

Chapter 9

Foreign Policy in the Information Age

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To hear the debate within Washington, it would be easy to conclude that little has changed in foreign policy circles since the days when every bright young man was speaking of throw weights and the Fulda Gap. Some of the names have changed, of course. The bright young men are now the venerable, gray-haired regulars of the think tank panel discussion circuit. The Cold War is over, so now some people worry a little more about China and a little less about Russia than they used to. Some argue that economic concerns are now more important than before. The names of the treaties being debated change, and the amounts of money that Senators balk at spending also ebb and flow. But inside the Beltway, the casual observer might conclude that U.S. international policy, U.S. power, and global relations are similar if not identical in character and conduct to what they have always been.

It is a little akin to Europe in the years immediately after Columbus landed in the Americas. Europe still felt like Europe. Dynastic kings still ruled from their ancient thrones. America was new, but it was there to fit into their old views of the world, to be made to serve Europe. Maybe the earth was flat, maybe it was not. That hardly mattered so long as European flags flew over these new lands. The character of the world had not changed, just some of the names and numbers on the map.

Of course, the fallacies rife in these views would soon be revealed. In a world that moved much more slowly than our own, discovery of the Americas would soon mean not a world of more Europe, more European ways, and more Europeans, but something entirely different. To be sure, there was a period of time when it looked liked the Eurocentric view might prevail. The Incas, Mayas, Aztecs, as well as the Sioux, Algonquins, and Seminoles—all were crushed. But European seeds planted in American soil grew into something entirely new, something that changed not just this hemisphere, but Europe and the world.

So it is today. A revolution in world affairs is afoot that possesses all the import, sweep, and potential impact of the discovery of the “new world” in the Americas or the onset of the Industrial Revolution or the Cold War itself. The very character of

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international affairs is changing—of power, of its application, of its roots, and of the challenges that we as a Nation will face.

This watershed in international relations has not yet been fully accepted in foreign policy circles, but the debates are starting. It has not produced new security theories, but the seeds have been planted. It has not produced new visions for leadership, but the void is becoming more apparent and the need to fill it ever more urgent.

The watershed has been triggered by a technological revolution unlike any other in history, one that is changing even the most fundamental assumptions about societies, governments, businesses, individuals, and their roles, as well as the nature of change, of risk, of opportunity, and of the future.

Just outside Washington, one of the world's great technological hubs is rising. Inside Washington, the Information Revolution is still seen as an incremental force, a minor adjustment to be made in old formulations.

A different view is called for. A new approach to U.S. foreign policy is urgently needed—one based on an in-depth reassessment of American interests and our ability to advance them. Call it the Global Era or call it the Information Age, it is time to set aside Flat Earth strategies and to try to understand the properties of this other new world, ironically, one of which may be that we are moving to an Earth that in some ways has become flatter after all.

This chapter will seek to lay a foundation for that new view by exploring the specific changes in the character of international relations that have resulted and will result from the continuing Information Revolution. In addition, it will illustrate those changes in character with a special look at how they have resulted and will result in a new and rapidly changing set of threats to the national interests of the United States.

Proving the Obvious: The Case for the New Era

To make the case that a new era has begun presents many challenges. Many, of course, have announced this change and attempted to plumb its subsequent challenges. How many articles and volumes and speeches have there been on the end of the Cold War or the onset of the Information Age? There have been books on the *End of History*, the imminent *Clash of Civilizations*, and on a *Jihad vs. McWorld*. In his book *The Lexus and the Olive Tree*, *The New York Times* foreign policy columnist Thomas L. Friedman asserts:

Sustainable globalization requires a stable power structure and no country is more essential than the United States. All the Internet and other technologies that Silicon Valley has designed to carry digital voices, videos and data around the world, all the trade and financial integration it is promoting through its innovations and all the wealth this is generating are happening in a world stabilized by a benign superpower, with its capital in Washington, DC . . . ideas and technology don't just spread on their own.

In other words, ideas and technology need to be backed by a credible currency, such as the weight of American, European, or Asian innovation. The implications of this change are not yet felt by many policymakers. Daniel Yergin and Joseph Stanislaw reiterate this point in their book *The Commanding Heights*:

A new reality is emerging. This is not a process but a condition—a globality, a world economy in which the traditional and familiar boundaries are being surmounted or made irrelevant. The end of the Soviet Union and communism has redrawn the map of world politics and subdued ideology as a dominating factor in international affairs. The growth of capital markets and the continued lowering of barriers to trade and investment are further tying markets together—and promoting a freer flow of ideas. The advent of emerging markets brings dynamism and opportunity on a massive scale to the international economy. . . . Paralleling and facilitating much of this is a technological revolution of momentous but uncertain consequences.

But can such a sea change be proven? At what point does the critical mass of smaller changes in communications infrastructures, information-processing tools, and related technological developments in areas such as transportation, health care, and other industries produce a larger scale phenomenon? At what point did the Middle Ages end and the Renaissance begin? How many factories had to be in place before the Industrial Revolution had officially started? Obviously, such dividing lines are not easily drawn, and inevitably they are drawn by historians secure in the perspective offered by hindsight.

The problem for policymakers is that they cannot wait for such thresholds to be limned. They must constantly reassess the world around them and determine whether their old metrics and systems still apply, or whether it is time to go back to the drawing board in a broader way.

It is also just as clear that, at such times, there will be plenty of those who note all that is the same and use this line of reasoning to trivialize the major change that has taken place. We hear such arguments today in the context of discussions of globalization. Contrarians are fond of pointing out that global trade as a percentage of world output is the same today as it was at the turn of the last century and that thus we are no more globalized now than we were then. What they neglect to assess is whether the character of international interaction has changed in such a substantial way that theirs is too narrow a measure.

One hundred years ago, while plenty of trade was taking place, it was mostly within and between a handful of empires and a few companies. It took place slowly via the seas. The vast majority of international interaction was limited to the courier and telegraphic links between nations, states, or cities. Nations in conflict could only very slowly mount attacks, moving overland at the speed of horses and across the seas at the speeds of comparatively early steamships. To say this international interaction is the same as today's is like saying that because the first printing press enabled books to go to more of the elites and to a comparatively small set of libraries worldwide, thus upping access to the written word by thousands of percent within a century, it is of the same consequence as the Internet connecting over 300 million people to virtually limitless information in less than a decade. While there are some similarities, they are hardly the same. And if one were a consumer or manufacturer of information, it would hardly make sense to use Gutenberg-era strategies, or even the communications strategies of the immediate pre-Internet era, to operate in the new environment.

In the same vein, it makes little sense to assert that because we had nations and armies and an international economy before this new age that the new age is nothing really different. Instead, what we must do is examine whether and how and to what degree the character of the drivers of international relations have changed. We must use all the tools at our disposal to do this. Statistical tools. Assessment of meaningful anecdotal observations. The evaluations of experienced observers. We need to collect evidence and then to weigh it. And once we have done so, we need to assess the consequences of that evidence.

Hype or Revolution?

How do we measure the degree of a revolution, especially one that is only in a nascent stage? We can note that 5 years ago there were 16 million people with Internet access and that in the past 5 years that number has grown by 1,902 percent to 304.36 million. Six months ago, the number of people online was 201.05 million, or 4.18 percent of the world's population. We can note that today, 1 in 3 Americans has Internet access, while 1 in 4 Koreans has it, and 1 in 20 Brazilians. And Internet penetration grows daily. We can note that Internet use is expected to grow 40 percent in the next 5 years, that the number of individuals with a computer worldwide will grow from 250 million to 350 million. We can note that e-commerce in the United States alone is expected to rise from \$51 billion in sales in 1998 to \$1.439 trillion in 5 years. We can emphasize the fact that despite the many people in the world who are untouched by this, every country is touched by it, every government, and every major corporation. Every credible member of his or her nation's elite is dealing with the new realities caused by this revolution.

As an alternative approach, consider for a moment the following anecdotes while asking yourself whether the scope of this change is indeed revolutionary. These are isolated examples, some very distant from the world of geopolitics and threat assessments that strategic thinkers are most comfortable with. But taken together, they suggest as evocatively as do the numbers cited earlier the breadth and depth and scope of the changes now afoot thanks to the technological revolution that is defining our era.

In the days of the Tiananmen uprising in China, foreign media sources were censored by the Chinese government, but protestors videotaped satellite feeds and faxed news briefs and circulated news nationwide without the cooperation of their leaders. From Chiapas to Tibet to Sarajevo to Seattle, the Internet has been used as a powerful tool for subversion, resistance and organization. Many feel that the fall of the Soviet empire was in large part due to the fact that closed societies could no longer compete in the Information Age, blind as they were to all the forces that drove the marketplace.

On Wall Street, the Internet and high-technology boom transformed the markets, drove them to new records, and forced a complete change in the rules of corporate valuation. But these changes also transformed Wall Street itself. From e-trading to the coming disenfranchisement of the intermediaries from brokers to traders to the creation of complex new algorithm-driven swaps and programmed trading techniques to the instant, global scope of increasingly volatile 24/7 markets, the Information Age has forced the financial industry to reinvent itself from the ground up. Even stodgy

old “white shoe” firms have gone to casual attire every day in a desperate attempt to attract those best and brightest who are now being drawn to the dot-com world.

The transformations in the financial markets have extended further. Not only have markets seen remarkable share volumes and indices seen remarkable point swings, but the interconnection of markets thanks to global information systems has also produced new phenomena like market contagion. In the past, of course, events in one market would touch others. But never so quickly or so profoundly as in modern markets. When in the emerging markets’ financial crisis of the late 1990s, speculators in the Russian market were caught off-guard by Russia’s decision to devalue the ruble, their margin calls forced them to withdraw money immediately from other markets. The one that felt this impact most acutely was Brazil, a country that until then had been viewed as having followed many of the financial prescriptions of the market and its advocates. Similarly, it was a crisis that spread across the markets of Asia that ultimately triggered the weakness in Russia. There are not independent markets any more, regardless of regulatory regimes. There is one global pool of capital that ebbs and flows from risk to reward globally.

This global flow of capital has, of course, had many other profound effects. In the wake of the end of the Cold War, as public sector capital flows from the United States and Russia to emerging markets shrank, as did the flows from the institutions they had controlled to serve directly or indirectly their Cold War objectives, these markets became more dependent on flows from capital markets. Thanks to the “wired markets” phenomenon described earlier, many of these flows were from the portfolios of institutions seeking near-term gain, so-called hot money that would come and go overnight. These funds, controlled by perhaps 30,000 equity, debt, and other securities traders worldwide, became a critical source of hard currency and capital on which these markets depended for growth. Consequently, how these 30,000 traders viewed public policies became as important to leaders wanting to implement change as were the views of local voters. These leaders now had two constituencies. One was at home where it had always been, Main Street—poorer, less cosmopolitan, less interested in global issues. The other was on “Wall Street” (in financial communities)—rich, globalist, concerned with maintaining liquidity and financial stability above all social concerns. This created a “dual-constituency conundrum” in which virtually all world leaders became servants to two sets of masters. To illustrate the importance of this factor, it is important to note that a decade ago, only 20 percent of the capital flowing into emerging markets came from the private sector; today it is 80 percent.

Of that 80 percent, the portion that does not come from market portfolios comes from global corporations. Their world too, has been profoundly changed by the technology revolution. Global multinational corporations face the challenges and seek to seize the opportunities created by global markets. This has forced consolidation on an unprecedented scale (for example, DaimlerChrysler, Vodafone-Mannesman-Airtouch, the dozens of once independent financial organizations that now make up Citigroup or Deutsche Bank, the airline alliances). This scale has grown so great that it challenges many of the basic underpinnings of traditional antitrust law—laws written in the age when a single company’s domination of a national market was a threat, but before the age when the national scale was only a fraction of that required to

compete internationally. Global companies have goals and interests that therefore extend far beyond national borders. Where once companies were part of a country, today they are increasingly apart from any one country, producing, selling, hiring, and raising money in all corners of the world.

The global information system required to support these companies has led in large part to the growth of the Internet and international telecom and transportation infrastructures that are the backbone of the technology revolution. But the existence of these global connections has also produced the first signs of new threats in the form of mischief and crime and sabotage, in which individual actors and nations have used the Web to disrupt business worldwide in an instant, as in the case of the "Melissa" and "I Love You" viruses; to steal billions; to alter national information resources for propaganda purposes; to shut down critical systems; and to consider new and more powerful ways to do all these things. The rise of cyberterrorism and hacking threats is therefore also a visible and important new development we can observe in this newly wired environment. It comes at a time when, increasingly, the financial and information flows of the world—personal and corporate and national resources that once sat isolated and safe in vaults—are now accessible via the open doors of the e-infrastructure.

These new technologies have had the effect of opening up the world to anyone with a computer. An individual can now sit at a desk and touch millions around the world, shop anywhere, find any information, sell to anyone, buy from anyone, and do it all in an instant. This effect is empowering and democratizing. It is also destabilizing, as it reshuffles power up to the global corporations cited earlier even as it gives individual actors unprecedented power and options—from tiny companies that can plug into global capital markets and grow more rapidly than ever before (witness the explosion of Internet companies) to hackers and cyberterrorists. These actors work in cyberspace, or the "infosphere," a region in which national borders are unclear and where it is harder to define jurisdiction, tax transactions, manage developments, or intervene.

This revolution has at the same time produced significant increases in productivity. The unprecedented economic expansion of the United States is now considered by some leading economists to be significantly (15 to 30 percent) due to the productivity increases resulting from the use of technology to save costs in production, employment, and marketing; eliminate middlemen; increase speed to market; refine supply chain management; and increase procurement efficiencies. At the same time, many feel that central bankers have failed to adapt their formulas for assessing whether the pace of growth is consistent with the new reality. Technology sector leaders like John Chambers of Cisco and Bill Gates of Microsoft and new economy economists have wondered aloud whether the efforts of the Federal Reserve Bank of the United States to tighten money supply in the face of increasing growth rates are based on antiquated ideas of what is possible. But because there is no consensus on this, the policymakers act to tighten and possibly undermine the potential for greater and faster growth in the near to medium term.

The current revolution is one that has emerged in the private sector and has developed so quickly that public sector policymakers have been unable to keep up with it. Regulations and responses from the government therefore have become lagging

indicators of this change. Unfortunately, as in any market-driven phenomenon, there is a tendency to focus efforts, resources, and change on those places where returns can be greatest rather than those where social equity is the principal driver. This produces another paradox. The factors that can create superpowered economic growth and integration are the same factors that can create a global digital divide in which information haves benefit and information have-nots fall rapidly behind. The fear of this phenomenon has led to a highly publicized backlash against the forces of globalization (seen as a manifestation of the technology revolution). This backlash was manifested in the streets of Seattle during the World Trade Organization (WTO) ministerial meeting in late 1999, in the streets of Washington and Prague during the recent meetings of the International Monetary Fund (IMF) and the World Bank, in the discussions that dominated the World Economic Forum meetings in Davos, and in countless other media and localized—and Web—forums.

Such anecdotal *tours d'horizon* are not always illuminating or meaningful. But the sweep of what is happening as a consequence of the technology revolution is so great and so manifest in so many respects that it conveys much more effectively than do sterile statistics the breadth, depth, and character of such changes.

But because we have had the opportunity to see how the information and related technological revolutions have affected sectors like business and finance, how they have transformed markets and the roles of nations and individuals, and how they have transformed the nature of interactions and conflicts, we also have another opportunity. We can use our experience to date to explore whether these transformations are of a similar character in any way, and whether they share common traits that can offer insights into coming changes or a better understanding of how this revolution will affect international relations or should affect international strategic considerations.

The Character of Change in the Information Age

On the basis of an analysis of how the technological developments of the past decade have changed industries from finance to manufacturing, changed nations and marketplaces, changed warfare and the media, it is possible to identify 9 and perhaps 10 separate characteristics of change that are linked to the Information Age. These characteristics are all factors that differentiate in some substantial way this new era from that which preceded it, either in degree or in terms of a deeper transformation. To understand them is the first step to understanding not only how this new age is unlike those that came before but also how to rise to its challenges and seize its opportunities—whether in terms of foreign policy, military affairs, or business itself.

Perhaps the first and most obvious change is *acceleration*. Thanks to new technologies in information and in transportation, things move much faster in the current era than at any time before. Transactions are conducted in a fraction of a second. Manufacturing processes are accelerated thanks to automation, refined supply chain management, enhanced delivery capabilities, and greater efficiencies at every stop of every process. Communications are accelerated thanks to the profusion of new communications technologies, enhanced competition, greater bandwidth, and more robust alternative switching and dissemination mechanisms. Political reactions to events

thus become more rapid because more people can see what is happening anywhere in the world sooner and share their reactions more quickly. Disruptions can also happen much more quickly as moods are changed and groups react with stunning swiftness. This is as true in markets as it is with uprisings. Consider the market contagion noted earlier, or the speed with which demonstrations erupted across China in the wake of the U.S. bombing of the Chinese Embassy in Belgrade.

The next fundamental change in character is *amplification*. The roots of the technology revolution go back to the transistor. This device was transforming because it enabled the amplification of weak electrical signals. Now virtually all the offspring of this device do the same in broader social, economic, political, military, and other ways. A single actor at a computer can start a computer virus that can touch a majority of the businesses on the planet Earth within hours. A single voice can be heard by millions. A single market actor can attract the attention of all capital providers. A single incident can thus have much greater consequences than before, and produce a greater reaction. Take the accelerating nature of most businesses and combine it with the ability to impact large numbers of people—touch many quickly—and the consequences of actions amplify.

The combination of acceleration and amplification yields the third characteristic of this changed world: *volatility*. No one who has lived through the market upheavals of the past few years needs to have them explained. Moves that once would have taken months take days. Volumes of trades have increased by magnitudes of 10 over a decade ago. Greater volumes in less time and a greater ability to absorb and synthesize information produce faster travel through cycles of reaction to an event. Consequently, market cycles are condensed. The same characteristic can be seen impacting elections and public opinion. Witness the huge outpouring of sympathy around the death of Princess Diana: huge populations spread around the entire world responded and were transfixed for several days. Witness the swiftness with which political fortunes can change. Yesterday's bull market very quickly becomes today's bear market; yesterday's hero, today's villain; yesterday's peace, today's conflict.

Another consequence of combining acceleration and amplification is that fewer people can have a bigger impact than ever before—call it *asymmetry*. This phenomenon is very familiar to military strategists, who have been contemplating asymmetrical warfare as a new and growing class of threat for several years now. Essentially, it comes down to the fact that new technologies allow either individuals or small groups to have much greater power than ever before possible, power that once was available only to the largest companies or governments. Once only a government had the ability to shut down the infrastructure of an enemy or to destroy a city. Now, cyberattacks or attacks with weapons of mass destruction (WMDs), managed and carried out by a few people, can do the same. Once it would be unthinkable that a tiny company could compete globally with a giant, but today small companies are plugged into every market, can process vast amounts of information, and can be visible everywhere—all via the Web. In the past, the capital-intensive business of building global infrastructure and delivery mechanisms was a barrier that protected the power of the large. Today, the infrastructure is in place for global communications and delivery, and, thanks to miniaturization, small devices with great power (or,

thanks to advances in biotechnology, new classes of microbial threat) can be sent anywhere, anytime, easily. This phenomenon comes at a time when the balance of the bipolar Cold War world is gone, and threats exist essentially along those fault lines where U.S. national interests appear gray or distant and smaller actors are the dominant threats to peace. But small does not mean what it once did; ask the Russians who faced a few thousand Chechens with cell phones and computers and the ability to move around with ease. Indeed, the reality is that one no longer requires the resources of a state to attack another state or society. Nonstate actors are a growing source of asymmetrical threats. This fact is complicated, of course, by the fact that U.S. power has been crafted to handle global challenges at the highest level. We are very good at thermonuclear war, less good at more limited conflicts. So, the little guy is not only empowered but also is striking a comparatively vulnerable area (worse still if he is attacking a country or region without our protection). This produces what could be called the David syndrome, in which the small—who are so numerous—become an increasingly important threat to the large. This is an increasingly important phenomenon in the world of cyberpolitik, in which balance of power calculations and tactics need to take into consideration more than just great powers.

This problem can itself be exacerbated by yet another factor of the new environment, *interconnectivity*. This is the nature of the Net, of course, a world in which the infrastructure is already in place to link everyone to everyone else. These linkages create new systems, new relationships, and new bonds that defy old structures. Geography is less important, and thanks to acceleration and amplification, new systems can be created overnight. This creates the possibility for virtual alliances that combine and recombine to meet different threats or serve different objectives. It takes parts of the world that seem remote from one another and it links them—so that Boris Yeltsin can “go to bed drunk, and Brazil can wake up with a hangover.” Or so that a threat in Pakistan has implications in the Straits of Taiwan. Or so that companies can engage easily in “co-opetition,” the process by which they cooperate with a company in the morning, then compete with it in the afternoon. Or so that alliances of nongovernmental organizations (NGOs) can form quickly. And so on. To make the United States a great Nation, first came the railroads, then the highways that linked us together. The infrastructure—for example, satellites, fiber optics, wireless links, traditional copper cables, air transport networks—to link the world is already in place, a public asset, more or less, to be used by anyone to link with anyone else. Consequently interconnectivity produces one of the most challenging consequences of this age: contagion—be it economic, political, social, or security-related.

The reality of a permanently connected, networked world has a number of other implications. One of the most important is *decentralization*, the redistribution of power thanks to the Web. Asymmetry is an element of it. But it is also linked to the fact that most power became “centralized” within a place or an institution because it had to be to maximize efficiency. Power was centralized around Wall Street because traders had to meet to exchange securities. Capital was linked to productive assets; consequently, in a more capital-intensive world than that of the knowledge economy, economies of scale were only available when there was a concentration of productive capacity and power. In the new environment, individual actors have tools, powers,

and options once available only to central authorities. In parallel with the rise of the information economy, moreover, central actors have begun to lose some of their strength for other reasons. Governments in particular have increasingly ceded power to markets, which apportion it among those who have the means to seize it. Also, as knowledge itself is distributed more broadly, the prerogatives associated with having a close hold on special knowledge dissipate. There is, however, a flip side to this argument. The creation of enterprises of sufficient scale to operate globally has produced new actors with even greater concentrations of some kinds of power than before. Decentralization does not simply eliminate the center, it moves it around; it creates a kind of “virtual” center that changes with each new combination of actors involved in any particular interaction—within a company, between companies, between countries, and among and between actors of all sorts.

Associated with decentralization in many of these interactions is what happened when people no longer had to deal with centralized authorities as in the past: they ceased requiring the services of those who had access to the center. They could deal more directly with the center or those at the top. Everyone is an email away. People do not need a broker or a trader to intervene in the marketplace when they can do it themselves. They do not need a middle manager to channel their views to top management when they can contact him or her themselves, and he or she has new means by which to filter more and more incoming information. People do not need a broadcast network or a newspaper to deliver their message to a large audience when the Internet connects them to the desks of hundreds of millions. This related phenomenon is *disintermediation*. Why do countries need ambassadors to relay messages when they can deal more directly via telecommunications media, transport media, or the Internet itself? They do not. One of the ironic realities of the Information Revolution is that it is producing a world that is not only smaller but one that is flatter. The flat earth is a world in which layer upon layer is proving unnecessary, and direct communication is proving easier. The effects on institutions, social structures, interpretation of information, clarity of communication, and many other elements of international relations are significant and growing with each passing day.

Just as profound is the shift away from a land-based world order. For most of human history, land was the fundamental source of wealth and the fundamental measure of power. This is because it is on land that we lived and because it was off the land that we survived. Gradually, as we moved toward more industrial societies, power shifted slightly to nations with access to nonagricultural resources required for industrial production. Now, in the post-Industrial Age, much of wealth exists as information, knowledge assets are more important, and exchanges take place not at a location on land, but in the infosphere. The result is what could be called *dislocation*. It is not that territory is no longer important. It is just that we live in a time in which territorial demarcations are becoming increasingly anachronistic. Data flows across borders are undetectable, uncontrollable. Huge flows of capital and of goods, once measurable and taxable and controllable, take place beyond the purview or ken of governments. Borders are increasingly meaningless. Economic units are increasingly differing in size from political units. This is both a result of trade liberalization and a result of the changing nature of trade in ideas as well as in intellectual property and

services. Dislocation also manifests itself in the idea that ad hoc or permanent groups of nonaffiliated individuals acting together within the infosphere can take actions that once only nations could take; they can pose threats and do so under the umbrella of state sovereignty. One thing governments are very bad at is dealing with this meta-world of virtual communities that have interests conflicting with those of nation-states. How do they communicate with them? How do they enforce their views without upsetting the order among nations? How do they tax those who seek to keep transactions above and beyond borders? How do they account for the flows of wealth that never adhere too long to a particular parcel of land? Indeed, how will they deal with the reality that there are now increasingly global communities in many countries that, thanks to new technologies, have much more in common with distant like-groups than they do with their own countrymen?

Related to dislocation and to volatility (impermanence), acceleration, and disintermediation is the ability of groups to recombine at will. This has created the growth of outsourcing and ephemeral communities such as those cited earlier. This then becomes the ninth characteristic of changes associated with this new world: *virtualness*. Virtual alliances, virtual enemies, and virtual nations such as those cited above are just some of the consequences of this characteristic that are worthy of consideration in the context of planning for this new environment.

Finally, the tenth factor that may be worthy of consideration is one that has been raised several times already. That is that virtually every driver of change in the Information Age is a double-edged sword. Each has the capacity to help and to harm, to build and to destroy. Interactions accelerate, and in so doing they present everyone with countless more choices, information sources, communications, and counterparties. Speed creates glut; the ability to process more creates more to process. Amplification can enhance the power of individual actors and of great players already on the stage. It can also offset power by creating more powerful defenses. Volatility creates wild swings in markets and the public mood, but as we see, people grow accustomed to these oscillations, time frames for assessing swings change, and tools for coping with volatility render it less meaningful. We have already discussed the fact that asymmetry is in fact a product of a paradox, the rise of great nations to be so powerful that they can hardly deal with the small without overkilling, overreaching, and losing their advantage. Decentralization creates new centers, even if they may be short-lived (volatility). Disintermediation creates new opportunities for intermediation through new networks or among members of virtual networks. Dislocation and virtualness are among the factors that have contributed to a backlash to globalization born of the sense that old land-based identities are at risk, and consequently to a new nationalism. So it goes in any period of revolution and great change; the issue is upheaval and coping with transition as much as it is trying to determine where in the long run we shall be. In the case of each of the changes in the character associated with the Information Revolution that have been cited, the trick is understanding the change and the consequences of, or reaction to, the change.

The changing character of international affairs in the Information Age has called into serious question many of the old models used to predict or manage international behavior. Most affected are economic and political models—for example, models of

market performance, state revenue collection, international conflict, power distribution worldwide, the creation or management of political opinion or will. We have seen an era begin with a continuous decline in the relative power of the state, and we have seen the incipient rise of nonstate actors. We have seen the decline in the relevance of political borders and a growing disconnect between political and economic entities, structures, and systems. (Despite the rise of a global economy and regional economies, weakening nation-states remain the norm.) We note that the government and multilateral entities do not include the new players who are of rising importance in this new mix. Perhaps most important, we have seen that the speed of the changes in question is severely challenging the ability of institutions (government, military, and business) to keep up even as the stakes rise rapidly for remaining in step with these changes.

Fifty Challenges: U.S. Foreign Policy in the Information Age

There is no reason to limit to 50 the number of major challenges that U.S. foreign policymakers will face in this new era. But it is a large enough number to suggest that the changes in place are so sweeping that much greater urgency is required in considering and responding to them. That number is sufficient to illustrate the situation we are up against and why it is significantly more profound than much of the action within the government and the policy community to date would suggest. The impact of the technological revolution of the past 10 years and the next 10 years on U.S. foreign policy may well prove to be as defining in scope and character as was the onset of the Cold War.

International Economic Policies

It is worth beginning with international economic policies for two reasons. One, the changes in question are more widely accepted there. Technological change has been embraced more enthusiastically by markets than almost anywhere else, and the consequences of that change have been better understood. Furthermore, economic tensions, economic interpretations of national interests, and other economic drivers often underlie broader foreign policy concerns, even ones draped in the rhetoric of higher motives.

1. New development models are required for the new global economy. Most of the models still in place focus on the lessons and approaches of the "old economy." They address industrial development. The new economy is different. To attract capital, new regulatory and infrastructure standards must be met, labor forces must be trained accordingly, and entrepreneurship must be cultivated. Private equity rather than debt capital must be more widely available. The leading role of the private sector in these changes must be accepted. The ability of e-commerce to eliminate middlemen, assist global marketing efforts, and bridge oceans and cultural divides must be harnessed. The list goes on. The drivers of wealth creation are changing.

2. New regulatory and institutional frameworks are required for a global economy. Transactions cross borders by the thousands each second. Throughout history such transactions have been regulated to protect consumers, to ensure justice, to reduce crime, to enhance the public health. But national and international institutions are inadequate to even assess what has changed, much less regulate it. The institutional gap is accompanied by a jurisdictional gap. An overarching policy review is needed to address these gaps.

3. Global capital markets require transnational oversight and regulation. The point raised in item 2 must begin with recognition that global capital market flows can be destabilizing to smaller nations, that power is concentrated within these markets, that new technologies make the consequences of volatility and abuse greater than ever, and that just as these markets have been regulated nationally, they must be regulated internationally. More important is that they must be overseen by disinterested panels that anticipate problems and correct them before they happen. This will require not only new entities and laws, but it will also require changes in political and financial attitudes.

4. Global e-commerce requires transnational oversight and regulation. There has been an effort afoot in the technology community to treat e-commerce as a separate class of economic interchange. The flaws in this approach will soon be realized, as other sectors are already beginning to protest this lack of regulation as a “subsidy.” Such “subsidies” also create a false sense of the economics of e-commerce businesses, which translate into valuation misunderstandings in the markets. Furthermore, beyond the need to address issues of market-to-market equity, the overall public goods cited earlier must be regulated in this new area—and mechanisms must be created that adapt to the rapid development of new models, business approaches, and business abuses within the e-commerce arena.

5. The role of IMF must be reevaluated to ensure its ability to cope with the changing nature of financial crises in the global information economy. This process began in the wake of the financial crises of the emerging markets in the late 1990s. The reality, though, is that the debate over the future of the International Monetary Fund has not taken fully into consideration the diminishing capacity of governments to influence the market activities with which the International Monetary Fund is concerned. Furthermore, many of the orthodox approaches used by the International Monetary Fund in prescribing fixes for emerging economies are not adjusted for the new realities in question. Finally, the swiftness with which changes happen in the marketplace requires not only that institutional structures be more fluid, but also that all the players involved—private and public sector alike—be at the table when crises are dealt with. This is currently not the case. Lack of transparency between the International Monetary Fund and countries will not be tolerated by the markets in the new environment, either. In short, an overhaul is called for.

6. The role of multilateral development banks must be reevaluated in the context of the new dynamics of the global information economy. This is just as true at the International Bank for Reconstruction and Development, the Inter-American Development

Bank, the European Bank for Reconstruction and Development, the Asian Development Bank, and the African Development Bank. United Nations (UN) Development Program, the UN Industrial Development Organization, and other such groups also must be reevaluated in the new context. The roles of these institutions will likely shift to addressing the growing divide between information haves and have-nots (see below), gaps that exist not just between countries, but within them. Furthermore, they will focus more on those national economies that are effectively disconnected from any viable economic base, the poorest of the poor. Since most capital will come from the private sector, their role will atrophy. And those that remain will have to implement the new policy prescriptions identified in point 1 above.

7. The monetary policy implications of new global foreign exchange realities must be weighed, in particular those of dollarization. Already there is a dollar on one side or another of virtually every foreign exchange transaction in the world. The same is true for commodity transactions. The reality is that old ideas of currencies are being overtaken by electronic realities. Money is just an algorithm in a computer, a formula for converting from one ostensible unit of value to another. Most national currencies are already a figment of local imaginations, and increasingly useless as borders are crossed. International trade efficiencies will require fewer currencies of which the dollar will be dominant. What does this mean for the United States? Should we advocate it? How far should we let it go? Can we control the outcome?

8. The implications of the consolidation of global stock markets must be taken into consideration. The merger of the Frankfurt and London stock exchanges is just the latest in a trend that will continue over the next few years. The old idea of a stock exchange as a place people meet to swap securities is dead. These transactions all take place 24 hours a day in virtual space. National pride will result in retaining a few such operations, but they will primarily exist for regulatory and clearing purposes, home to servers rather than traders. What are the implications of the massive regional markets that will replace the local markets? How do we manage the process?

9. We must assess and understand the capital market implications of the growing, Web-enabled retailization of markets, including the volatility and thus enhanced risk. The character of markets has changed, too. Where once the majority of stock trading in the American markets was institutional, today most trades are in retail-size 1,000-share units. Whereas in 1929, 8 percent of the populace owned stocks, today almost 80 percent do. Market movements are therefore not an issue of concern only to the rich. Furthermore, market decisions are being made by a class of less well-informed investors who are able to absorb less punishment or do not manage risk as well as large institutions. What does this mean for the future of markets and their relationship with consumer confidence and other macro-economic drivers?

10. We must understand and manage the growth of global unregulated markets in hedge funds and other such vehicles. Some financial vehicles, such as hedge funds, will grow in use thanks to these new technologies and the desire to manage risk in new ways. These funds, however, have their own inherent risks as we have seen in

the past several years, and they are not regulated even nationally as other similar investment alternatives are. This sort of gap will also have to be addressed.

11. The implications of dislocations of transactions from national tax bases must be assessed and dealt with. There is already a body of work focusing on how the dislocation of transactions from national borders and the ease of creating complex chains of transactions globally will impact national tax revenues. Means of tracking, measuring, and taxing such transactions will be an imperative in this new environment.

12. Antitrust laws must be redrawn to account for growing global consolidation of industry and requirements for global scale. As noted earlier, American and other national antitrust laws date to times when monopoly domination of national markets was the fear. Today many companies that are monopolies in national markets lack the scale to compete globally. Furthermore, new alliances across industries are required to adapt to the changing realities of knowledge economies. (America Online-Time Warner is an example.) All these raise questions about the value of old laws and the need for new ones and new transnational enforcement and monitoring mechanisms.

13. New growth models are required to account for the enhanced productivity of the current and coming eras, and old models must be adjusted or set aside. Many business leaders today feel that the U.S. Federal Reserve is being too cautious regarding growth rates. They feel that the board at the Federal Reserve is focusing on old metrics to determine when an economy becomes overheated without fully taking into account the heightened productivity made possible by new technologies and the new explosion in wealth drivers resulting from the creation of that economy. These assertions need to be evaluated, and, if deemed necessary, new metrics and related growth management policies will have to be devised.

14. Tensions caused by the development of new global labor disequilibria must be addressed. As the new global information economy develops, 1 billion new workers will enter the labor force, most of them in developing economies. If these workers are disconnected from the real wealth drivers in the global economy, capital will not flow to their countries, and they will live in poverty and be doing hard labor to support the richer, knowledge economies that will be exporting “bad” jobs to these markets. This will inevitably cause great tensions. At the same time, globalization will enable countries with large, low-cost labor forces to harness information technologies to better compete and actually create better jobs, leading to the perception in the developed world that those jobs were “stolen” from the developing countries. Witness the labor reaction to globalization in the United States. This tension is likely to be an increasingly important driver in U.S. international affairs in a world in which labor, capital, and corporate mobility, as well as the ability to rapidly manage change over great distances within short times, will all conspire to reshape global labor market dynamics.

One change touches all areas of U.S. international policy and poses a challenge that should be at the forefront of those we consider actively and attentively:

15. We must contain the growing digital divide and the related, growing disparity in the wealth between the information haves and have-nots in the world. In 1946, the

average per capita income in the world's richest nation was 3 times that in the poorest nation. It is now 77 times higher. While the Internet revolution has transformed American and developed societies with now one in three people in the United States online, the majority of people in the world have never heard a telephone dial tone. Three billion people live on \$2.00 a day or less. The Information Revolution can accelerate the growth and prosperity of those who harness it—and leave them farther and farther apart from those who do not have the chance to plug in. This will cause growing tensions, not just between nations, but within them. In fact, elites in the emerging world do have access to these technologies and capital resources, and they are integrating into the “global” economy even as their countrymen are not. The gaps between rich and poor, haves and have-nots, have driven most of the conflicts known to man. But today, new technologies also make it possible for the poorest to have hitherto unimaginable power—thanks to the availability of cheap WMD technologies. Discontent over the growing gaps could thus produce highly costly conflicts. If there is comfort to be had, it is in the fact that new technologies also give us the ability to knit these societies back together, educate more people faster, improve health care across distances, and reduce social inequities. There is a choice involved. It may be the single greatest choice human society currently confronts.

International Security Policy

Given the destabilizing nature of several of these challenges, should they not be addressed, it is natural to turn our focus to security concerns prompted specifically by the nature of the new era.

16. We must assess and address growing asymmetrical threats. Asymmetrical threats have already occupied the attention of many strategic thinkers. That said, new threats are emerging all the time, and there has certainly not been a shift to addressing these threats that is commensurate to the proportion of our attention that they will demand. Further complicating this is the fact that asymmetrical threats may emanate from within sovereign territory not directly linked to the threat. We have had some limited experience in this regard, but it is certainly not something that our diplomacy or the international system is well equipped to deal with. We must be able to exploit national means to deal with non-national actors, be they individuals, terrorist cells, political groups, NGOs, businesses, or others who now act as nations once did, but do so in a way that is either invisible to our current systems or so ill-suited to them that we are ineffective in containing threats until they have manifested themselves as crises.

17. We must assess and address the implications of global systemic shock in this new environment. Acceleration and amplification produce volatility on a scale not foreseen by past policy models. A financial breakdown in one region causes a global panic. Similarly, political upheaval on one side of the world can spread rapidly to like-minded individuals anywhere in the world. A virus can shut down computer systems worldwide in hours. The disadvantage of living within a connected system is that all parts can be made to feel pain quickly. We are better prepared to deal with simple regional crises than complex chains of economic, political, social, and security challenges that spread across the globe, mutating according to local circum-

stances. But this character change—related to what the financial markets call contagion—may have massive foreign policy implications in certain future crises.

18. We must assess and address the regional corollaries of global systemic shock in the new environment. If global systemic shock is possible, regional systemic shock is even more likely. Just as markets view negative developments in Thailand as having serious consequences for the Association of Southeast Asian Nations (ASEAN) or Asia in its entirety, so too will future crises of a noneconomic nature be more likely to become regional in their significance. Colombia is not a localized problem. It is an international commercial problem that has burgeoned for the same reasons as globalization has let other businesses burgeon, enhanced by the same technical tools. It now touches the entire Andean region, Brazil, Panama, Mexico, and the United States. Drug organizations and regional insurgents alike draw on international trade in illicit weapons and technologies from groups as far away as the Russian Mafia to support their efforts. When pressure is placed on a group, it is easier to move when so many financial and information assets exist in the infosphere. This is an example of how new technologies are changing the character of old problems and converting national concerns into regional and international ones.

19. We need to consider the underlying consequences of greater market shocks, security shocks, environmental shocks, and others. Another corollary to the notion of shocks within the system is that the consequences of market upheavals, environmental upheavals, and political upheavals are more easily spread. They can therefore grow in scale and become more likely to produce security challenges. Thailand's real estate markets melt down, ASEAN is hit, Indonesia's economic house of cards collapses, Suharto falls, and Timor and Aceh become security problems. These changes took place rapidly. Future changes will do so as well, but the threats of each will differ in magnitude, location, and nature.

20. A new definition of rapid response to over-the-horizon and multiple-theater challenges will have to be developed for a world of proliferating serious threats. We once trained our military to fight a Cold War. Following that, we looked at low-intensity conflicts and developed strategies to deal with two large regional conflicts. Today, however, we face a world in which scores of threats can arise at any moment, such threats can impact one another overnight, and virtual alliances can be formed among our enemies rapidly—all of which poses the risk of a rapidly changing constellation of threats that will demand much more fluid responses from us.

21. Cybernetic, biological, and other enhanced technical threats must be dealt with. It goes without saying that one of the results of the technology revolution is the development of new technologies of war fighting. Cyberwarfare and biowarfare and other such new sources of threats will grow, and our ability to contain them, track them, and respond to them and the proliferation of WMDs in the new environment will be critical.

22. We must continue the work being done to identify and protect national information assets. What are our most important sources of information—that is, commercial information resources, software developers, computer security specialists? Which

commercial resources now exceed our Federal resources? Which academic resources do? How do we identify them? Who identifies them? How do we protect them? This is a new class of assets, a changing class, and one that is increasingly important.

23. We must also identify and protect critical national infrastructures. More progress has been made in this area. The Y2K exercise and the National Critical Infrastructure Initiative have produced excellent public-private models for protecting information assets as well as infrastructures. But new threats will emerge, new infrastructures will be created, and the process needs to evolve to meet those challenges.

24. We must enhance our ability to fight and win cyberwars. Electronic warfare battalions have been introduced, and we have begun to make inroads in exploring the strategies required for winning cyberwars. But the doctrine is not fully developed, and new resources will be required to translate what we have learned for offensive use.

25. We must enhance our ability to contain cyberterrorism. The potential power of cyberterrorist attacks has been illustrated by hacking attacks on commercial information systems. Governments have also employed cyberterrorism or cyberattack techniques in peacetime assaults on the information apparatuses of their enemies (for example, across the Straits of Taiwan). New units are required to address this threat—even as we must acknowledge that the skills and resources of the people we have fighting these threats may never be commensurate with those of the people initiating them.

26. We must prepare to fight technology-empowered enemies in an era in which U.S. information hegemony is resented and fought by our allies. The Information Revolution will lead to the spread of destructive technologies, even as it fuels our ability to maintain our technology leadership. We must expect to fight increasingly technologically enabled foes while at the same time confronting growing resentment from allies and others who see our technological strength as a lever of power in all manner of negotiations. We have already seen within certain alliances that the dependence on U.S. information warfare dominance has produced tensions and a desire to develop alternative systems and resources outside the United States.

27. We must assess and address the realities of coping with the “electronic democracy” (e-democracy) speed of shifts in American public opinion. As noted below, American public opinion is a small vessel afloat on an ocean of information. It will be easily swept in one direction or another—turned, righted, and turned again. Internet and satellite feeds suddenly make one misfired weapon or one ill-considered target a decisive factor in the war to maintain public support for international action. Given this potential for error magnification, militaries will have to move increasingly to a zero-tolerance-for-error model. Owing mainly to the unpredictability of battle, such a model has eluded militaries since the dawn of time. The result: an environment in which the political information war around the military information war will gain increasingly in importance—even beyond the importance it has already achieved.

Just as we identify new threats and new enemies directly related to emergent technologies, we must strive to understand the drivers underlying threats and how best to manage them. Consequently, we must also consider international politics.

International Politics

A number of policy challenges arise in this area:

28. We must understand the sources and drivers of power in this new era as we did those of the past era. During World War II, we produced steel, ships, and aircraft because we saw these as the sources of our power. During the nuclear age, we did the same. Now, we must reassess where power comes from in the Information Age. Surely, we will need ships, and we will still require strategic weapons. But there are other sources of power in this age...new systems, new constellations of satellites, new human resources, new education resources, new concerns with private sector proliferation of technological capabilities, that must be studied as a new calculus of power is developed.

29. Understanding how our national interests are altered in the new era is essential. As the interests of our citizens and companies globalize, and as our interests in the roots of Information Age power as a source of security and prosperity evolve, so too will our assessment of our national interests. Driving that assessment, of course, will be the immutable desire for peace and prosperity. But as the determinants of peace, prosperity, and related factors change, so too must our sense of national interests. Where are the stakes highest? Where are the threats greatest? What threats do we take most seriously? Which do we wish to contain? Which allies are likely to be most loyal or most important? This is the foundation of all foreign policy, and we need to examine it.

30. Efforts must be made to develop an understanding of the global fault lines of the Information Age. Are the fault lines in fact between information haves and information have-nots? Are they between the rich and the poor of the world? Are they between those Internet-linked nations whose cultures converge and those disconnected nations who see the Internet as a threat to culture? Does the Internet enable new alliances among those with common languages, cultures, and experiences? Where do our national interests suggest we are willing to intervene? Regardless of the answers, we can rest assured that as long as we are so dominant, the fault lines will lie just beyond the borders defining places we will certainly intervene—that is, in those gray areas in which the ambitious will feel that they can seek gain without paying too high a price.

31. We must develop more fluid institutional structures for a more fluid era. The North Atlantic Treaty Organization (NATO) has proved too slow to act, even against a comparatively weak enemy—for example, the Serbs. Can alliances that are consensus-driven function in an environment of information-empowered warfare? The simple answer is that they cannot, and thus new decisionmaking apparatuses have to be developed—or new alliances.

32. Mechanisms must be developed to deal with nonstate actors. The U.S. Department of State has no bureau to deal with foreign companies or foreign individuals that pose threats. It deals only state-to-state. As we have repeatedly noted, a new set of challenges has arisen, and new mechanisms will have to be developed—and perhaps old ones scrapped.

33. Strategic innovation will be required to manage foreign policy in the era of virtual alliances and co-opetition. Governments should take their cue from companies that have dispensed with old models to enable the virtual strategic alliances and co-opetition crucial to success in the Information Age. Perhaps the first such virtual alliance was that formed by the Bush administration during the Persian Gulf War. Disparate groups came together for a purpose, then disbanded. We have since seen that one of the problems of such alliances is the difficulty of maintaining them to address future contingencies. But we are not good at groupings in which our leverage differs from group to group. Our bureaucrats like pre-existing structures so that they can have pre-existing plans. This makes less sense in this new era. We might benefit from considering whether companies that operated like our State Department or intelligence agencies would successfully compete or lose in the current global environment. The answer is painfully clear.

34. We will have to be more effective in managing transnational problems—from environment to drugs to terrorism. We see a growth of transnational problems in the global environment, but we do not have effective multilateral institutions to deal with them. Those we do have are ineffective and constantly weakened by our inability to invest real political and economic capital in them. Without new institutions, we will continue to struggle to deal with these growing problems—and, in a global environment, that could prove to be a very serious flaw in our foreign policy apparatus.

35. The information leadership of the United States should be maintained. We are the leader now in most information technologies. We are the leader in software and in most hardware. We are the home to the system of higher education that is producing the most important and valuable technologists. Our language has become the language of these new industries. Our intellectual property is the backbone of much of this technology growth. Our companies are dominant in many sectors of the information and other technology industries. Do we leave this leadership to the marketplace? It is, after all, what produced the leadership. Are there ways of protecting the lead that do not, like many trade protection measures, for example, do more harm than good?

36. Strategies must be developed to continue the information dominance of the United States. How far are we willing to go? Are we willing to actively work to promote English as the language of business, and our standards as the standards of the Information Age? Are we willing to do what we can to fund new developments, to encourage companies to spend more money on research and development, to encourage foreign students to stay in the United States, to make our regulatory environment more attractive than any other, and to protect our intellectual property rights more vigorously? Do we want to increase our lead? Do we want to counteract threats? Is

this even a matter for a nation to consider? It is not politically correct, but the path of enlightened self-interest in such matters has always been worth serious consideration.

37. We must address the technical empowerment of criminals. Just as cyberterrorism is growing, so are international criminal cartels, six or eight of which may represent the most serious near-term threat to our national interests of any entities on the planet. These are the entities that are killing tens of thousands of Americans a year thanks to illegal drugs, and stealing hundreds of millions of dollars a year in cyber-crimes that have barely stirred public awareness to date. These are international entities representing domestic and foreign policy concerns of the first order. Stopping them will require new plans and initiatives, international cooperation, and sophisticated and costly information resources.

38. The power of the Internet and related information technologies should be exploited to change, subvert, and politically motivate societies (overtly and covertly). Just as the Internet can be used to move public opinion by independent actors, so can the United States and other governments use it. We need to study the example of NGOs and insurgencies that have done so and consider where and when we would employ similar tactics. We need to take advantage of the ability to do so covertly, and we need to recognize the ability of others to do the same to us.

39. It is important to develop new intelligence models for the open source-rich information era. Through the use of open sources and modern technologies, it may be possible to produce a better intelligence product than the vast majority of the output of the U.S. intelligence community. It is certainly possible to create an information and knowledge management system within the U.S. Government that would allow intelligence users to better interact with intelligence gatherers and analysts, to manipulate information better, to seek it better, to receive it in a more useful form, and probably to do it all in a more secure fashion, notwithstanding fears about agency-to-agency information sharing. Indeed, given the realities of the Information Age, the information-gathering arm of the U.S. Government is probably the arm of government most amenable to a complete overhaul.

40. Immigration policy must reflect the realities of a mobile world in which a premium is placed on technically knowledgeable workers. Attracting and keeping knowledgeable workers, retaining the output of our system of higher education, finding workers to perform tasks more educated workers will not do, and doing this in the context of uncertainty about the implications of globalization for labor forces—all this will require a reassessment of our immigration policies and procedures.

41. Foreign policy controls are required in an era in which the role of the Executive Branch is shrinking, the role of government is shrinking, and U.S. special interests are being realigned globally. Foreign policy prerogatives are being seized by the Congress, by the states, and by companies. It is becoming increasingly difficult to define who and what the U.S. Government's constituents are. Voters? Voters who work for foreign companies? American companies with most of their operations overseas? Government is less important than before. Interest groups are converging

on the Internet despite borders. The result is a world in which the very core understanding of who does what for whom in U.S. foreign policy is being altered.

Domestic Policy Concerns with International Implications

Naturally, to implement and address many of these issues, domestic policy changes must be considered and implemented. They include the following:

42. The U.S. Government must be restructured to better reflect these new realities (making it flatter, more fluid, better able to deal with nongovernment entities). Reinventing government is a nice slogan. However, until we get rid of outmoded agencies, permit government restructurers to fire employees, give government workers the tools that they need to communicate with each other and compete with their counterparts in other governments and nonstate actors around the world, it will remain a slogan. Government really has to be reinvented.

43. Definitive steps should be taken to improve understanding and management of e-democracy (opportunities, threats, and the pace of change). One threat to—and hope of—the reinvented government will be that the very nature of electronic democracy will change. The threat is that it will do so in an unplanned way that produces not leaders but individuals who respond to a never-ending series of polls and referenda. This could produce the kind of deficiencies decried by political theorists from Plato to Alexander Hamilton, James Madison, and John Jay. It also could paralyze real action. It may seem a distant threat, but consider the degree to which electronic media and polls drive decisionmaking today. The reality is that the foundations of politics are now firmly planted (is this possible?) in the infosphere. On the other hand, enabling greater involvement of the people and greater dialogue among government and nongovernment actors with common interests can only conduce to the enhancement of democracy in this new era. What dominates and defines the character of the change remains to be seen; to a large degree, however, it is up to us.

44. Efforts should be made to improve understanding and management of e-government (opportunities, threats, and the pace of change). The ability to deliver government services via the Internet is on the rise. How rapidly will this happen? What does it mean to register voters, to recruit soldiers and sailors, to manage Social Security accounts, to distribute passports and other government documentation—all online? What does it mean to put in place extremely transparent government procurement systems, or to make information about public officials and programs more accessible to the public? Government here and abroad will change profoundly in how it operates, how it interacts with people, and how it is perceived. What does this mean for the future of democracy?

45. Education policy (distance education, cross-border education) will have to be adapted to the Information Age. Education is of paramount importance in a knowledge economy. The Information Age promises many changes in this regard. Children everywhere will have access to schools and libraries everywhere via the Internet. The best teachers will be available online—but only to those who will pay their higher prices. Will they be available through universities or via their own Web sites?

Knowledge resources—including education resources—will cross borders more easily. Should we build universities in Africa or simply erect satellite links to schools in the United States or Europe? Should we educate a world of scholars or use information technologies to take undereducated workers and walk them through the steps of jobs that once required more training? Do we educate or do we just enable? How will the basic theories of education policy be changed as the media via which we educate change? What are the implications of career-long education for those who can get it—and for those who cannot?

46. We will have to confront intelligently the health care and Social Security policy implications of biotechnology, which may dwarf the political implications of the Information Revolution. Like distance learning, distance medicine has already attracted considerable attention for its ability to attract the attentions of top doctors to rural and other formerly inaccessible regions and patients. But behind the question of how the Information Revolution changes health care is the bigger and substantially more profound question of how the biotechnology revolution will change global societies. In the next two decades, advances in biotechnology will produce dramatically longer life expectancies—for those who can afford the innovations. It is therefore reasonable to anticipate an aging, developed world that requires the exertions of the more youthful, underpaid labor forces of the developing world to pay for their extended retirements. This is likely to negate all pre-existing assumptions about Social Security and health care systems and how they are funded, and it could prove to be a source of serious societal tension. It will also, inevitably, give rise to new biowarfare threats and options. It is a revolution made possible by the increased computing power that is the hallmark of the Information Revolution, and thus it can be reasonably argued that the two should be considered together.

47. Structural models for policy should be based on the Internet model rather than the obsolete hierarchical model. Our old structural models were the product of societies and organizations run by councils that gathered in a single room at the hub of centralized infrastructures that they managed. Hierarchies dominated. The new environment's decentralization, dislocation, and virtualness argue for structures that are more like the Internet (that is, more matrix-like), wherein information flows differ depending on the recipients and the purpose of the interaction. The various levels of international actors—supranational, regional, national, transnational (for example, corporate), and individual—will have to have mechanisms for dealing with one another within and across borders as circumstances dictate. Structures will be flatter and more fluid. They will also be virtual, with resources held in virtual spaces for timely deployment in support of meetings and interactions.

48. Strategies must be developed to overcome the difficulty in attracting quality individuals to government. Recruitment power has shifted to the private sector; the old days when the State Department attracted the best and the brightest individuals with international interests are long gone. Government is finding it increasingly difficult to compete with private industry in attracting talented employees, and this will only get worse as government's influence shrinks and private sector opportunities proliferate. It will also be increasingly difficult to attract senior officials in a world in which ac-

tive e-empowered media can penetrate to the most intimate level of personal lives and thus make service a considerable risk. The Information Age will not obviate the requirement for talented leaders, but increasingly those leaders are likely to have to be borrowed (briefly) or hired from the private sector.

49. It will be necessary to cope with growing pressure to cede to supranational entities the authority to address growing global and regional problems. The domestic implications of this are illustrated best by the reactions to the WTO manifested in the streets of Seattle and those to IMF and World Bank in Washington, DC. The reality is that such institutions are needed, and yet we have not found an effective way to sell them to the public. In the absence of support for them, they will falter and thereby weaken, correspondingly weakening the trading, financial, and other systems that they are intended to support.

50. We must combat the backlash against globalization and the associated rising tide of nationalism. The current backlash against globalization is linked to resentment of American domination of the Information Age and to emerging challenges to our leadership in related affairs. Nationalism, the predominant countervailing force, is observable in the politics of all kinds of national leaders, from Mahathir bin Mohammed in Malaysia to Joerg Haider in Austria, from Pat Buchanan in the United States to Hugo Chavez in Venezuela, and from Vladimir Zhirinovsky in Russia to the old hard-liners in Beijing and Tehran. When sweeping changes occur, it is natural for the forces of reaction to be brought into line. Our interests lie not in appeasing them, but rather in containing the threat they pose. Consequently, we must find a way to advance our views in ways that persuade or weaken them.

Conclusion: Broader Implications and Beyond

There are many significant implications of this new era for U.S. national policies. And there are a host of related questions that we will be forced to answer. How do we feel about our role as the current undisputed Information Hegemon? Do we feel the same about our role as the undisputed Technology Hegemon? Is it in our best interests to protect and preserve these roles, regardless of the economic impacts on our allies and less fortunate nations, or the consequences in terms of the world's view of us? Should technology dissemination accelerate thanks to the ubiquity of information in the Information Age? Who will be the new threats? India? China? Brazil? Our European allies? Do we wish to promote growth and thus stability by giving up some of the information assets that would ensure our continued dominance? Recognizing that the digital divide is also a capital divide—capital and information travel together—is there an alternative to promoting global participation in this revolution that does not promote such economic tensions as to engender protracted global conflict? As information has flowed more freely, we have seen a weakening U.S. resolve to put our men and material at risk globally. Is this trend likely to continue? In the absence of the U.S. police officer, what will become of world order? In the absence of Cold War pressures that once kept nations unified—threat of civil conflict produced alignment with either the U.S. or Soviet side and raised the stakes for divi-

sion—will we see atomization of the planet as new technologies give smaller and smaller states the ability to operate effectively internationally? Does this mean a growing disconnect between political and economic units? Do political units become more ethnically driven? Are we, in fact, entering a new era of polarization of the planet between haves and have-nots, between those for whom stability is the predominant interest (those with assets and market interests) and those who require upheaval to advance? Where are the fault lines in this new global tug-of-war?

The world is being transformed by the Information Revolution. The result is globalization, and with it new wealth and productivity. On the model of the industrial era, a by-product of which may have been the ability to feed and clothe every human being, the by-product of this era may be the ability to educate every human being. New international cohesiveness is possible, born of a new sense of shared interests.

Or we may falter. We may be whipsawed by the transition and stumble. New conflicts and divisions may arise and be exacerbated. The stakes of technologically empowered conflict will certainly grow. And the future may see greater and costlier conflicts rather than fewer if we do not rise to the challenges of the new era.

The first step is recognizing that something new and profound is afoot. The next is recognizing the character of change in the new era. Then we can begin to develop and implement enlightened policies to address that change.

We have not begun to take these steps; we have just begun to consider them. As a consequence, this moment is likely to be seen as a watershed in our history—and we shall be judged by history on the basis of our ability to recognize and rise to its challenges. 🌐