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Net Diplomacy III: 2015 and Beyond (Part II)

Barry Fulton, Editor

Imagining Technology

The State Department needs to consider a cultural shift, one in which the technology-savvy, networking professional is regarded equally with those bearing the more traditional credentials of statecraft.
--Richard P. O'Neill

Richard P. O'Neill is president of The Highlands Group, a consulting and analysis firm in Bethesda, Maryland, with clients in both the public and private sectors. He previously served in government, in his last position as deputy for strategy and policy in the Office of the Assistant Secretary of Defense. He created and directs The Highlands Forum, a nationally recognized cross-disciplinary forum of leaders from industry, academia, government, the arts, and the professions, to support high-level government policy and strategy development.

Imagining the world, and in particular the world of international relations and diplomacy, in the year 2015 is the context for this exercise. That time frame is a mere fourteen years away. Looking back over the past fourteen years to 1987 is illustrative of the possibilities to be faced in looking outward.

First, the Soviet Union. On June 25, 1987, Mikhail Gorbachev announced radical Soviet reform. Trying to salvage the Soviet Union's moribund economy, he called for a "radical reorganization of economic management." He outlined his plans for *perestroika*, a national restructuring to make state-owned businesses competitive. The program also entailed *glasnost*, an effort to loosen Soviet social and political controls. Second, the decade-long focus of the United States on Iraq. Defense Secretary Donald Rumsfeld, appearing recently before closed-door sessions of Congress, remarked that during the 1989 confirmation hearings for Dick Cheney as Secretary of Defense, the word "Iraq" was not mentioned once. Looking back at the past decade and a half gives us pause about predicting even the near future of diplomacy.

The difficulty is further compounded by asking about the future of technology and how technology will affect diplomacy in 2015. Technology predictions are notoriously bad. While sometimes catching lightning in a bottle, they most often follow one of three paths:

- seeing only a linear change from the current state; or
- woefully missing the discontinuity when it begins to appear (e.g., Ken Olsen, the legendary founder of Digital Equipment Corporation, who said, "There is no reason for any individual to have a computer in their home."); or
- breathlessly proclaiming a technology or application so radical that life itself is changed.

Imagining technology in 2015, only fourteen years out, shouldn't be an unreasonable task. Rather than seeing technology development and application seeming revolutionary, the moderate pace of deployment and makes the change appear evolutionary. Over a relevant range of time we can look back and see the revolutionary changes brought about as a technology influenced numerous aspects of life.

The pace of change today on all fronts, however, seems to be accelerating and should give us pause before we begin such an exercise. Stewart Brand, in a *Time* magazine interview, offered:

The newest technologies differ from recent technologies in a profound way. The recent ones such as telephones, automobiles, television and jet air travel accelerated for a while, transforming society along the way, but then they would settle down into a manageable rate of change--a stable, predictable, reliable condition known as "lock-in." The telephone system stabilized in the 1930s, the automobile system in the 1940s, the broadcast television system in the 1950s and the jet travel system in the 1960s. Each was eventually more rewarded for staying roughly the same than for ongoing radical transformation. That maturing process doesn't work the same way with new technologies such as computer tech, biotech and nanotech. They have the property of perpetually accelerating their own development--an unstable, unpredictable, and unreliable condition termed "autocatalytic." That is, the product of their own processes enables them to develop ever faster.

Brand believes as with information technology, "biotech and nanotech are self-accelerating in a similar way, three autocatalytic technologies are now loose at the same time, constantly redefining what is possible with computation, with life and with materials. To make the situation even more explosive, all three accelerate each other." So the speculative questions of what will be new in technology and how that might affect diplomacy pose an interesting challenge.

Here are some interesting milestones, past and present:

- 1987--We got it wrong. Digital AudioTape (DAT) players were introduced. My DAT player is stored in my "early adapter" box, along with my eight-track tape player and my Betamax.
- 1988--We got it right. For the first time, CD sales surpassed LP sales, leaving CD and cassette as the two dominant consumer formats. I still have a cassette player somewhere in the house, but I have several compact disc players and a library of CD's.
- 1989--I had my first cell phone issued to me in the navy. There were few cell phones around, most of them the size, shape, weight, and utility of a brick. Today, cell phones are small, smart and ubiquitous. In 2000, the new small, smart phone was the single largest-selling Christmas gift for children in Spain. *Newsweek* magazine tells us that "a whopping 100 million Americans now use mobile phones, and tens of thousands of new customers wire up every day. There will be as many as 1.6 billion cell phone users worldwide by 2005."

In *Global Trends 2015: A Dialogue About the Future with Nongovernment Experts*, the National Intelligence Council puts it this way:

Fifteen years ago, few predicted the profound impact of the revolution in information technology. Looking ahead another fifteen years, the world will encounter more quantum leaps in information technology (IT) and in other areas of science and technology. The continuing diffusion of information technology and new applications of biotechnology will be at the crest of the wave. IT will be the major building block for international commerce and for empowering nonstate actors. Most experts agree that the IT revolution represents the most significant global transformation since the Industrial Revolution beginning in the mid-eighteenth century.

The council also recognizes the role of integration of continuing revolutions, or even coevolutions, in information technology, biotechnology, materials science, and nanotechnology. While I tend to have a less aggressive take on technology futures because of the slow pace of diffusion and assimilation, despite the best efforts of science, commercial institutions, governments, and media, I believe that

both Stewart Brand and the council report raise seminal issues, among them how such technology integration and innovation, with their capabilities and unintended consequences, will affect the roles of leading nations and nonstate actors--particularly if the technology is commercially available and fungible.

Acknowledging the Trend

In a previous edition of *iMP*, Jonathan Spalter and Kevin Moran told us:

The United States State Department and American diplomacy have reached a pivotal point. Technological changes associated with the emerging Information Age are rapidly redefining the way in which international affairs are perceived and conducted; and they are shifting the way societies, governments and leaders communicate and do business with one another. Instantaneous communications, near-ubiquitous information and ever more pervasive and integrated systems are blurring traditional boundaries, creating new types of diplomatic issues and giving rise to a host of new non-state actors.

I acknowledge that. I also acknowledge that it cuts both ways, that is, information technology, market forces, and globalization have created a dynamic for new ideas and wealth creation, for the rise of new actors, and for the vulnerability of markets and institutions that rely on this new information infrastructure.

There is another vector to explore here, however. In thinking about how technologies might interact with diplomacy by 2015, there may be somewhat different propositions to consider, and at the risk of self-parody, I would offer three technologies/applications that fit into my categories of the above predictive structure: the linear extrapolation, the missed discontinuity, and the breathless proclamation. In juxtaposing them against the new world dynamic that the CIA/National Intelligence Council expect in 2015, we might see a different type of diplomacy emerging, one in which the United States might leverage its technological edge for the advancement of our principles, our interests, and our protection.

Quo Bio?

Biotechnology represents the first category of prediction, the linear extrapolation. It is clear that we are on the cusp of "altered states." Genetic manipulation in the realm of new drugs to combat old diseases or in the creation of food source where there was none before is the current state of play. Scientists in other countries have reported the first successes with cloning; institutes are embarking on stem cell research as a way of growing replacement organs and curing diseases. These technologies are not without controversy, but they are now being addressed by governments as among the most vital human ethical issues and public policy questions. With the rapid growth of the population in the developing world and the rapid aging of the population in some of the leading industrialized nations of the world, questions of creating and maintaining new food sources or finding cures for disease or the secret of life extension are driving research and development.

Where will we be in 2015 vis-à-vis these questions, the state of the technology, and the actions states might take? The United States has a great stake in the development of biological solutions to society-altering dynamics. Whether conducting research and development in government laboratories, or supporting U.S. biotech/biopharmaseutical companies in global competition, or working with other states or nongovernmental organizations (NGOs) to address the growing plight of the world, government will have a role. How might this translate to diplomatic action? Diplomacy, writ large, includes many things, from altruistic actions to advancing our own national and corporate interests. Somewhere on that scale, perhaps under the category of technological aid, we may find a new type of assistance that the United States or alliances including the United States might afford.

An early, and imperfect, example is the UN-led effort to eradicate AIDS in a public/private

partnership on a global scale. There are fundamental questions regarding the direction of research and development, the sale and deployment of new classes of drugs, and the exporting of genetically manufactured foods. Ethical questions aside, none of these questions are easy to answer. From a technology perspective in general, fourteen years is a long time, and change can be stunning. However, the national and global regimes and laws in place that govern the commercializing of food and medical products will likely keep the revolution in check, and linearity should rule. From a diplomatic standpoint, therefore, these technologies should offer a logical and linear extrapolation of agricultural and medical aid programs of the past.

Nevertheless, given the costs, the involvement of a consolidated global pharmaceutical industry, and the objections of key countries or organizations to some of these issues (viz., the UN AIDS program), a new way of thinking about this will be necessary. Diplomacy and foreign aid will be interesting in 2015.

Who Are Our Peers?

Spalter and Moran tell us in their *iMP* article:

Nowhere can these changing dynamics and the effects of such new, (IT) systemic interactions be seen more vividly than in the realm of foreign affairs. Thanks to the Information Age and its developments, diplomacy is no longer exclusively limited to foreign ministries and diplomats. Publics, nongovernmental organizations, companies, even individuals now have the ability to profoundly affect international affairs. Today, people in their living rooms using laptops can drive political and economic change in ways never before imagined. Consider, for example, the power of the "Zapatista Effect"--the power exemplified by Mexican Zapatista guerrilla commandants who make demands simultaneously to the Mexican government and the world using e-mail and work to sway domestic and international policy and sentiment. Or consider the student hacker who shuts down the White House Web site by orchestrating a campaign to overload the site's e-mail capabilities. Or consider the Serbian press that publishes and widely disseminates disinformation about government activities in Kosovo. These Information Age situations pose real foreign policy challenges that are not easily dealt with through traditional diplomatic channels.

The communication environment that abets these activities is about to change. If Spalter and Moran are correct, and we have seen significant change to power dynamics as a result of the technologies, modes, and networks that have arisen, then what are we in for next (2001 to 2015)? In technology parlance, are we in for a discontinuity soon? Will this discontinuity come from a new technology or from a new way of applying a maturing technology?

Some observers see ubiquitous peer-to-peer computing and communicating as an emerging idea that might constitute a major discontinuity in the way people use their computers, share information, and get around central control. Their idea is that the traditional model of participating in the Internet, in which a desktop or laptop is operated by a user, or client, asks for and receives information from a larger computer administered by a business or other large entity (a "server"), is beginning to cede some ground to a new model called peer-to-peer networking. In peer-to-peer networking, all participants in a network are approximately equal. The participants are usually ordinary computers run by everyday people. Chat services and the music-sharing community, which Napster represented, are examples.

The chief advantage of peer-to-peer networks is that large numbers of people share the resources (processor time and disk space), administration, and innovation. Such a network is free of centralized control and relatively anonymous, hence harder for opponents of peer-to-peer service to bring down. What are some of the applications? Greater sharing of files (government or otherwise) in a protected space; greater computing power to attack a common problem simultaneously and in aggregate (breaking encryption algorithms); greater ability to coalesce group beliefs and coordinate actions in anonymity.

These and other possibilities could have profound effects on diplomacy in a digital age; just as we established e-mail accounts in Foggy Bottom, the power of organized actions on the Internet made us start thinking about "public diplomacy." Spalter and Moran, along with Jamie Metzl, have been working for several years to get the various agencies of foreign and defense policy to consider the ramifications of such technologies, and we still are working to assimilate their message and turn it into diplomatic action. The discontinuity is peer-to-peer, or "networking on steroids." In the business world such disruptive innovations are troublesome for entrenched market leaders; in government, the consequences of missing the inflection point can be more serious. So what should we be considering as this architecture butts up against our foreign policy architecture?

Diplomacy in 2015 will feature more players than ever before; they will be enabled not just by the networks or commercially available satellite imagery. Diplomacy will change at least as much as, if not more than, diplomacy did fifteen years ago, when the domain of closely held, cable-driven and deliberative decision-making gave way to multiple players on the stage, enabled by a dimension of openness created by CNN, commercial imagery, the cell phone, and the Internet.

Spalter and Moran suggest:

To address these challenges, and to remain as relevant and effective as possible in this new environment, the United States and its foreign affairs apparatus must adapt its diplomatic strategy and develop a new "digital" diplomacy. This digital diplomacy must be increasingly networked and technology-driven, and it must be able to react with speed, flexibility, reach, and efficiency.

The State Department needs to consider a cultural shift, one in which the technology-savvy, networking professional is regarded equally with those bearing the more traditional credentials of statecraft. If the Department of Defense can consider a transformation of its force structure and organizational structure in light of emerging nontraditional threats and opportunities, should we expect any less from State?

"Dust unto Dust"

The third technology that may most affect diplomacy in 2015 falls into my final category--breathless predictions. Just emerging in the public consciousness, this is the technology of the very small. For many of this report's readers, this may not seem new. After all, this readership has been aware of new technologies for some time, but the recent rapid successes in developing the new level of microminiature platforms is poised to usher in a new era of enormous change. While miniaturization of electronic components gave us the transistor radio, the computer, and smart appliances, micro-electro-mechanical systems (MEMS), and nanoscale components may mark the beginning of an even greater wave of change. Around since the 1980s, MEMS interface with both electronic and nonelectronic signals and interact with the nonelectrical physical world as well as the electronic world by merging signal processing with sensing and/or actuation. Instead of handling only electrical signals, MEMS also bring into play mechanical elements, some with moving parts, making possible systems such as miniature fluid-pressure and flow sensors, accelerometers, gyroscopes and micro-optical devices.

In an April 2000 meeting of The Highlands Forum, Dr. Kris Pister, the associate director of the U.C. Berkeley Sensor and Actuator Center, told the assembled group about the project he was working on--what he calls "smart dust." This dust comprises computers so tiny they could go virtually anywhere. Pister said:

I think that we will actually get something that's a millimeter square and only something like 10 microns thick (one-tenth the diameter of a human hair) so that it will actually float. The picture I have of "smart dust" is these cubic millimeter-sensing platforms that can network with each other and are probably fixed, and there are some interesting examples of where they would be mobile or suspended in air. But in general they would be fixed sensors that you would just stick somewhere. My mental

images are of grains of sand, that they are small enough that you scatter thousands or millions of them over an area that you are interested in.

One of the primary applications of smart dust sensors impacting security and diplomacy would be in chem/bio monitoring and treaty verification with networks of distributed sensors. Pister finds the concept to be valid and highly likely, one that will be implemented in the next few years or decade. In a recent interview he told me:

One of the ideas behind "smart dust" is that it is a modular system. You swap out my tiny temperature sensor and plug in a sugar cube-size chem/bio detector and now you've got your whole system ready to go. A sugar cube is still pretty hard to find and it is probably a lot easier to drop a whole lot of sugar cubes around pharmaceutical plants in Sudan than to have some poor sod go in there and dig up some soil and put it in a baggie. I think that that is absolutely the way to go, and in terms of SCUD hunting and monitoring where material is going in buried targets, I think that is another huge application for smart dust and distributed sensor networks.

And Pister says that the sensors will get much smaller soon.

The idea of a rogue regime in possession of the materials and the manufacturing process for weapons of mass destruction denying an inspection team access could be challenged. Further, the use of a smart dust network to work with other cueing systems could give the security element of diplomacy a robust new tool. Another possibility might include more precise global environmental monitoring at a time when this issue is gaining greater prominence.

In Conclusion

The *Global Trends* report says about 2015:

Advances in science and technology will generate dramatic breakthroughs in agriculture and health and in leap-frog applications, such as universal wireless cellular communications, which already are networking developing countries that never had land-lines. What we do not know about the S&T revolution, however, is staggering.

I think they have it largely right. Uncertainty is the key. We do know enough about the possibilities, however, to factor in how they might affect diplomacy and how diplomacy might best take an active role. We know that it is likely that advances in science and technology will pose national security opportunities as well as challenges of uncertain character and scale. We know that the technologies can be of assistance to powerful as well as to impoverished nations and to those who would challenge the global order. We know that alliances with the science and technology communities as well as with commercial companies and governmental and nongovernmental bodies will be more important than ever. What we need to know is not only how our diplomatic institutions should transform their tools, strategy, and culture to take advantage of the technology advances anticipated by 2015, but also how to embrace them for our greater benefit.

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Diplomacy and Remote-Sensing Technology: Changing the Nature of Debate

Even with rudimentary forms of networks and sensor platforms present at the turn of the century, policymaking and diplomacy experienced a radical transformation.

--Steven Livingston

Steven Livingston is a professor at the George Washington University in Washington, D.C., where he directs the Political Communication Program in the School of Media and Public Affairs. He writes and lectures about the effects of information technology on international affairs and U.S. foreign policy.

By 2015, the old adage that information is power will never be truer. But who or what exercises it, and in what manner, is less evident. Taking the perspective of an observer writing in 2015, let's review developments.

The trends were evident fifteen years before as informed observers spoke of network-centric business, warfare, and diplomacy.[1] At the time, organizations were undergoing a radical transformation away from hierarchical structures that emphasized ascending layers of bureaucratic structure and responsibility, a structure often defined by segmented access to information. Instead, organizations were flattened by the democratizing influences of information networks. For example, looking ahead in their technical patios, network-centric warfare theorists at the time maintained that the "speed of command will flatten the engagement hierarchy, and place decision-makers on the same page with 'shooters'." Data streams coming from sensors informed everyone on the "Net" at the same time and in basically the same way.[2] This was a more transparent information environment. Generals back in a command-and-control center would be directly linked with the lieutenants and sergeants in combat, leaving the captains and majors in a radically new and perhaps unsettling position. As a result, "warfare will be transformed from a step function to a continuous process, reducing both the delays associated with decision-making and the enemy's opportunity to rekindle initiative."[3] Networks place greater emphasis on speed, agility, and individual initiative (but in the context of network-defined objectives). The important point is that this vision of warfare in the twenty-first century was transportable to other domains of business and public policy.

Greater transparency came to characterize relations among institutions, both within and across national borders. Fundamentally, old-order presumptions concerning exclusivity of information were under attack and crumbling. Even intelligence organizations found themselves in the novel position of confronting articulate and well-publicized analyses that were at odds with official assessments, a phenomenon to which we will return in a moment. In this environment, explaining national policy to the global community took on new weight and confronted new challenges. In the words of one prescient observer, by necessity, "megaphone diplomacy" would give way to "network diplomacy."[4]

Megaphone diplomacy presupposed information and communication dominance, such as a claim to exclusive knowledge concerning intelligence assessments of foreign threats. This was an untenable position in a networked and sensored world. Network diplomacy instead built on openness and sharing of information with an eye toward reserving credibility as a wedge in persuading others that a preferred position is best. Network diplomacy required learning to engage and even accommodate alternative views, contrary opinions, and evidence, rather than attempting to contemptuously speak over them, as was the case in megaphone diplomacy.

To understand network diplomacy requires that we take a moment to think about the nature of policy making and the emergence of networks and sensors in international political affairs. Following the more immediate discussion of the nature of policy making in a networked environment, we will review the development and the role of private spy satellites in the twenty-first century.

Policymaking in Networked Environments

Earlier notions of telecommunication networks only began to capture the complexity and density of our contemporary (2015) networks and sensor platforms. Kris Pister's groundbreaking work on "smart dust" played an important role in changing our thinking about sensing and networking.[5] Sensors and networks were no longer centered on "things," such as cameras on lampposts or at the ATM, but rather were embedded elements of the environment. Embedded computing, enabled by quantum computing and micro-electro-mechanical systems (MEMS) is common in 2015. But the

significance of expanding sensor density and networks was evident much earlier. Even with rudimentary forms of networks and sensor platforms present at the turn of the century, policy making and diplomacy experienced a radical transformation. These are the basic characteristics of this new environment.

Nonstate actors enjoy unprecedented access to highly technical data of the sort once referred to as "intelligence." This included high-resolution remote-sensing imagery. Earlier efforts to block the development and regulate the use of remote-sensing technologies in the United States under the provisions of the Remote Sensing Act of 1992 were futile. This was true not so much because of the inevitable court challenges by news organizations and other information providers, but rather because of the sheer proliferation of satellite systems that operated outside the control of U.S. regulators. Japan, Israel, and a host of other countries developed commercial systems of their own. In the global networked environment, another easily replaced one satellite system. By 2000, the information environment was already global, flexible, and multisensored.

Political scientists Margaret E. Keck and Kathryn Sikkink captured the significance of information networks when they spoke in 1998 of the new power of activists committed to common causes or beliefs across national boundaries.[6] Networks of like-minded individuals and organizations, linked by the Internet, inexpensive telephone rates, and travel, began using coordinated information strategies to further their common objectives on an international scale. Human rights organizations, policy advocacy groups (such as the land mines ban organizations), anti-World Trade Organization "action coalitions," and other nonstate actors utilized the new networked environment to engage policymakers and challenge their claim to exclusivity of information. This was true even in such traditional domains as national security and intelligence matters. What was new about this was not the fact that nonstate actors were challenging government claims. That had been a common practice for as long as there were state authorities. What was new was the scale and character of the challenges.

Frank R. Baumgartner and Bryan D. Jones note that competing interpretations may emerge from a given set of conditions, especially when those involved in policy processes--both inside and outside of government--believe that different policy outcomes will follow from "different understanding of what the facts mean."[7] Determining which facts come into play and at what time is perhaps even more important. Policy outcomes are determined by which facts and frames enjoy preeminence in policy debates. Internationally linked advocacy groups began challenging official explanations and policy justifications on their own turf when they began to enjoy an independent means of acquiring data. The new information sensors and networks that came online at the turn of the century changed the dynamic of whose facts and frames came into play. As a consequence, they confronted government analysts head-on using instruments that had previously been the sole preserve of intelligence organizations, such as remote-sensing satellites and other sources of "intelligence" data. If information is power, nonstate actors at the turn of the century began exercising a new form and degree of power with the development of new sensor platforms and networks.

The first high-resolution commercial remote-sensing satellite, Ikonos, was launched in September 1999. Writing at the time, Daniel Dubno, a CBS News producer, realized the significance of the launch of Ikonos. "In the past twelve months, powerful new computer technology coupled with greater access to foreign and commercial satellite imagery has begun to revolutionize broadcast journalism." The availability and use of this technology, said Dubno, "represents a sea-change in news presentation."[8] Writing in 2000, William E. Stoney of Mitretek Systems saw the change under way. There is "a clear trend toward the private sector catching up with government systems--in the beginning of 2000, there were 11 government satellites and one private system. Plans indicate that in three years there will be 12 government satellites and 8 commercially funded systems, and that by 2005 there could be 16 private and 10 government satellites."[9]

Clearly, by 2005, the state's exclusive grip on high-resolution remote-sensing data had slipped. The

sheer numbers of private satellites available to private users was not the only or even the most important consideration. By the end of 2001, the one-meter-resolution Ikonos satellite was surpassed by a 0.5-meter satellite. This meant that nonstate actors had at their fingertips what would have been regarded as highly sensitive intelligence data just a few years before. They used these data to confront the claims of state actors, and they did so on a world stage.

John Pike, formerly an intelligence and space policy analyst at the Federation of American Scientists (FAS), led the way in clearing a path for private, non-state intelligence analysts. In May 2000, while reviewing satellite images in the Web-based archives of Space Imaging, Inc., (the company that owned and operated the Ikonos satellite), Pike discovered multiple views of China's Datong nuclear bomber base on the eastern coast of China. Although Space Imaging would not reveal who had ordered the images, Pike realized that the most likely customer was the government on Taiwan. "I've been of the opinion that Ikonos is going to be of considerable interest to military intelligence agencies around the world--and this is an example of that," said Pike.

But Pike himself and his organization at the time, FAS, an anti-arms proliferation advocacy group based in Washington, D.C., also had a strong interest in using Ikonos. Using declassified U.S. spy satellite imagery, commercially available Russian imagery off the Terraserver Web site, and the Ikonos images, Pike calculated the runway, maintenance, and aircraft parking capacities of all of the major Chinese air bases along the Taiwan Strait. In this way, Pike became among the first nonstate analysts to use satellite imagery as a "tool in the global debate over nuclear nonproliferation through a FAS initiative called Public Eye." The Public Eye project was funded by major donors, including the Rockefeller Foundation and the John D. and Catherine T. MacArthur Foundation. Vernon Loeb of *The Washington Post* captured the significance of the Public Eye program when he wrote that Pike's assessment of China's potential for launching an air assault against Taiwan "could not realistically have been attempted by those outside the U.S. intelligence community before satellite imagery of the world was for sale."[10]

The Public Eye project did not end with an evaluation of China's strategic nuclear threat. In January 2000, Pike used an Ikonos image of North Korea's No Dong missile test site to claim that the threat from North Korea was far less serious than had been claimed by U.S. government analysts. This came at a time when debate was raging among policy experts and the informed public as to whether the United States ought to build a national missile defense shield against "rogue states" such as North Korea. Pike's technical assessment contradicted that claim. More significantly, his argument was backed up with pictures and a highly detailed analysis of the North Korean facility. The Central Intelligence Agency (CIA) and the National Imaging and Mapping Agency (NIMA) had no experience in going toe to toe with a public intelligence assessment. In fact, they could not do so because of the security precautions that prevented disclosure of national technical means, the euphemism for spy satellites. In this new networked and sensored world, the censoring of the CIA put it and those responsible for explaining government policies and priorities at a clear disadvantage. Pike had the rhetorical upper hand.

In March 2000, FAS released Ikonos photos of Pakistan's nuclear and missile facilities. According to Pike's analysis, both facilities were larger and more developed than previously known by those without necessary security clearances. Here again, a nonstate actor challenged official, at least public, assessments. And here again, the challenge was met with little debate from government sources, which were silenced by the old structures of secrecy and classification.

But having the satellite image was only a first step. Analysis of satellite imagery is a highly technical undertaking with an extraordinarily high error rate during the first few years of an analyst's career. Just this fact alone led former CIA analyst Patrick Eddington to refer to FAS' Public Eye as "amateur hour." And there was good reason for alarm. News media, for example, were among the primary users of satellite imagery, outside of governments. Yet most news organizations made little effort to take seriously the challenges associated with image analysis. Executives at NBC, including Brett Holey, the director of the NBC Nightly News in 2000, indicated that no clear procedure was in place

for analyzing satellite images.[11] Instead, NBC relied on retired military or intelligence analysts. The problem with this strategy was that it missed or misunderstood the nature of photo analysis. A well-trained analyst often has years of familiarity with a particular terrain or facility. It is not always a matter of simply eyeballing a picture and saying what it means. Instead, it involves extensive comparative analysis of multiple images over time.

CBS, one of NBC's competitors, had at the turn of the century given more thought to the problem of image analysis and had established clearer procedures and forged relationships with professional value-added firms. Other news organizations have not been so careful and have been made serious mistakes. Generally, the proliferation of technical assessments of security threats by nonstate actors has muddied the debate. News media in a rush to publish have made mistakes in their analysis of images. We saw this early on in the history of commercial remote sensing.

On May 25, 1998, *Newsweek* magazine ran what it said was a satellite image of the site of India's most recent nuclear test detonations. According to the caption, the image was taken a week before the detonations. The two-page photo carried annotations identifying what were said to be the detonation site, an abandoned village, and buildings that were part of the nuclear test facility. In fact, the "nuclear detonation site" was a corral to hold livestock. How could such a serious mistake occur? According to one of the Newsweek reporters involved with the story, publication pressure got in the way of judgment. Rather than using a professional analyst, one known to *Newsweek*, it went with the mistaken analysis.[12]

Deadlines, particularly the rolling deadline of twenty-four-hour news, create an incentive to take shortcuts. The budget cuts in news operations over the past fifteen years, as corporate consolidation in the news business has continued, have made matters only worse. Today's predominance of Web-based journalism means that all news organizations face essentially the same constant, unremitting pressure once felt only by television news.[13]

But this shortfall in nonstate actors' analytical efforts has been the saving grace of diplomats and others charged with articulating coherent and well-reasoned positions on U.S. policy. By lifting the shield of secrecy as much as possible, by being honest and forthcoming, even when doing so has caused embarrassment, American public diplomacy has learned to operate in the sensor-rich, networked environment of 2015. In becoming a clear, calm, and undyingly truthful voice in a world awash in the cacophonous din of claims and counterclaims, U.S. public diplomacy has found the position from which to engage in effective dialogue.

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iMP Magazine: http://www.cisp.org/imp/july_2001/07_01livingston.htm

Endnotes

1. Indeed, if one had searched newspapers and other media using the Nexis database in 2001 one would have discovered just how much discussion there was back then. One would have found well over a thousand articles and broadcasts about network-centric developments.

2. In March 2000, the author was invited to observe a live-fire exercise conducted by the Marine Corps Warfighting Lab at Twenty-Nine Palms, California. The Marines tested a network-centric system in the exercise. Marine riflemen were outfitted with LDC displays that attached to their Web gear. What is essentially a wireless local area network was established, linking the Marines into a common GIS (geographical information system), which displayed crucial data in real time.

3. "The Silent Service Gets Vocal," *Jane's Navy International* (105, February 1, 2000).

4. Barry Fulton, "The Digital Diplomat." (Speech presented at the Workshop on Information Technology and Practice of Diplomacy: The Impact of the Internet on the Use and Role of Public Diplomacy, at the Elliott School of International Affairs, The George Washington University, Washington, D.C., April 20, 2001).

5. David Ignatius, "Will the Boom Byte Back?" *Washington Post*, May 21, 2000, p. B7.

6. Margaret E. Keck and Kathryn Sikkink, *Activists Beyond Borders: Advocacy Networks in International Politics* (Ithaca, N.Y.: Cornell University Press, 1998).

7. Frank R. Baumgartner and Bryan D. Jones, *Agendas and Instability in American Politics* (Chicago: University of Chicago Press, 1993), p. 28.

8. Daniel Dubno, "Satellites Change How We See the Earth," CBS News Web site, October 13, 1999. For an example of a one-meter image, see Space Imaging's Web site: http://www.spaceimaging.com/.

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10. Vernon Loeb, "Sharp Eye in the Sky Lets Nations Spy-for a Price; Taiwan Appears to Monitor China's Military by Satellite." *Washington Post*, May 10, 2000, p. A3.

11. Interview, New York, May 3, 1999.

12. Telephone interview, May 3, 1999. There are several reporters associated with the *Newsweek* article. The reporter interviewed for this chapter agreed to discuss the matter, but asked to remain unnamed. Also, one of the two experts identified by the reporter asked to remain unnamed.

13. See Howard Kurtz, "On the Web, Newspapers Never Sleep," *Washington Post*, September 7, 1999, p. E1.

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