power of this magnitude. But it will not get as much attention in this chapter because it does not appear to be on a collision course with the United States.

three democratic powers have an equity, figuratively and literally, in each other's success.

As for China, its growing investment in and reliance on information technology will intensify pressures for further economic and political liberalization. If and as the Chinese state yields to these pressures, China will be drawn ever more closely toward—indeed, into—the core of democratic powers and the interests that motivate them. Alternatively, a stubbornly authoritarian, nationalistic, and self-sufficient China will find it hard to become competitive in the dominant technology, on which both its economic prospects and future military power increasingly depend. China can become a modern world power or can reject the ideals and oppose the interests of the core, but it cannot do both.

Fear in the United States of China as a powerful, authoritarian, hegemonic challenger ignores the analysis that power requires information technology, information technology requires freedom and integration, and freedom and integration create a community of values and interests. Obviously, China will not be a replica of Japan or Western Europe. Neither will it adopt all of America's ways and beliefs. But as China's mastery of information technology and its power grow, so should its identification with the interests of the core and thus its qualifications and disposition to become a genuine partner of the United States and a creator of regional and global security rather than of insecurity.

While the prospect of partnership among the world's powers, established and rising, offers great hope to the United States and to global security, there are pitfalls and countervailing trends. Openness produces not only strength but also vulnerability. Societies that enjoy political and economic openness, rely on the sharing of information, and are integrated into the world economy are inviting targets for states or groups that oppose them. Democracies might lack the will to pay for military power or the nerve to use it when threatened. Moreover, by networking communities of interest and bypassing vertical authority, the information revolution is eroding hierarchies of all sorts, including democratic nation-states. Finally, so rapid and uncontrollable is the spread of information technology, thanks to the integration and enlargement of the global economy, that even closed states can acquire and use it for military purposes.

Granted, these factors will limit the power and security of even the most powerful nation-states. But this chapter's thesis is not that powerful states will be invulnerable or necessarily dominant in world affairs. If anything, the symbolic and operational utility of national power, including that of democratic states, will be less in the information age than it was in the industrial age. But the thesis here is that the most powerful states will be at least loosely aligned behind a common strategic and political outlook and that states, however sizable, lacking that outlook will encounter difficulty creating and using the dominant economic and military technology.

The thought that freedom and integration promote security is not new. Neither is the idea that democracies do not wage war with each other. (Doyle, 1986; Ray, 1995.) The argument that integration engenders common interests, promotes cooperation, and dampens conflict is also familiar, though less widely accepted, mainly because of the contrary example of European interdependence in the decades before World War I (more on that later). The new idea here—adding the spice of information technology to the curry—is that democracies have the inherent potential to be more powerful than other types of states, which was not the case when states could wield industrial power.

For these ideas to be right, several propositions—mere assertions thus far—must be valid. First, competitiveness in information technology depends on economic and political freedom and on integration into the core. Second, military power and other forms of national power depend on broad-based competitiveness in the creation and use of information technology. Third, integration into the core creates shared stakes that eclipse, or at least qualify, power politics and point toward a democratic commonwealth of interests and values. The remainder of this chapter will examine these propositions.

INFORMATION TECHNOLOGY NEEDS FREEDOM

Knowledge and Economic Freedom

Success in creating and exploiting information technology depends on economic freedom. The two most important stages in the lives of most information technologies are *invention* and practical *application*. These stages are especially dependent on healthy market forces

and financial returns; government infringement, opposition, or control at either end retards the technology.

Creativity and freedom in invention and use have not been this crucial in every industry: In steelmaking, for example, the economics of gathering ore and coal and of manufacturing are key; in nuclear power, fault-free engineering and operation are what matter most; in consumer products, success depends above all on distribution. But as we can already see from the explosion of new ideas, products, and services in the decade since the deregulation of the U.S. telecommunications industry, the combination of invention and application—of science and market—provides the combustion for the information revolution.

The prospect of handsome profit in return for high-value innovation is critical in attracting the talent and justifying the risk-taking required in the discovery and design of information technology. In addition, the development and introduction of new information systems and services require large, efficient, and venturesome capital markets. Therefore, returns commensurate with value and risk are needed to stimulate both invention and investment. Such incentives have not been and cannot be well replicated in a state-dominated economy. Even if vast public resources are garnered and invested in these technologies, a closed system has no way of emulating the extraordinary, continuing growth in valuation, capitalization, and income for reinvestment that has accompanied the expansion of the information technology industry in the capitalist democracies.

State resource allocation, ownership, control, and planning, even if meant to provide the spark of innovation, will more likely extinguish it. It takes the price mechanism of a free market to keep up with the fast pace at which information technology is able to create new applications and reduce costs. The information market has a voracious appetite, demanding the next course before it has digested the last. No sooner does a market segment seem saturated (mainframe computers, for instance) than it transforms itself and demands a better technology on an even greater scale (distributed processing). Because of flexible design, versatile components, malleable software, and open connectivity standards, new products and services can be created, brought to market, and incorporated with astonishing speed. Neither producers nor consumers in this market have patience for government regulation. No major industry has devel-

oped a stronger aversion to state interference. The spread of e-mail and the Internet has occurred well beyond the reach, speed, and competence of the state.

Scale is as important as quickness in achieving competitiveness in information technology. Large commercial and consumer markets are needed to generate the revenue required to justify and afford the high research and development costs inherent in this industry. Absent such markets, military and other state needs are much too small to cover these costs. For want of a market, the Soviet Union was unable to compete in information technology despite its seemingly immense defense sector. In contrast, Japan, with a diminutive military sector, has had great success. The U.S. military market now makes up just 2 percent of the demand for information technology in the United States, down from 25 percent in 1975. While U.S. armed forces still require some customized technology, they have come to rely heavily on the broader information market: the public telephone network, common integrated circuits, everyday computers and data networks, and standardized operating systems.

Even as small, open states, such as Taiwan and Hungary, can find niches in the world information technology market, the investing firms' home countries—the United States, Japan, and Western Europe—also stand to benefit from the spreading of their technology. In addition to new markets and the income stream flowing back to headquarters, globalization expands the capabilities, especially the human capital, to which the great economic powers have access and over which they have continuing control, because they generate most new technology. The conventional wisdom that the diffusion of technology leaves the transferring state worse off is mistaken. The export of their own technology has strengthened the information industries of Japan and the United States and thus the countries themselves, given the importance of their information industries.

Economic freedom both furthers and is furthered by participation in the global economy. Such participation requires data communications for dispersed yet integrated operations. It provides pipelines for the latest innovations and applications. Despite the efforts of governments to control technology transfers, there is a growing, free-flowing transnational pool of information technology, not tightly restricted to but concentrated in the integrated core economy, where nearly all advanced value-added production occurs. (Vernon and

Kapstein, 1991.) Countries lacking economic freedom will have difficulty integrating, owing to their exclusion from the world trading system and to inhibitions on the part of foreign investors. Consequently, their access to the pool of information technology will be constricted.

In light of their indigenous deficiencies and investor disinterest, states without free markets will be forced to try to import advanced technology, legally or otherwise. While this is feasible for some other technologies—the ones required to make and launch weapons of mass destruction, for instance—it is not feasible, broadly speaking, for information technology. Most information products and services work well only when embedded in a society whose skills and infrastructure are undergoing a larger information revolution. These technologies are increasingly interdependent, especially as computer networking expands; parts are of limited utility. What good are desktop computers without networks and a steady diet of software upgrades? Information technology is constantly being modified, enhanced, and overtaken by better ideas, leaving importing states to engage in an expensive and never-ending game of catch-up.

Of greatest concern, obviously, is that states that shun free markets might nevertheless be able to acquire particular information technology for military purposes. But, of course, the more ambitious those purposes, the more technology they need. Since the technology is virtually impossible to partition and control, the more of it such states acquire, the greater the likelihood that they will end up weakened or transformed. Economic openness, integration, and information technology travel together and are a juggernaut of progress when they do.

The information revolution has figured centrally in the accelerating expansion of the world's free-market core—spreading ideas, permitting global operations, improving the output of human capital in much of the developing world, and facilitating the investment that has extended capitalism's reach over the last two decades. Throughout this process, the enhancement of economic freedom has enabled emerging nations to attract investors and to acquire, use, and eventually produce information technology.

But is history since 1980 or so a guide to the long-term future? Will economic freedom remain a prerequisite of national success in per-

petuity, if and as the information *revolution* turns into a more stable information *age*? Or could it be that the need for creative stimulus and freedom in the invention and application of information technology, so evident today, is not a function of the nature of the technology but of its youthfulness?

After all, invention was where the action was early in the industrial age, too. Perhaps, in a less revolutionary future, production methods, industrial management, or distribution will come to dominate the information age, as occurred when the industrial revolution matured. If so, it could be that the edge now held by open-market states in spawning, financing, and applying new ideas could fade as this revolution settles into a more steady state. Conceivably, capitalism's phenomenal success in recent decades—perhaps democracy's too—might be a temporary phenomenon reflecting its peculiar efficacy in *launching* the information revolution.

But recall that economic freedom is critical in both the creation *and use* of information technology. Thus, there is no reason to expect a lessening over time in the importance of free markets in sustaining an edge in information technology. An open economy requires distributed information for its private companies to operate, especially as they themselves become decentralized and more interactive with their suppliers and customers. Large private enterprises have become the most sophisticated users of information technology, demanding the best to enhance their own strategic competitiveness. They provide the essential leading edge in challenging the industry to furnish better hardware, software, networks, and services. In addition, extensive and modern backbone telecommunications, with gateways to the global network, are a requirement of a vibrant private sector. In contrast, closed economic systems lack private enterprises whose appetite for information technology stems from the urge to compete, cut costs, and increase profits. Governments do not express such demands.

Thus, the *nature* of this technology, not just its stage of development, favors open economic systems. The nature of heavy mechanical industry lent itself to state involvement. The nature of atomic power required it. But information technology contradicts the purposes and can weaken the props of state economic power. The main economic uses to which information technology is put—distributing information, decentralizing functions and decisionmaking, creating

horizontal links, improving producer-consumer contact, sharpening external awareness and adaptability—correspond with strong market forces. Even if the supply of information technology becomes less dependent on economic freedom over time, the demand will not. Therefore, we should expect capitalist systems to retain their advantage through the information age.

Knowledge and Political Freedom

Success in creating and exploiting information technology also depends on and fosters political freedom. As we were taught in introductory civics, access to information, via as many media as possible, is a precondition for accountable government and effective democracy. In turn, the free flow of information amplifies democratic demands. Recent research confirms a strong causal link between the availability of communications and the expansion of political freedom in the wake of communism.[4]

Dictators who try to control information freedom, lest it weaken their grip on power, clearly understand the connection (without having read the research). The world's most oppressive states—North Korea, Iraq, Cuba, Libya, Syria, and Serbia—are also those most determined to monopolize and manipulate information. The availability of information technology, whether or not sanctioned by the state, spreads news and opinions about what is happening both inside and outside the country, which for most dictators can only hasten involuntary retirement.

Looked at from the opposite direction, a climate of intellectual and personal freedom is important in encouraging breakthrough ideas, which are especially critical in information technology. True, authoritarian states can cultivate, pamper, and even motivate scientists and engineers whose inventions serve "the cause." But the speed with which the vaunted science and technology establishment of the former Soviet Union collapsed demonstrates the fragility of state-controlled science in the information age.

Intellectuals, including those of science and of letters, demand intellectual freedom. Intellectual freedom, in turn, gives rise to insistence

[4]Christopher Kedzie of RAND did work on this in 1996 in the context of what he calls the "dictator's dilemma."

on the right to question the ruler, the ruler's policies, and the very system of government. It is difficult, arguably impossible, for a regime to pigeonhole individual freedom and political freedom for long. Conversely, a state's refusal to embark on genuine political reform will, in due course, become an impediment to the successful creation and use of information technology, thus limiting its economic and military potential.

The prompt and unrestricted use of new information products and services, characteristic of open political systems, increases the expected financial return on both innovation and capital. The digital network, the personal computer, cellular telephony, and the Internet, all of which required hefty investment in the face of market and technical risk, have relied on confidence that the government would not interfere in the market or restrict use. The growth of Web browsers would hardly be as rapid as it is if industry feared that government might crack down on the Web. In addition, the free sharing of ideas, a hallmark of democracy, is important in disseminating and thus making full use of the latest information technology. The fact that the first Chinese magazine about the Internet had to begin underground underscores the contradiction between the urge to spread the technology and the urge to police it.

The link between democracy and information technology is not transitory. Attempts by government to restrict the international diffusion of information technology have been largely futile. Over the past several decades, the industry has eagerly spread its know-how as part of the competition for global markets. So, mastery of these technologies ought, in principle, to be widespread. Yet nearly all of the new information technology generated today still comes from the democracies that account for less than one-fifth of the world's population. And other societies that are beginning to use and produce information technology are, for the most part, also democratic. The pattern is too strong to be accidental.

Economic Freedom and Political Freedom

Free enterprise breeds political reform and, eventually, accountable government. In Asia, for example, nearly all of the emerging free-market nations are democratizing. Empirical research confirms that

> marketization, the process of moving from a centrally controlled economy to a free market, provides the conditions necessary for fostering democracy and the means by which the citizenry can establish this system of government. (Ravich, 1996.)

The growing middle classes of the emerging societies demand political rights to go with their economic freedom. Authoritarian regimes have had little success at satisfying, or buying off, the new economic classes with prosperity. Give a person the chance to make money, and he will want more, not less, freedom to use his earnings as he wishes, to go where he pleases, to say what he wants, and to criticize what he dislikes.

With marketization, the government becomes an economic backwater, the guardian and paymaster of uncompetitive state enterprises. As the economic power of the state shrivels, so does its ability to resist pluralist demands and political reform. Its ability to provide public and social service is weakened. As it loses its economic legitimacy, its lack of political legitimacy invites more determined opposition.

Economic freedom, as already noted, goes hand in hand with integration in the international economy, leading to exposure to foreign goods and services, customers and suppliers, management know-how, and liberal political notions. These exposures encourage the challenging of undemocratic government. Attempts to create a dual economy—part open, part not—can work only for a while, since the open part will become noticeably more prosperous, and seditious ideas from abroad will take hold there and seep into the rest of the society. Fidel Castro's misgivings about freeing up part of Cuba's economy, as Cuban reformers advocate, suggest that he has a nose for these risks.

Direct support for dissidents or embryonic democratic institutions is increasingly available both from the governments and nongovernmental organizations of the democratic core, thanks to (what else?) information technology. The penetrability of even self-isolated societies is growing, especially when sophisticated transnational "civil society" groups make it their business to network with the oppressed. Determined despots can combat this porosity only by resorting to more severe oppression and to economic self-isolation.

The price of resisting democratic pressures—deprivation and popular hatred—is rising.

While undemocratic states are capable of instituting capitalism, they are generally less good at it. Even if they condone economic freedom, undemocratic states hardly offer a climate conducive to the individual initiative needed for success in creating and applying information technology. Moreover, the durability of undemocratic free-market states is doubtful. Pinochet's Chile was often mentioned—until Chile became democratic. Singapore is the most commonly cited example, but it is too small and idiosyncratic to support any generalization. Chinese elites admit that political reform—indeed, some recognizable form of democracy—cannot be postponed indefinitely if China's success is to continue. Their forecast that this will occur over many decades—Jiang Zemin recently prescribed democracy for China in 50 years—might underestimate the difficulty of inoculating free enterprise against free politics. Even now, though obscured by China's poor human-rights record, political openness and representative government are spreading at local levels, and the appetite of Chinese citizens for freedom is unlikely to be satisfied by just a taste.

History will settle whether marketization produces democratization—though *recent* history suggests it does. The point is germane but not critical here. Even an undemocratic state that integrates into the core economy, yet remains undemocratic, will come to share the bulk of the *interests* of the great democratic powers even if it does not also subscribe to core *values*. Those already integrated into the core are largely motivated by a set of common economic interests: the security of world energy supplies, the smooth functioning of global markets, the institutionalization of free trade, and common approaches to transnational challenges. A distillate of current U.S. global strategy reveals a preponderant economic motivation, with its concentration on East Asia, Europe, and the Middle East; its relentless drive to open markets; and its willingness to project power to ensure access to petroleum. Although America's closest and best partners have been other democracies, it usually can also count on less savory states that share its material interests. As the world economic core integrates and expands, it acquires collective interests that will animate the behavior of all who participate, be they politically open or not.

NATIONAL POWER NEEDS INFORMATION TECHNOLOGY

Information Technology and Military Capabilities

This chapter's second proposition is that military power, and other types of national power, depend increasingly on broad-based competitiveness in the creation and use of the dominant technology. If this is true, in conjunction with the first proposition, power will come more easily and be more sustainable for states whose economic and political freedoms and integration in the world economy make them more competitive in information technology.

Information technology is becoming the most important factor in military operations and power. The centrality of information technology in military capabilities is now recognized in the two most definitive recent statements on U.S. defense strategy: the *Report of the Quadrennial Defense Review* (DoD, 1997a) and *Joint Vision 2010* (DoD, 1997b). Until recently, the U.S. military was applying information technology to improve at the margin its traditional ways of fighting and managing. Like many private enterprises before, it is only now beginning to change its ways, the better to realize the new technology's promise.

As military forces and operations exploit the information revolution, the very measures of military power will change. The sizes of armies, the heaviness of armored forces, raw numbers of combat aircraft and ships, and atomic megatonnage will matter less in the new era. The performance—accuracy, reliability, lethality—of individual weapons has been enhanced by microelectronics, but their real value will come from networking them together. Improved data communications can now combine sensors, platforms, weapons, and command into far more potent capabilities than those of high-performance systems used independently.

The ability to use weapons, sensors, platforms, and other military systems in conjunction with one another depends on elegant but rugged command, control, communications, computing, intelligence, surveillance, and reconnaissance (mercifully, "C4ISR"). The side with C4ISR superiority—"information dominance," in the jargon du jour—can track its adversary's every move, see and direct its own forces, and largely determine the course of the conflict.

Information technology is eliminating the inverse relationship between range and accuracy, and thus lethality. Combined with the improved ability to find and follow enemy units, such lethality permits rapid and systematic destruction of the enemy's whole force and war infrastructure. The need to fly manned aircraft into enemy-controlled air space to do this job is declining, as accurate standoff weapons can be used to destroy any target and as unmanned vehicles are developed.

Small, light ground units with large arsenals of affordable precision-strike munitions borne by remote platforms at their command can pack a heavy offensive punch. Using "swarm" tactics, they will be more than a match for much larger but slower enemy forces and permit quicker deployment and reduced logistical demands, all thanks to the improved lethality and connectivity provided by information technology. These capabilities will expand the ability of those possessing them to project power, strike with impunity from any distance and direction, render an adversary defenseless, and achieve decisive victory, all with lower casualties. Tactical operations could be fought from strategic distances. Mechanized aggression could go the way of the cavalry charge.

Information technology has also brought within reach the elusive goal of joint warfare, which provides enormous combat advantages over those who lack it. Instead of waging segregated warfare among ground-, sea-, and air-based components, "jointness" unifies forces to carry out decisive operations. Potentially, any capability from the entire integrated force, depending on priorities, can be brought to bear on any component of the enemy's force, but not vice versa. As options multiply, the adversary's hope of defending its forces and infrastructure fades.

Using private-sector information technology and methods, defense logistics are becoming leaner and quicker. American military leaders and critics still lament the difficulty of restructuring and shrinking their huge support establishment and inventories. But at least they have reached the foothills of this mountain chain. Most other militaries remain far behind, encumbered with calcified support establishments that drain resources and hamper operations as much as support them. Information technology also offers the possibility of streamlining procurement, improving resource management, sharp-

ening training (e.g., with simulations), and enhancing productivity throughout the defense establishment. In sum, both "tooth" and "tail" are undergoing transformation to exploit the information revolution.

Information technology, physically defined—hardware and software, devices and systems—only partly accounts for U.S. military superiority and for the inherent advantages of open societies. The quality of American military personnel, on the rise since the end of the Vietnam War, is an equally towering strength. While quality encompasses a bundle of aptitudes and education, more and more it emphasizes skill in "knowledge" tasks and technologies. An ample supply of high-quality information-oriented people has become a critical ingredient for military excellence, and it is more readily found in free-market economies and open societies (not only the United States) with ubiquitous information technology. A state-dominated system might be able to make, buy, and use this or that weapon system, but it is condemned to make do with inferior personnel and an industrial-age military establishment that will severely limit its power. Democracies are more capable of providing both the "machine" and "man" components of information power in military affairs.

Even though the United States is transforming its forces, structures, and doctrine to exploit information technology, it does not automatically follow that other states must mimic this approach to pose military challenges. North Vietnam, by analogy, understood the weaknesses of U.S. strategy and tactics—not to mention U.S. will—and did just the opposite, fighting on foot underneath the U.S. long-range attacks. In the future, reliance on massed platforms in open territory, skies, and waters will guarantee defeat against information-rich forces, such as those of the United States. But low-intensity conflict, the use of dispersed infantry, and hiding are promising tactics against such forces, and they do not require information technology. Does the prospect of low-tech asymmetric strategies contradict the idea that nations must excel in information technology if they are to avoid being at a military disadvantage?

Fundamentally, no. Bearing in mind that the revolution in military affairs is still in its infancy, as the application of information technology improves, a growing assortment of counterstrategies will fall vic-

tim to it. Military facilities, stationary troops, and exposed tank columns are the easiest but not the only targets that can be detected, locked on, and destroyed by increasingly precise, quick, and affordable data links and munitions of a joint, information-age force.

This does not exclude the possibility that some hostile state will buck the trend, shun the dominant technology, and still present a military challenge. But any state that aspires to regional or global military power, or that expects to fare well in a military showdown with the United States, will have to incorporate information technology increasingly into its military capabilities. Other powers that step onto the playing field preferred and dominated by the free-market democracies will be able to advance only by opening themselves up to the pressures for reform and freedom that create modern knowledge-based power.

Freedom as Vulnerability

Pessimists warn that, traditional military power aside, the information revolution is posing new security problems that could prove more severe for open than for closed societies. Because the United States and its democratic partners are more economically dependent than other countries on connectivity and computing, they could become more vulnerable to information warfare, even ending the sanctuary from hostile attack that they now enjoy. Integration in the world economy, with its crisscrossing networks, enlarges the risk.

Threats to the democracies' cyberspace endanger not only the citizens' quality of life but also their resolve. Americans are ambivalent enough about projecting power as it is. The prospect of a disruption of the national economy due to attacks on domestic information infrastructure could tilt that ambivalence in a distinctly negative direction, thus emboldening a militarily inferior enemy to challenge U.S. interests.

Moreover, as the United States and other advanced nations become more dependent on information technology in their military systems, they will become more susceptible to information warfare during operations. The revolution in military affairs places a bull's eye on the C4ISR that is critical to it. In the extreme, the ability of the United States to project power and to strike at will could be under-

mined if an otherwise weaker enemy interfered with the links that network U.S. forces, fuse U.S. sensor data, and permit joint warfare. Even if the military establishment secures its own dedicated links and nodes, effective information warfare attacks on the U.S. public telecommunications network, on which nearly all routine military traffic flows, could create havoc in a crisis and cripple a major power-projection campaign.

Given these vulnerabilities, could the economic and political openness of the United States and other advanced democracies become more of a strategic liability than an asset as the information revolution unfolds? Probably not. Free-market democracies should be able to fashion sufficient security, resilience, and redundancy into their civil and military information systems to avoid being hobbled by hostile information warriors. Private enterprises, especially large providers and users of information systems and services, are already working to improve security, for their own profit-and-loss reasons. Moreover, we need not have absolute security from cyberspace invasions; a certain tolerance and toughness should be possible for an open society that already experiences blackouts, stock market swings, cable cuts, and traffic jams.

It is even possible that the irregular, unregimented, decentralized, and adaptive patterns of very open societies will make them more able than rigid, closed systems to withstand disruptions. Some vulnerability will be a fact of life for democracies in the information age. Yet the countries that are superior in the military application of information technology also have a greater potential to conduct offensive information operations. They will hardly be defenseless. Moreover, the democratic powers should not confine themselves to responding in kind to information warfare attacks. If they can find the source—which improved track-back technology will help them do—they can settle scores with their superior conventional military strength.

A more fundamental question is whether we are merely experiencing a bend in the endless, winding road of military power that happens to favor the United States and other democracies. If so, the next turn could benefit despots. With the relentless spread of virtually all technologies, what faith have we that states and nonstate actors hostile to the interests of the democratic core will not get weapons,

perhaps cheap high-tech ones, that neutralize the superior capabilities of the United States and its friends? (See Stavardis, 1997.) After all, globalization propagates innovation rapidly throughout the world economy. Arguably, this will flatten out world economic and technological strength, which could in turn lead to the equalization of military power, or at least to trouble ahead for any country that relies mainly on its technological edge for its power.

More specifically, even though the democracies might retain military superiority based on their edge in information technology, their ability and will to use their power could be undermined by improved missiles, mines, and of course chemical and biological weapons in the hands of hostile states. It would not take a very high forecast of casualties to deter the United States from taking military action even against an inferior enemy, especially if no vital U.S. interests were at stake. Alternatively, if the military role of information technology were to wane in the next cycle—supplanted, for example, by weapons of mass destruction or swarms of guerrilla fighters (this time, Mujahideen instead of Vietcong)—democracies would have no advantage and perhaps major disadvantages, including the higher value they place on human life.

Yet these reservations do not negate the essential advantages of military capabilities based on information technology: Such capabilities are more usable than less precise and less discriminating weapons and reduce the human role in—though never the responsibility for—international violence. The information revolution in military affairs makes the use of force easier, more surgical, more refined, and less costly in lives and treasure. The combination of accurate long-range weapons and data networks can improve the ability to project power over great distance, in any direction, at low risk. Information technology can reduce its possessors' reliance on massing humans on the battlefield, whether to fire weapons, man sensors, halt an enemy army, or mount a counteroffensive.

Even if new military technologies find their way into the hands of rogues, and even if those rogues master their use (which is problematic), their greatest value will be to those who need to project power without heavy losses. Because of their global interests and public aversion to casualties, the United States and other democracies of the integrated core stand to benefit the most strategically.

Even as states hostile to the core counter with other capabilities and tactics, the fundamental point is that superior information can provide a transcending advantage—one that the countries strongest in the essential technology will enjoy.

Because open societies hold the lead in guiding and exploiting the information revolution, they also hold a lead in the military application of that revolution. While blind confidence would be foolish, the rise in the relative power of open societies will not be easily reversed. The information revolution is not a *cycle*, but a *threshold* in human advancement. Having been introduced to warfare, the ability to gather, digest, and share information will be crucial from here on—as defining and permanent as metal and fuel are to machines.

The Changing Profile of Power

Since the end of the Cold War—perhaps earlier—military power has been overtaken by other, "softer" forms of power in world politics. (Nye, 1990.) National power includes economic strength and stability, industrial output, technological output, savings and investment levels, market size, infrastructure, exploitable but renewable resources, education, management competence, and scientific capacity. Every one of these factors correlates positively and increasingly with human knowledge, not commanded by the state but arising from the freedom to create, profit, adapt, and challenge the status quo. Free-market democracies dominate these categories of nonmilitary power and are superior in using information technology and in human talent to achieve their goals. Therefore, the decline in the importance of military power does not reduce either the importance of information technology or the democratic advantage.

There is yet another, subtle but increasingly important aspect of power in the new era: the ability of a system, or society, to sense the need for change and to adapt. The Soviet Union and what became of it illustrate the lack of this power, as well as the consequences. In a world of flux, with the future unpredictable, but surely quite different from the present, the race will be not only to the swift but also to the flexible.

The capacity to adapt has many components: technology, systems, institutions, practices, legitimacy, and of course the freedom to

change. In any "complex adaptive system," the ability to assimilate, share, and act on information is indispensable for successful adaptation.[5] This requires excellent internal and external communications, as well as openness. While the intelligence and policymaking organs of the state have a role to play, decentralization and privatization of economic and technological decisionmaking are key, as is the extent of participation in the world economy. Democratic systems, awash with information, in touch with the world, and communicating freely within, tend to adapt well.

Information technology is generally weakening all forms of vertical authority and strengthening networked communities of interest. One of the human institutions being weakened is the nation-state itself. National governments, including democratic ones, are losing some of their functional and constitutional importance. So even as nation-state power is concentrating among the free-market democracies, they too will experience losses to nonstate actors, some of whom could in turn exploit national vulnerabilities. While this is true, the general erosion of state power will affect most the nations in which that power has been dominant. The economies, societies, and technologies of democracies depend relatively little on central government. So states like the United States are less likely to be undermined by information technology than those that rely on control rather than legitimacy and in which economic and technological performance depend on that control.

POWERS AS PARTNERS

Power, Integration, and Common Success

The congruence of freedom, knowledge, and power is no guarantee of a peaceful world. But it does point toward greater security insofar as democratic powers are not hostile toward each other and have military superiority over undemocratic states that are hostile to them. At a minimum, the risk of great-power conflict—the world-endangering sort—would be reduced. As the democratic powers

[5]The notion of a complex adaptive system has been developed principally at the Santa Fe Institute and RAND, the former more in theory and the latter more in policy application.

become more integrated economically, they will become even less inclined toward confrontation, having little to gain and much to jeopardize, and will become more inclined toward pursuit of their common interests.

Rising powers should come to see the world in essentially the same light. In the information age, they must integrate to rise, and integration reduces conflict and increases collaboration. As national success depends less and less on national power, hegemonic rivalry will be regarded as pointless and damaging to success. The relative standing among the principal nations will become less important in world politics.

The claim that economic integration discourages conflict usually elicits the reminder that the nations of Europe were interdependent prior to the outbreak of World War I. This is true, but the relevance of that history to our future begs examination. An important difference between then and now is that the old European powers engaged each other mainly in commodity trade, whereas today's integration encompasses vital, high-value-added products and services, including information technology. (Vernon and Kapstein, 1991.) Commodity trade can be cut and redirected; dependence on common crucial inputs cannot.

Moreover, a major arena of economic interest among the powers of late-nineteenth-century Europe—colonialism—far from dampening conflict, stoked it. Industrial-age economies depended on the control of raw materials, valuable land, and trade routes. Britain's empire and Germany's continental preeminence were economically important and depended on strength—indeed, on relative strength. Every power's industrial capacity could be seen as a potential threat, not a benefit, to other powers. Hegemony could yield real benefits; consequently, hegemonic rivalry had a certain logic. The low-value trade taking place engendered no sense of common economic fate, let alone common strategic interest. Add the turn of the century's cocky brand of nationalism, and the result was a flammable mix of maneuvering, distrust, and miscalculation that culminated in 1914. In sum, the old European powers were not truly integrated and saw each other's success as a threat to their own. Their trade did not alter that strategic calculus.

No such competition for colonies, land, or resources—not even energy—pits the leading democracies against one another today. In the information age, the existing powers have no interest in conquest, for it leads nowhere they cannot get more directly through investment and cooperation. Globalization, the liquidity of economic assets, and the creation of a single pool of information technology reduce the economic utility of power. How can territorial dominion, let alone aggression, help when the prize is information and ideas?

The United States, Western Europe, and Japan share interests in the health, security, and growth of the core political economy: the unimpeded flow of goods, services, resources, money, information, and know-how throughout the core; the integration of emerging states; the success of new democracies; the security of world energy supplies, which lie mainly beyond the core; the stability of the dangerous regions where most of those energy supplies lie, the Middle East and the former Soviet Union; denial of weapons of mass destruction to hostile states; and the capacity to relieve human crises in failed states. Although each power in the core also has particular interests, these generally do not contradict the common interests. If and as other countries become more open, integrated, and powerful, they should come to identify with these same core interests.

Is hegemony obsolete? The current situation might provide a clue, since one of the powerful democracies in the G-7 is clearly more powerful than the others. Despite a clear opportunity for hegemony, the United States does not seek to dominate others. American triumphalism and its unilateralist lapses are criticized by its closest friends. But there is a huge difference between insensitivity and an attempt, based on superior strength, to exert hegemonic control or to trample the interests of others in pursuit of one's own.

At present, the great democratic powers are functioning as an effective community of trustful partners despite an imbalance of power, as well as responsibility, among them. If, as well, the Chinese understand that joining a community of powers in which the United States is strongest does not mean subjecting China to American hegemony, they need not hesitate to join. Such progress is possible because relative power no longer determines absolute success.

Integrating Rising Powers

Because of the new link between knowledge and power, no country, whatever its size by traditional measures, will find it possible to develop modern power without being competitive in the creation and use of information technology. Only by allowing economic and political freedom and by participating in the core economy will a state be able to acquire the investment, know-how, and market access needed to take full advantage of what information technology has to offer. A rising power that offers such economic and political freedom will find the governments and firms of the core prepared not only to accept but also to facilitate its integration and success. Thus, in the information age, becoming a great power means becoming part of the core. How will that integration affect the rising power's international outlook and conduct?

The surest, most feasible, and most durable way to get a rising power, such as China, to accept core interests is through the effects of integration. Where have we heard that before? Why believe this will work now with China when its antecedent, détente, failed with the Soviet Union? The Soviet Union was, as we know now, not a rising power at all, but one whose economic system was starting to fail well before the collapse. It had no real hope of integrating into the world economy and was not even trying to do so.

China harbors no interest in transforming the world—its interest is in transforming *itself*. It is eager to integrate and can realistically aspire to a major role in the world economy. Another major difference lies in the effects of information technology. Because of it, integration should affect Chinese internal politics and international behavior in ways détente never could have affected the Soviet Union. To achieve its goals, China must be able to acquire, create, and use information technology. Therefore, China must continue to reform and integrate. As it does, it will come to share the core economic and security interests that motivate cooperation among the United States, Japan, and Europe.

Like the current democratic powers, China will identify with the need for technology, products, money, energy, and information to flow freely throughout the world economy. It should also begin to sympathize with and eventually subscribe to the security concerns of the

core democracies, particularly access to world petroleum reserves, for which China's future needs are great. Similarly, threats posed by the spread of weapons of mass destruction have already begun to outweigh whatever economic and political benefits the Chinese might see in trafficking with the likes of Iran. With global trade increasingly vital to China, it will value the security of trade routes and thus the need to resolve territorial disputes peacefully. There are straws in the wind that the Chinese are beginning to identify with these interests—the cutoff of nuclear dealings with Iran and its cooperation with the United States in response to the Asian financial crisis.

There will likely be continued friction between China and the United States and its partners over human rights, trade policy, and regional questions. And one issue, Taiwan, could produce a head-on collision. But the safety net beneath such difficulties, even if Chinese nationalism persists, will be the convergence of China's fundamental economic and strategic interests with those of the United States, Japan, and Europe. Even the Taiwan problem should become more soluble, despite China's growing military power, as China itself changes and as the idea of war between China and the United States begins to look unacceptable to both.

The decoupling of national power and national success, as the industrial age gives way to the information age, makes confrontation between leading powers and the rising power both reckless and pointless. If the leading power is not attached to the status quo, because progress, not power, produces success, the rising power has nothing to assault. The world's leading powers can function in lasting concert rather than in precarious balance, even if their power is out of balance. The dependence of power on information technology and of information technology on openness has created a new possibility.

The Future of the Core

Thus, great-power relations in the new era need not, and from this standpoint will not, resemble those of the past: ever maneuvering to rebalance power, distrustful of each other because of the maneuvering, and preoccupied with stability yet potentially unstable. Globalization and its prime mover, information technology, are producing

a growing commonwealth of responsible great powers, compatible in outlook and ideals and confident enough to welcome change. The last two decades have been encouraging: Relations among the United States, Japan, and Europe are reassuring, and the prospect of China and India joining this stream of progress is good. So the question inevitably arises: Does the information revolution have the strength to convert the entire planet (but for the odd rogue) to openness, responsibility, cooperation, and peace?

Since the end of World War II, the expansion of the core from North America outward has had a pacifying effect: Western Europe and Northeast Asia, two of the world's most dangerous regions in the first half of the 20th century, are now at peace. More recently, Eastern Europe and Southeast Asia, also notorious for violence, have begun to enjoy security as a consequence of their transformation and integration. The locations of conflict since the end of the Cold War have been outside the democratic pale: Somalia, Haiti, Yugoslavia, Kurdistan, Afghanistan, and Central Africa. It is reasonable to believe that the wider the democratic core, the greater the expanse of security.

But globalization might be in for a slowdown. Several regions—the greater Middle East, the former Soviet Union, and Africa—are showing unpromising signs. Ancient feuds persist among states and tribes. Reform is at best uneven. Most governments lack legitimacy. Cynicism and corruption among elites are unabated, if not rising. Human capital is not being developed and used to the fullest. Education and science are weak. For all these reasons, investors are wary, except when it comes to extracting raw materials. With all the options available to firms from the core in search of new locations in which to produce for global markets, now including vast pools of Chinese and Indian talent, they are not likely to choose these regions. If they stay effectively outside the core, these three regions will remain the world's most dangerous.

There is also a possibility that, as the core gets larger, its rate of expansion will slow—the opposite of the acceleration we witnessed from 1980 to the present. The emerging countries of Latin America, Asia, and Europe offer abundant investment opportunities. A flood tide of previously underutilized labor has been matched with capital, production technology, and global market access. China is adding

some 10 million workers (former peasants) every year, and India has comparable potential. (Oksenberg, Swaine, and Lynch, 1997.) The competition for investment and technology is fierce. To the extent that further globalization depends on the spread of such investment to the Middle East, the former Soviet Union, and Africa, it will be hard to sustain the pace. Additionally, the financial turmoil and economic sag in East Asia and other emerging markets suggest that the process, more specifically the investments that drive it, might have overreached in recent years. This, too, does not bode well for regions not yet included.

Time will tell whether globalization sweeps in or sweeps past the outlying regions. The purpose here is not to practice futurology with false precision. Rather, it is to underscore that the expansive progress of the last two decades of this century could be hard to sustain. The expectation of a community of powers offered in this chapter is considerably more modest than any claim that the information revolution will soon produce a worldwide commonwealth of democracy, blossoming human talent, prosperity, and peace.

The sobering view of the exclusion of whole regions—nearly half the world—suggests that the core powers, the United States, Japan, and the EU, with China and India in the wings, will have much about which to cooperate. Power will be heavily concentrated in the core, but dangers will persist outside it. The strongest power cannot possibly cope with these dangers by itself—and why should it, when the other powers have similar interests at stake and growing means to help? Japan and the EU must share the burdens, as well as the prerogatives, of leadership with the United States. At the same time, the American policy elite should shed its fondness for unipolarity, not because it is infeasible, but because it is unnecessary and counterproductive to seek. The success, liberty, and happiness of Americans are not ensured by American supremacy but by the creation of a strong U.S. economy and a peaceful, and powerful, community of democracies.

In sum, world politics in the early 21st century could feature a concert of the most powerful nations, characterized by openness, integrating their economies and responding jointly to dangers to shared interests beyond their perimeter, e.g., energy insecurity, weapons of mass destruction, and ethnic conflict. Because they have the power

of the information revolution at their disposal, they will be stronger than any adversary and should have the means to enhance world security in general.

> It has been of the world's history hitherto that might makes right. It is for us and for our time to reverse the maxim.—Abraham Lincoln

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