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Recommended Citation

Ronfeldt, David and Varda, Danielle, "The Prospects for Cyberocracy (Revisited)" (2008). *Working Papers*. Paper 29.
http://opensiuc.lib.siu.edu/pn_wp/29

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THE PROSPECTS FOR CYBEROCRACY (REVISITED)

David Ronfeldt and Danielle Varda

Abstract: The deepening of the information age will alter the nature of the state so thoroughly that something new emerges: *cyberocracy*. While it is too early to say precisely what a cyberocracy will look like, the outcomes will include new kinds of democratic, totalitarian, and hybrid governments, along with new kinds of state-society relations. Thus, optimism about the information revolution should be tempered by an anticipation of its potential dark side. This paper reiterates the view of the cyberocracy concept as first stated in 1992, and then offers a postscript for 2008. It speculates that information-age societies will develop new sensory apparatuses, a network-based social sector, new modes of networked governance, and ultimately the cybercratic *nexus-state* as a successor to the nation-state.

This is the version of the paper that has been available at www.ssrn.com since January 2009. A dearth of comment motivates re-posting it here as a Political Networks Working Paper. Of particular interest may be the following: an early anticipation of the rise of network forms of organization; an effort to discriminate between social and organizational networks; a discussion about “government by network” in comparison to government by tribe, hierarchy, and market; and a speculation that a “nexus state” integrating all modes of governance will arise in the future.

PROLOGUE

Recent re-readings of an old paper about *cyberocracy* (Ronfeldt, 1992) indicated that many of its points still read well and that the concept might be worth reiterating. Undertaking a full revision and updating was not feasible, so we decided to abridge the old paper and then add a postscript to update selected ideas and observations. This derivative paper is the result.¹

¹ The abridgment reduces the original text by about 40%. Readers may compare our abridgement to the original by perusing the 1992 version in *The Information Society* journal or its reprint in a .pdf file at www.rand.org, or by reading the precursor paper (Ronfeldt, 1991), which is also available as a .pdf file at www.rand.org. The difference between the 1991 and 1992 versions amounts to about four pages of text added for the 1992 version; the texts are otherwise identical.

Readers who want to know what lies behind the concept should at least browse in the abridgment below. Our trimming makes it more readable and relevant for today than is the original full text. Besides, far from being all musty and passé from age, the abridged portion shows that the early intellects of the information revolution — people like Daniel Bell, Peter Drucker, Jacques Ellul, Theodore Lowi, and Ithiel de Sola Pool — raised many stimulating ideas and observations decades ago that still seem fresh today. In retrospect, it is impressive how well they foresaw both the bright and dark sides of the computer revolution. It is also curious how few truly new themes are in play today; many amount to respinnings and repackagings of points they made those decades ago.

Readers who are already familiar with the points made in the original paper may prefer to turn directly to the Postscript. It briefly summarizes trends that have become more evident in recent decades, and then looks ahead to prospects that information-age societies will develop: (1) new sensory apparatuses, (2) a network-based social sector, (3) new modes of networked governance, and eventually (4) the nexus-state as a successor to the nation-state — all pursuant to the rise of cyberocracy.

“CYBEROCRACY IS COMING” [THE VIEW IN 1992 — ABRIDGED]²

Perhaps it gets tiresome to read, as we have read for years,
that advances in computing are going to change the
world. But it's true. (Harry Tennant and George Heilmeyer)³

The world now taking shape is not only new but
new in entirely new ways. (Richard J. Barnet)⁴

The purpose of this paper is to suggest that *cyberocracy* is coming. This term, from the roots “cyber-” and “-cracy,” signifies rule by way of information. As it develops, information and its control will become a dominant source of power, as a natural next step in political evolution. In the past, under aristocracy, the high-born ruled; under theocracy, the high priests ruled. In modern times, democracy and bureaucracy have enabled new kinds of people to participate in government. In turn, cyberocracy, by arising from the current revolution in information and communications technologies, may slowly but radically affect who rules, how, and why.

² Abridged verbatim from Ronfeldt (1992 [1991]).

³ Tennant and Heilmeyer, 1991, p. 117.

⁴ Barnet, 1990, p. 48.

Perhaps the literature does not need another attempt to field another term about the shape of things to come. Awful terms like *communications*, *technetronic society*, and *computopia* have already come and gone.⁵ The term cyberocracy may fare no better. [Yet,] a good case exists for using the “cyber-” prefix, for it bridges the concepts of information and governance better than any other available prefix or term.⁶

INFORMATION AS POWER

Agreement is spreading that information should be viewed both as a new source of power and as an agent for transforming one kind of power into another. In the words of two very different observers:

The crucial point about a post-industrial society is that knowledge and information become the strategic and transforming resources of the society, just as capital and labor have been the strategic and transforming resources of industrial society. (Daniel Bell)⁷

We are witnessing a historic transformation of the traditional modes of power. Power today is becoming based less on physical and material parameters (territory, military forces) and more on factors linked to the capability of storing, managing, distributing, and creating information. (Regis Debray)⁸

Strong Effects on Business and Economics

Business leaders have recognized and responded to these trends more quickly than have government leaders. The production, dissemination, and consumption of information have become major growth activities, especially in the United States where more than half the jobs may be information-related.

Concepts of business management are changing. The private sector has found that a dispersed business can now be managed directly from a single center or from several locations. Corporate officers and management theorists tout the end of hierarchy and the rise of flat organizations. Top management finds that the new

⁵ Beniger, 1986, pp. 2–5, provides an excellent compilation of terms since the 1950s.

⁶ The prefix is from a Greek root, *kybernan*, meaning to steer or govern, and a related word, *kybernetes*, meaning pilot, governor, or helmsman. The prefix was introduced by Norbert Wiener in the 1940s in his works creating the field of *cybernetics* (a term related to *cybernétique*, a French word meaning the art of government).

⁷ Bell, 1979a, p. 26. Another useful examination of how and why politics and economics in the information age may differ from those in the industrial age is Smith, 1983.

⁸ From an interview with Regis Debray, as excerpted in *Harper's Magazine*, April 1986, p. 18.

information systems may enable them to run complex operations without relying heavily on middle management.

Concepts of markets are changing. A marketplace used to mean a geographic area with a boundary that expanded and contracted. But as Daniel Bell notes, the Rotterdam spot market for oil “is no longer in Rotterdam. Where is it? Everywhere. It is a telex-radio-computer *network*.” As work becomes detached from place, and operations from central headquarters, “we see a change of extraordinary historical and sociological importance — *the change in the nature of markets from ‘places’ to ‘networks.’*”⁹

Concepts of capital are changing. Corporations now buy, sell, store, and transmit information as though it were money (and vice-versa). Capital is viewed as a form of information (and vice-versa). Electronic transactions and financial news result in immediate, worldwide adjustments in monetary exchange rates without any bullion or currency physically changing hands. Thus, in [Walter] Wriston’s view, a new “information standard” is replacing the gold standard.¹⁰

Wriston, who has been praised for building Citibank into “the one institution that understands that finance no longer has to do with money but with information,”¹¹ says that new terms and concepts are needed.

[M]ost of the terms we use in standard economic analysis were invented in the industrial age, and while many are still relevant, some no longer measure what they once did, because the base has changed. . . . If we think about our economy, another word we use is “capital.” Economists of many schools tend to agree that capital is stored-up labor which has been expressed in dollars. A good case can now be made that knowledge and information are becoming the new capital in today’s world. . . . A strong argument can be made that information capital is as important, or even more critical, to the future growth of the American economy than money. Despite this perception, this intellectual capital does not show up in the numbers economists customarily look at or quote about capital information.¹²

Meanwhile, traditional concepts of labor and work are also being challenged; the new technology is transforming the nature of work and relations between workers and

⁹ Bell, 1987, esp. p. 12. Italics in original.

¹⁰ Wriston, 1986, pp. 134–135.

¹¹ From an interview with Drucker reported in the *Los Angeles Times*, April 14, 1985, Part V, p. 7.

¹² Wriston, 1986, pp. 120, 125–6.

managers. According to Harvard Business School professor Shoshana Zuboff, “work organization requires a new division of learning to support a new division of labor,” because in the final analysis “the informed organization is a learning institution.”¹³ The image she offers for labor-management relations is one of concentric rings rather than hierarchical pyramids.

Lagging Effects on Government and Politics

The new technology has given rise to a new generation of policy issues. Foremost among them have been privacy and security issues. The technology has also obliged governments to focus on a new set of international telecommunications issues. The growth of transborder data flows and international trade in information services, the rising demand for access to communications networks and crowded radio-spectrum frequencies, and the prospect of direct broadcast satellites have all raised complex commercial and regulatory issues, and touched sensitive nerves about national sovereignty and independence.

[For example,] U.S. Secretary of State George Shultz quickly realized in the 1980s that [the information revolution] represented a new source of power. In his view, its diffusion was making the world smaller and more interdependent, but also more turbulent. It was altering the technological bases of national, regional, and global economies. It was inducing political changes that would challenge traditional concepts of national sovereignty and affect not only the role of government in society but also the international balance of power.¹⁴ He foresaw that the outcome would be to the advantage of the open, democratic societies of the West.

Thus, recognition is spreading in governments around the world that the new technologies may profoundly alter the nature of political power, sovereignty, and governance.

- The distribution of *power* and the prospects for cooperation and conflict are increasingly seen as a function of the differing abilities of governments and other political actors to utilize the new technologies. A new distinction is emerging between the information “haves” and “have-nots.” Some actors

¹³ Zuboff, 1984, pp. 394–395.

¹⁴ See Shultz, 1986a, 1986b, 1985.

- may become global information powers, but others, notably in the Third World, fear “electronic colonization” and “information imperialism.”
- Information flows based on the spread of the new technology are undermining traditional concepts of territorial *sovereignty*.¹⁵ Information in electronic form, unlike most goods and services, is difficult to control; financial data flows, electronic mail between computers and fax machines, and television broadcasts from remote trouble spots do not halt at border check points. Clinging to closed, autarchic notions of sovereignty is less and less a viable option for ultra-nationalistic governments.
 - A key expectation about *governance* is that the new technology benefits society over the state, and thereby strengthens the prospects for democracy. The revolutionary upheavals of 1989, especially in Eastern Europe, have provided evidence for this, and raised optimism that open societies are superior and will triumph over closed ones. But in the United States and other leading democracies, the new technology may also lie behind trends that could undermine the democratic process: e.g., the growth of single-issue politics, media sound-bites, targeted mailings, and public surveillance.
 - In addition, the new technology has raised expectations that top leaders and their staff will eventually have access to better information, from any part and level of government, virtually on demand. But meanwhile, especially in U.S. foreign policy, the modernization of an office's communications systems has sometimes enabled it to expand its operational horizons in ways that stimulate bureaucratic rivalries.

In short, the basis exists in the government world for conceptual and structural shifts that are as profound as in the business world. Yet, by comparison, the government world appears to be changing much more slowly and uncertainly. With few exceptions, policymakers and analysts are just beginning to discern how government and politics may ultimately be affected by the information revolution.¹⁶

Applying the new technology to government has been a stressful task for the U.S. government since the 1970s. In 1984, J. Peter Grace, who had just headed a presidential commission on waste and inefficiency in the federal government, observed that:

¹⁵ Wriston, 1988/1989; Webster, 1984; and Ware, 1981.

¹⁶ Dedijer and Jéquier, 1987, is one of the exceptions.

Over three quarters of the federal government's white-collar work force is involved in the processing of information — from mailing Social Security payments to processing tax returns. . . . The federal government is the single largest user of data processing systems in the world.¹⁷

But his commission was appalled by the obsolescence, incompatibility, and duplication of computerized information systems scattered about the federal branch, by the rapid turnover of systems personnel, and by the “woefully inadequate” quality of the information available to federal managers.¹⁸

Federal offices and agencies had a terrible time in the 1980s trying to modernize their information systems and computerize their administrative activities. Efforts to install advanced information systems in the White House did not fare well either. By the mid 1970s, when President Jimmy Carter took office, the White House systems were much less sophisticated than the business world's, and had been installed in a haphazard, fragmented, and uncoordinated manner. The emphasis was, and remained, on improving the efficiency of routine office tasks more than on informing the decision makers and improving their efficiency. Some analysts saw that the new technology could provide tools to develop an institutional memory and support crisis management. However, an effort to develop an integrated decision-support system for the Carter White House, and a subsequent effort under President Ronald Reagan, both ran afoul of internal power politics and staff rivalries, and were halted.¹⁹

Yet a case may still be made that the improvements which have occurred in the White House communications systems since the 1960s have had a significant effect on the ability of the President and the White House and National Security Council (NSC) staffs to take an increasingly operational and independent approach to the conduct of foreign policy.

The situation room and its communications systems thus helped Presidents to seize control of the foreign-policy system. It helped the NSC staff to serve the President as he must be served, even if it offered also unfair advantages in the bureaucratic competition. But established initially to bring Kennedy and his staff more fully into the policy game, it would be employed by

¹⁷ From Grace, 1984.

¹⁸ Grace, 1987. Among other things, the commission recommended that an Information Management Office be created in the Executive Office of the President.

¹⁹ Hinckley, 1986.

subsequent Presidential aides — especially Kissinger and Brzezinski — to keep out State and Defense, sometimes even their Secretaries. The new communication networks allowed both Presidents and the White House staffers to get more deeply into the daily business of diplomacy, sometimes acting without the knowledge of the officials actually charged with those responsibilities. The machines have allowed the growth of the operational Presidency.²⁰

Congress did not advance more effectively than the Executive branch in this period. The information systems of the executive and legislative branches, already fragmented within each branch, were kept entirely separate from each other. However, whereas executive branch officials could sometimes gain access to the Congressional databases, its representatives could rarely get their hands on databases and simulation models used in the executive branch. Thus, in various ways, “The introduction of the computer threatened to upset the comfortable pattern of intrabranh and interbranch power holding.”²¹

A Revolution Barely Begun

In sum, the information revolution is well underway, but it is also in its infancy. The beginnings of its maturation may be ten years away. The best and worst are yet to come in terms of the technology’s effects on society, and especially on its politics.

A new technology usually has to prove itself first in terms of efficiency. Advanced information and communications systems, properly applied, are improving the efficiency and cost-effectiveness of many activities. But improved efficiency is not the only or even the best possible effect. The new technology is also having a transforming effect, for it disrupts old ways of thinking and doing things, provides capabilities to do things differently, and suggests that some things may be done better if done differently:

The consequences of new technology can be usefully thought of as first-level, or efficiency, effects and second level, or social system, effects. The history of previous technologies demonstrates that early in the life of a new technology, people are likely to emphasize the efficiency effects and underestimate or overlook potential social system effects. Advances in networking technologies now make it possible to think of people, as well as

²⁰ Destler, Gelb, and Lake, 1984, p. 247.

²¹ Frantzich, 1982, p. 234.

databases and processors, as resources on a network. . . . If we look beyond efficiency at behavioral and organizational changes, we'll see where the second-level leverage is likely to be. These technologies can change how people spend their time and what and who they know and care about. The full range of payoffs, and the dilemmas, will come from how the technologies affect how people can think and work together — the second-level effects.²²

We may thus begin to see increasing evidence of a lesson from the history of an earlier revolutionary technology, the printing press: According to its greatest historian, Elizabeth Eisenstein, it “created conditions that favored, first, new combinations of old ideas and, then, the creation of entirely new systems of thought.”²³ Drucker has said that a radical technology may not displace established technologies unless the new one proves itself ten times more cost-effective.²⁴ Afterwards, the structural changes implied by the new technology are much more likely to occur. Indeed, a realization that institutional redesigns are needed to take full advantage of a new technology may be an important sign of maturation.

BEYOND BUREAUCRACY: CYBEROCRACY

Throughout history, information has been essential to government, and different types of governments may be distinguished by the ways in which they acquire, process, transmit, and control information. Yet information *per se* has rarely been considered a key organizing principle in theory or practice.²⁵ Cyberocracy implies that information and its control will be elevated to a key principle.

A precise definition is not possible at present, but in a general sense cyberocracy may manifest itself in either or both of two ways:

- narrowly, as a form of organization that supplants traditional forms of bureaucracy and technocracy;

²² Sproull and Kiesler, 1991b, pp. 15–16. Also see Sproull and Kiesler, 1991a.

²³ Eisenstein, 1968, p 8.

²⁴ Gilder, 1989, p. 55, paraphrasing Peter Drucker.

²⁵ Innis, 1950, discusses the communications methods that lay behind the organization and administration of the ancient Egyptian, Babylonian, Greek, and Roman empires. Converse, 1985, finds (pp. 3–4) that “the whole construct of information seems largely a twentieth-century notion. . . . It is scarcely isolated as an entity until studies of propaganda began in our century.” Deutch, 1963, emphasized information in political analysis before the technology revolution began.

- broadly, as a form of government that may redefine relations between state and society, and between the public sector and the private sector.

Although the shape of a full-fledged cyberocracy remains obscure, it should spell major changes in the nature and conduct of government. It should not mean that a nation's intelligence services, think-tanks, media, or other sources of informational power dominate government, although the information revolution has increased their visibility and importance. The major impact will probably be felt in terms of the organization and behavior of the modern bureaucratic state.²⁶

Bureaucracies enable governments to generate, process, distribute, and store information. Even the Egyptian, Roman, and other ancient empires were administered in part by bureaucracies. Yet the terms *bureaucracy*, *bureaucratic*, and *bureaucrat* are not ancient; they date from the 1830s and 1840s. The growth of formal bureaucracy is a phenomenon of the 19th and 20th centuries, and the modern bureaucratic state is one of mankind's recent accomplishments. For organizations in both the public and private sectors, the bureaucracy represents an important, modern technology of control.²⁷

To some extent, a cyberocracy would be a bureaucracy changed by computers. This new form presumes the diffusion of advanced information and communications systems throughout a nation's government (and its public and private sectors generally). It also implies the rise of elites who rely on those systems and work to use them to their fullest capabilities.

But it would be a mistake to define a cyberocracy as a computerized bureaucracy, or a *cybercrat* as a bureaucrat with a computer. The new technology opens the doors to new capabilities and possibilities; it implies that things may be done differently. This difference may stem less from the computer someone may have than from the access it may provide to networks and databases outside one's office, and potentially across all branches and levels of government, in the private as well as the public sector, and internationally as well as domestically.

While bureaucracies are organized along thematic lines, big budgets and staffs are generally considered more important than information as bases of bureaucratic power.

²⁶ Toffler, 1970, deserves credit for being one of the first works to foresee that the information revolution would have a major impact on bureaucracy. His concept of what lay beyond bureaucracy, which he termed "ad-hocracy," has much in common with my concept of cyberocracy.

²⁷ Beniger, 1986, pp. 19, 20, and *passim*. This impressive work identifies bureaucracy as a technology of control, and shows how it integrated office technologies, like telephones and typewriters, for processing and distributing information.

Moreover, the hierarchical structuring of bureaucracies into offices, departments, and lines of authority may confound the flow of information that may be needed to deal with complex issues in today's increasingly interconnected world. Development of a *cybercratic state* may mean that "big information" becomes a more important source of power and authority than a budget.

Cyberocracy must surpass bureaucracy and its 20th century iteration *technocracy*²⁸ if new techniques of acquiring and using information are to take hold. Bureaucracy depends on going through channels and keeping information in bounds; in contrast, cyberocracy may place a premium on gaining information from any source, public or private. Technocracy emphasizes "hard" quantitative and econometric skills, like programming and budgeting methodologies; in contrast, a cyberocracy may bring a new emphasis on "soft" symbolic, cultural, and psychological dimensions of policymaking and public opinion. Bureaucrats command offices and channels. Technocrats command scientific expertise and analytical skills. Cybercrats may not only command all that their predecessors commanded, but also redraw the boundaries of appropriate, authorized behavior.

Cyberocracy may mean that the traditional notions of bureaucratic boundaries are broken and that the public and private sectors become increasingly permeable to each other. The new technology makes possible a degree of networking and bypassing that would play havoc with the traditions of a hierarchical bureaucracy, but that may become hallmarks of future organizational processes.

One key to being a cybercrat may be the ability to tap multiple sources of information in electronic form, available inside and outside the official system, from both public and private sectors, in ways that bypass or break the conventional boundaries of bureaucracy. Another key may be the ability to readily communicate and consult, individually or in teams, with selected individuals inside and outside of government who may be able to contribute to a policymaking process, even though those individuals may be far removed from one's immediate office area. Policy consultation and coordination may become more extensive than ever, but may unfold in ways that defy traditional bureaucratic conceptions. At stake, then, is not only access to information, but also control of how information is used to influence policymaking and to direct behavior.

²⁸ The term "technocracy" was coined in 1919 and popularized in the mid 1930s. See Bell, 1967, pp. 24-35, *passim*.

A wholly new information and communications infrastructure will be required for such a system.

MIND-BENDING NEW INFRASTRUCTURE

Cyberocracy will require handy systems for selectively acquiring and representing complex information about how a particular political, economic, social, or other system may be performing, and for assessing policy options about how to affect the performance of a system. Also, new techniques are needed for “envisioning information.”²⁹

While the computer has received enormous attention because of its potential to transform social relations and empower individuals, the new communications networks are expected to have equally profound effects in the future:

Networking has the power to allow everyone to participate in a worldwide marketplace — will we be able to ensure that everyone has equal access to it? Networking makes it feasible for people in organizations to share information freely and frequently — will we be able to release ourselves from “chain of command” organizational structures to take advantage of this capability? Networking will give people access to vast libraries of historical and up-to-the-minute written, visual, and oral information — will we be able to develop tools to allow people to chart their own courses of learning and discovery through so much information? Networking has the potential to connect all the world in one global electronic civilization — will we be able to sustain a diversity of cultures?³⁰

Tomorrow’s policymakers and analysts will need quick access to data banks the likes of which are but a gleam in the eye today. A cyberocracy will require that entire libraries of print materials (books, periodicals, reports, memoranda, survey data, time-series data, etc.) be readily available in electronic form. This will be necessary for historical as well as current materials, in order to broaden the available temporal horizons. And it will be necessary not only for the materials that may be associated with particular offices, but also for materials that may be needed from public and private sources beyond the office confines, in order to broaden the available spatial horizons.

²⁹ Classic treatments include Tufte, 1983, 1990.

³⁰ Johnson, 1991, p. 168.

While the focus today is on the data base, this may not be the case in the future. Visionary technologists foresee the possibility of “expert systems,” “intelligent agents,” and “knowbots” that can peruse vast data banks and “information utilities” according to the specified needs of the user. They also see the possibility of “mirror worlds” and “reality windows” that may be used to show what is happening.³¹ The technology may still be used to access facts, but pioneer computer technologist Alan Kay goes farther:

The retrieval systems of the future are not going to retrieve facts but points of view. The weakness of databases is that they let you retrieve facts, while the strength of our culture over the past several hundred years has been our ability to take on multiple points of view. That’s what simulations allow you to do. Databases will be replaced by active simulations that no longer contain embalmed slices of a company at different points of time but active simulations of the company.³²

Advent of Cyberspace

As the new technologies — the hardware and software, communications networks, and information utilities — become interconnected, they may form a globe-circling “cyberspace.”³³ Today [in 1992], this new realm is in a nascent phase of construction. Much of what exists is partitioned and compartmentalized — from home to home, office to office, organization to organization, and nation to nation. Nonetheless, out of sight of much public attention, cyberspace may already be the fastest-growing, new domain of power and property in the world.

Recent debates are fraught with questions about who will have access, who will benefit, and who will control it. To what extent should it be developed as a public utility, as a strategic resource, and/or as an educational service? Should its development be left to the government? To private enterprise? To what extent should it be open to public access? Treated as private property? To what extent should the freedoms expressed in the First Amendment apply?

These debates hark back to issues identified a decade ago in a classic study by Ithiel de Sola Pool.³⁴ Pool foresaw that the advent of electronic communications

³¹ See Gelernter, 1991.

³² Ryan, 1991, p. 207.

³³ The term is generally credited to a seminal “cyberpunk” novel by Gibson, 1984. Its unusual influence extends to professional works like Quarterman, 1990, whose title, *The Matrix*, is from the novel. Other terms that get used include “noösphere,” “infosphere,” and “technosphere,” which appear in the writings of Teilhard de Chardin, Kenneth Boulding, and Alvin Toffler.

³⁴ Pool, 1983.

implied both the creation of a new domain and a convergence of all the domains into “one grand system.”³⁵ The concern he raised — it resounds in today’s debates about the effects of the new technologies and the development of cyberspace — is that the historical trend toward political regulation will continue; the traditions of free speech enshrined in the First Amendment may be subverted in the future information society.

In that future society the norms that govern information and communications will be even more crucial than in the past. . . . The onus is on us to determine whether free societies in the twenty-first century will conduct electronic communication under the conditions of freedom established for the domain of print through centuries of struggle, or whether that great achievement will become lost in a confusion about the new technologies.³⁶

The outcome Pool hoped for included universal interconnectivity, basic rights for public access, and clear standards for easy use.

Restructured Perceptions of Social Space and Time

As the information revolution alters people’s consciousness of the world around them, their perceptions of space and time are affected. These may seem like subjects for metaphysics and the physical sciences, not the social sciences. Indeed, the physical sciences rest on hard-fought concepts of space, time, and momentum. But while few social scientists use such terms, a persuasive case may be made that “Every political theory that has aimed at a measure of comprehensiveness has adopted some implicit or explicit proposition about ‘time,’ ‘space,’ ‘reality,’ or ‘energy.’”³⁷

A curious, important effect of the information revolution is that people are thinking anew about their perceptions of social time and space and their role in shaping consciousness and behavior.³⁸ Marshall McLuhan was one of the first analysts to raise this a quarter century ago:

³⁵ Pool, 1983, p. 28.

³⁶ Pool, 1983, p. 10. His points resound throughout Brand, 1987.

³⁷ Wolin, 1960, pp. 15–16. His statement continues: “Admittedly, few if any writers have employed this form of terminology. Rather, the political theorist has used synonyms; instead of political space he may have written about the city, the state, or the nation; instead of time, he may have referred to history or tradition; instead of energy, he may have spoken about power.”

³⁸ There is a growing literature about the new technology’s effects on social space and time orientations. Bell, 1977, esp. p. 26ff., summarizes points he made in the 1960s and 1970s. Among recent studies, Pool, 1990, praises the technology for “crumbling the walls of distance.” Rifkin, 1989, argues that the technology has negative effects on people’s use of time and their relationship to the world.

Electric circuitry has overthrown the regime of “time” and “space” and pours upon us instantly and continuously concerns of all other men. It has reconstituted dialogue on a global scale. Its message is Total Change, ending psychic, social, economic, and political parochialism. . . . Ours is a brand-new world of allatonceness. “Time” has ceased, “space” has vanished. We now live in a *global* village . . . a simultaneous happening.³⁹

This impressive, enthusiastic view has resounded in subsequent discussions about the effects of the information revolution. Yet it begs for examination. The nature of the change is more complex and ambivalent than McLuhan says. The truth that he illuminates ignores other truths and possibilities.

It is widely believed that the new technology is making the world smaller. Now people may easily communicate with, form relationships in, and acquire knowledge from distant places. But a case may also be made that this means the world is bigger, for the technology expands people’s horizons, makes them more aware of distant places, and enables them to see that what happens far away may have more bearing on their lives than they previously realized. From a global (i.e., macro) perspective the world may be smaller; but from an individual (i.e., micro) perspective, it may just as easily seem bigger.

It is also widely observed that the technology lies behind the undoing of many established barriers, borders, and boundaries. Thus, financial data transmissions now ignore national borders; the democratic upheavals in Eastern Europe lead to the fall of the Berlin Wall; and geographically scattered scientists, activists, ethnic diaspora, and other groups form “epistemic communities,” “electronic tribes,” and “virtual communities” on computer networks. But a case may also be made that the technology enables new barriers and boundaries to be defined and erected. For example, single-issue groups and religious factions use computerized mailing lists to campaign against their opponents, draw sharp dividing lines, and polarize the public. Wealthy elites use cellular telephones, fax machines, and computers to live in increasing splendor away from the rest of humanity. Government and corporate leaders erect virtual walls of technology to protect secrets and defend against terrorist attacks — while terrorists aim to turn public opinion against such leaders by scaring them into isolation. Some individuals and groups may use the new technology to narrow their sources of

³⁹ McLuhan, Fiore, and Agel, 1967, pp. 16, 63.

information to pet topics, removing themselves from exposure to broad media that have shaped national culture and consensus for decades.

Thus the new technology is having complex, ambiguous, ambivalent effects on people's spatial orientations. Many traditional social, economic, and political barriers are coming down because of it. But in other cases, the traditional barriers may be reinforced, and new ones may be erected.

The information revolution is also changing people's time horizons. Since McLuhan, many analysts have argued that the new technology is enabling people to conquer time. For example, financial transactions clear almost instantaneously around the world now. People send faxes and electronic mail anywhere in minutes. CNN and other television networks broadcast in real time the sights and sounds of SCUD missiles over Israel. Government officials move with apparent composure from one immediate crisis to the next.

But a case may also be made that people's time horizons are being distorted because of the new technology. In many ways, it has been used to overload people with information about current developments, narrow their focus, and pressure them to act quickly. Too many things seem to be happening instantaneously and simultaneously. Too many people seem captivated by an intensified awareness of the immediate present and its crises, a sense of detachment from the past, and an anticipation of an accelerating rush into the future. Many seem to be abandoning a sense of history and tradition. Whereas for some activities, like financial transactions, the world has become a single fluid time zone, in other respects people are increasingly sensitive about the gaps in temporal progress and its pace in different parts of the world.

In other words, many people are not conquering time, not even the present moment — they are being conquered by it. While some think they are saving time, others feel they are being deprived of it. While some think they are increasingly able to grasp the future, others feel they are losing their grip on it. Partly because of technology, information (not to mention disinformation) is flowing faster than many people feel they can absorb, sort, make decisions, and obtain additional information that may be needed to make the right decision and control the outcome.

If one accepts the spatial and temporal shifts that McLuhan lauds, a united, even happy "global village" is still not the only possible implication. Like McLuhan, Daniel Bell has commented that technology is resulting in "the eclipse of distance and the foreshortening of time, almost to the fusion of the two." But in his view, instability is a likely implication. Societies, the United States in particular, are undergoing a "loss of

insulating space” as conditions and events in one place are quickly, demandingly communicated to other places. Political systems are becoming more “permeable” than ever to destabilizing events, and people are more able to respond directly and immediately. In some societies — Bell was worried about the United States — this may raise the likelihood of contagious mass reactions and mobilizations, and make the rulers strengthen centralized controls to keep that from occurring.⁴⁰ In other words, the information revolution is an important factor behind both the integration and the disintegration that may be seen occurring all around the world today.

The new technology is having, and will continue to have, important but complex, ambiguous, and ambivalent effects on people’s perceptions of space and time. These perceptions form an important bridge between people’s values and their behavior. This is relevant to the analysis at hand, because the development of cyberspace implies some reconstruction of political space and time.

TOWARD THE CYBERCRATIC STATE

Almost by definition, cyberocracy will mean that a government has an official cyberspace, with varying degrees of interconnection among its parts. Cyberocracy might be defined as a form of organization that has a well-developed cyberspace, conducts many key activities there, and is structured as though its cyberspace were an essential factor for the organization’s presence, power, and productivity. Technology may appear to be the driving consideration; but how these new forms of organization and infrastructure are developed will depend as much on sociopolitical and other considerations.

Cyberocracy may raise issues about relations not only between people and offices in particular areas, but also between different office areas, agencies, and departments of the government, between the public and private sectors in general, and between state and society. It may prove to be no mere variation on bureaucracy or technocracy; the technology implies more than improved efficiency for old institutional designs. Cyberocracy may radically change, in ways we do not perceive, how states and societies interact, how governments are structured, and how offices and people within those governments deal with each other, outside organizations, and individual citizens.

⁴⁰ Bell, 1977, pp. 26–27. Also, Bell, 1967, pp. 108–109. Although time and space perceptions are not explicitly mentioned, Lowi, 1972, and a similar article by Lowi, 1975, in Forester, 1980, identify many of the same implications as Bell.

A key issue for theory and practice may be the pros and cons of interconnection. Technology provides a capability for interconnecting individuals, organizations, and sectors on an unprecedented scale. As already noted, the technology alone will not determine how it gets used, or what the outcomes are; that will depend on broad cultural, political, and other conditions. In some areas, and for some states and societies, extensive interconnection may be desirable. But elsewhere, that may be not be the case.

The first cyberocracies may appear as overlays on established bureaucratic forms of organization and behavior, just as the new post-industrial aspects of society overlay the still necessary industrial and agricultural aspects. Yet such an overlay may well begin to alter the structure and functioning of a system as a whole. Just as we now speak of the information society as an aspect of post-industrial society, we may someday speak of cyberocracy as an aspect of the post-bureaucratic state.

There will be no single type of cyberocracy. Some variations may occur because different departments and agencies within a government perform different tasks and have different requirements. For example, the kind of cyberspace that the U.S. State Department may want may be quite unlike what the Internal Revenue Service may want. Furthermore, national variations may appear because of differing cultural and other conditions. Thus Japan and United States will probably develop very different types. This may take time to become clear.

More Questions Than Answers

Since the 1960s, the information revolution has given rise to a host of recurrent questions that reduce to a string of polarities and contradictions: What will this revolution favor more: Open or closed systems? Decentralization or centralization? Big or small government? Federal, state, or local government? The public or the private sector? Inclusionary or exclusionary communities? Individuals or institutions? State or society? Privacy, or security and surveillance? Freedom or authority? Democracy or new forms of totalitarianism?

The literature offers exhortations and evidence in all directions, but no definitive answers. Most of what has been thought about such questions appeared in writings in the 1970s; and with few exceptions, recent writings provide little additional clarification or insight.⁴¹ New research would help, especially if it were conducted carefully in the

⁴¹ One of the exceptions is Zuboff, 1984.

knowledge that we may be in a confusing transitional phase. Indeed, some of today's trendier points — e.g., the information revolution empowers individuals, favors open societies, and portends a worldwide triumph for democracy — may not hold up as times change.

The best answer may ultimately be “all of the above” depending on the situation and the society affected by the new technology. Open as well as closed types of states may continue to arise. Centralized and decentralized institutions may flourish in the same state. And complex, hybrid patterns may occur; for example, decisionmaking capabilities in some governments may become more centralized and more decentralized at the same time.

Rise of New Elites

For decades, analysts have expected the information revolution to create new elites,⁴² and a new stratification between the “information-rich” (or “haves”) and the “information-poor” (or “have-nots”). Awkward terms like “knowledge elites” and “knowledge workers” have gained currency to label the new strata that live off the expanding information sectors.

A principal contributor to thinking about the new knowledge elites, Daniel Bell, concluded that:

The fear that a knowledge elite could become the technocratic rulers of the society is quite far-fetched and expresses more an ideological thrust by radical groups against the growing influence of technical personnel in decision making. Nor is it likely, at least in the foreseeable future, that the knowledge elites will become a “cohesive class” with common class interests, on the model of the bourgeoisie rising out of the ruins of feudalism to become the dominant class in industrial society. The knowledge class is too large and diffuse. . . . What is more likely to happen . . . is that the different situses in which the knowledge elites are located will become the units of corporate action. . . . The competition for money and influence will be between these various situses. . . .⁴³

⁴² Bell's writings note this. Also see Lowi, 1972; Lowi, 1975, in Forester, 1980; and Michael, 1972. Drucker, 1989, pp. 180–186 and passim, provides a recent analysis.

⁴³ Bell, 1979b, in Forester, 1980, p. 543.

His points are sound, but do not lay the matter to rest, for he defines knowledge elites in primarily technical terms. Other analysts who take a less technical approach to the new elite continue to detect insidious possibilities.

One of the latest warnings comes from Harvard political economist Robert Reich, who has added the equally awkward term “symbol analysts” to depict a growing gap between a new elite and a new mass.

Of course, wealthier Americans have been withdrawing into their own neighborhoods and clubs for generations. But the new secession is more dramatic because the highest earners now inhabit a different economy from other Americans. The new elite is linked by jet, modem, fax, satellite and fiber-optic cable to the great commercial and recreational centers of the world, but it is not particularly connected to the rest of the nation.⁴⁴

Reich sees a gap growing in many cities between these symbol analysts and the broad mass of local service workers whose jobs depend on the symbol analysts. For him, “The stark political challenge in the decades ahead will be to reaffirm that, even though America is no longer a separate and distinct economy [from the rest of the world], it is still a society whose members have abiding obligations to one another.”⁴⁵

Reich’s points are serious, but the implication that the new infrastructure benefits mainly the rich and powerful provides a partial picture. For example, elites in political and professional organizations that have previously lacked influence may use the new technology to help form coalitions with geographically distant, like-minded elites elsewhere, including in foreign countries. Some of the heaviest users of the new communications networks and technologies are progressive, center-left, and socialist activists, through entities like the Association for Progressive Communications. Cyberspace is going to be occupied by all kinds of people, with all kinds of ideologies and agendas, from almost all areas of society.

Today’s knowledge elites are not necessarily tomorrow’s cybercrats. Individually, there will probably be as many different types of cybercrats as there are bureaucrats, technocrats, and other types of officials. What may distinguish the new generation of elites is that they will tend to define issues and problems in informational terms, and to look for answers and solutions through their access to cyberspace and their knowledge

⁴⁴ Reich, 1991a, p. 42. For elaboration, see Reich, 1991b.

⁴⁵ Reich, 1991a, p. 45. Also, see Zuboff, 1984, on management-labor differences.

of how to use it to affect behavior. The new elites may include propagandists and manipulators, as well as people of high public integrity and democratic consciousness.

Organizational Restructuring

According to many accounts from the business world, the information revolution is causing the flattening of organizations, the collapse of hierarchies, increased decentralization, and reductions in the number of middle-level managers. Technology and management innovations are said to be undermining traditional hierarchical and recent matrix forms of organization. Success in the new business environment is said to depend increasingly on organizing project-oriented “teams” and “clusters” of individuals from different parts of a hierarchy who function semi-autonomously until a project is completed. But while some work and management units operate more autonomously than ever, other units span more boundaries than ever (e.g., the case of strategic planning). One new notion is that organizations should be redesigned around networks instead of hierarchies, and that these networks should be kept in flux. Another notion is that well-managed networks of small companies may increasingly outperform big centralized companies.

Such views have prominent champions, notably Peter Drucker and Alvin Toffler, and important shifts are occurring in management theory and practice.⁴⁶ But it is easy for enthusiasts to overstate them and claim that more is changing than may be the case. Complex organizations depend on some kind of hierarchy. Hierarchy does not end because work teams include people from different levels and branches. The structure may be more open, the process more fluid, and the conventions redefined; but a hierarchy still exists, whether one is looking at management in the United States, Japan, or another country entering a post-industrial, post-bureaucratic phase. The fact that the world is going through a very turbulent, in many ways revolutionary period of change means that many kinds of hierarchies are being disrupted and overturned; but this may be a transitory phase, until the information revolution and a new world order result in a new set of hierarchical relationships.

Decentralization is another important trend for many states and societies. As management scientist George Huber points out, asking whether the new technology

⁴⁶ Toffler, 1970, 1990. Drucker, 1989, and Drucker, 1988. Applegate, Cash, and Mills, 1988. Bell, 1967, p. 114, Lowi, 1972, p. 144, and Lowi, 1975, in Forester, 1980, p. 464, also foresaw that traditional bureaucratic forms would give way to new models, but they were more circumspect and less optimistic than other analysts.

may increase or decrease centralization is too general a question, and perhaps the wrong one. In some cases, the new information technologies may enable an organization to become even more centralized, or decentralized, than it is. Huber's hypotheses also suggest that the computer-assisted communications and decision-support technologies may lead to the reverse: greater decentralization for highly centralized organizations, and greater centralization for decentralized ones.⁴⁷ In addition, operations researchers have shown how organizational decision support systems (ODSSs) may enable decentralized organizations to rest on strong, centralized bases of information.⁴⁸

The question of whether decentralization or re-centralization will prevail becomes even more complex if one asks how the new technology and related management innovations may enable organizations to become both more centralized and more decentralized at the same time. Indeed, many analysts have noted that the real question is how to have both. The answer may lie partly in a concept identified by Yale computer scientist David Gelernter. While the new technology fosters decentralization, it may also provide greater "top-sight" — a central understanding of the big picture that enhances the management of complexity.

If you're a software designer and you can't master and subdue monumental complexity, you're dead: your machines don't work. They run for a while and then sputter to a halt, or they never run at all. Hence, 'managing complexity' must be your goal. Or, we can describe exactly the same goal in a more positive light. We can call it *the pursuit of top-sight*. Top-sight — an understanding of the big picture is an essential goal of every software builder. It's also the most precious intellectual commodity known to man.⁴⁹

While many treatments of organizational redesign laud decentralization, it alone is not a decisive issue — the pairing of decentralization with top-sight may be what offers the real gains.

Furthermore, the demise of middle management may be a suspect notion. Many companies have reported reductions; in some, this stems from installing computer networks to track information that used to employ numerous clerks and middle managers. But this reduction may be a transitory trend. Former AT&T Lab director

⁴⁷ Huber, 1990, esp. p. 57.

⁴⁸ Walker, 1991.

⁴⁹ Gelernter, 1991, p.52.

Arno Penzias suggests that middle managers may be needed more than ever, particularly to maintain links between different working groups in large organizations. "As I see it, these growing needs for the services that middle managers provide are the key driving forces behind the dramatic changes taking place in the employee mix of information technology companies."⁵⁰

As cyberocracy develops, will governments become flatter, less hierarchical, more decentralized, with different kinds of middle-level officials and offices? Some may, but many may not. Governments may not have the organizational flexibility and options that corporations have.

In the U.S. government, interagency working groups and task forces have been a common phenomenon for over a decade. This has not meant less hierarchy and middle-management, but it has meant a more networked form of organization. At the apex, the White House and the National Security Council are operationally stronger as a result of their growing information and communications capabilities; in some instances officials there have designed and implemented some policies and operations without apprising other parts of the government. But the latter are catching up and catching on; more, not less, coordination and consultation should be expected in the future. The notion of enhancing decentralization and improving flexibility and performance through clustering small business companies around a central company has a governmental counterpart in the privatization of public services and procurement, although this has not proceeded far yet.

In other words, the post-bureaucratic state may end up configured quite differently from the traditional bureaucratic state. If so, future studies of political rivalries and struggles in a government redesigned for the information age will read quite differently from contemporary studies of bureaucratic politics.

Public and Private Sector Relations

The development of the new infrastructures should raise issues about relations between the public and the private sectors. One issue is access by officials to public and private communications networks, conferencing systems, and data banks located outside government circles. Should an official be able to connect to any service he needs in the public or private sector? Or should diverse, separate networks and utilities

⁵⁰ Penzias, 1990, p. 191.

be built to accommodate official needs, including for privacy and security? Such questions, rarely asked today, are bound to grow in importance.

A second, more general issue is the effect on definitions of, and relations between, the public and private sectors. The boundaries are blurring between the two sectors; and at the same time, new fusions are resulting from efforts to create public-private partnerships to address many policy problems. According to political scientist Theodore Lowi, writing presciently twenty years ago about the potential political impact of the information revolution, “the blurring and weakening of the public-private dichotomy could be the most important political development in the coming decades.”⁵¹ A related question — it gets asked particularly by librarians — is whether social imperatives or proprietary interests should govern how information gets organized, stored, and distributed.⁵²

For many observers, a major phenomenon of our times is the trend toward the privatization and deregulation of economic activities around the world. In many countries the private sector has been expanded and strengthened, while the public sector has seemed to diminish in scope if not strength. But while this trend has received heavy attention, there are indications of an obverse parallel trend: many political activities that were once considered private (or could be conducted as though they were private) are increasingly public (and publicized). For example, an election or case of corruption that might have been treated as a private affair in some country years ago may now be turned by the media into a world-wide event. Computer networks installed by local communities and governments may enable previously isolated individuals to make contact and organize a caucus or political action group that nobody expected. Records of electronic mail messages in the U.S. government, and of police computer and radio discussions in major cities, may be released to the press in connection with sensitive legal proceedings.

In these respects, both the private and the public sectors are being opened up, expanded, and redefined. The more this proceeds, the more the lines between them are blurred, and the two are fused. The information revolution lies behind much of this.⁵³

⁵¹ Lowi, 1972, p. 148.

⁵² Schiller, 1981, pp. 705–709.

⁵³ The blurring of public-private boundaries, and of the boundaries between domestic and foreign policy, has also been pointed out often in the literature on transnational interdependence since the 1970s. That literature recognizes the information revolution as one of the factors explaining the growth of global interdependence.

In addition, the advent of cyberspace is leading to the creation of new areas of private and public activity.

Where will this lead? Will it mean that traditional distinctions between public and private become relics of the industrial age? At a minimum, people may need to think less in terms of turning to government or the private sector to solve a problem, and more in terms of building cooperative partnerships across public and private boundaries and across all levels of government. This seems to be both an implication of the information revolution and a task that cannot be achieved without its tools, given the degree of consultation and coordination that may be required.

Beyond that, political scientist Roger Benjamin suggests not only that the public-private distinction may be outmoded, but also that the development of post-industrial societies will raise the importance of “collective goods” and services that stand between but are different from public and private goods and services, traditionally conceived. In this view, institutional redesigns will be needed in the United States and elsewhere to deal with the changing nature of goods and services that people demand.⁵⁴ Daniel Bell once pointed out that “the nation-state is becoming too small for the big problems of life, and too big for the small problems of life. . . . In short, there is a mismatch of scale.”⁵⁵ But Benjamin and others argue that scale is not the key issue; the whole relationship between what is public and what private, and thus between state and society, may be headed for redefinition, domestically and internationally. Bell might well agree, for he too has argued that information and knowledge are tantamount to collective goods.⁵⁶

The implications for cyberocracy are unclear and speculative. They may mean a continuation of “big government,” but they may also mean greater interconnection, consultation, and collaboration between the public and private sectors, if not the creation of a whole new sector that is separate from but also mediates between those two traditional sectors. This new sector may turn out to be crucial for cyberocracy to work. Meanwhile, it is difficult to see how smaller government will be the result since vast data collection, storage, analysis, manipulation, and dissemination capabilities may be required. Perhaps governments will need fewer middle-managers and clerks in the future. Perhaps many data collection and storage activities can be turned over to

⁵⁴ Benjamin, 1980.

⁵⁵ Bell, 1987, p. 14.

⁵⁶ Bell, 1979b, in Forester, 1980, p. 512. Benjamin and Bell cite economists as sources for their thinking, including Kenneth Arrow.

agencies outside government boundaries. But personnel with new skills will also be required. And it may be increasingly difficult to tell where the boundaries of government stop.

From Hierarchies to Networks

A theme emerges from these considerations: The information revolution appears to be making “networks” relatively more important, and interesting, than “hierarchies” as a form of organization.⁵⁷ This may have profound implications for the cybercratic state, both for how it is organized internally and for the kinds of external actors it must respond to.

The information revolution, in both its technological and non-technological aspects, sets in motion forces that make life difficult for traditional, hierarchical institutions. These forces disrupt and erode hierarchies, diffuse and redistribute power, redraw boundaries, broaden spatial and temporal horizons, and compel closed systems to open up. This creates troubles especially for large, bureaucratic, aging institutions, but the institutional form *per se* is not obsolete. It remains essential, and the responsive, capable institutions will adapt their structures and processes to the information age. Many will evolve from traditional hierarchical to new, flexible, network-like models of organization.⁵⁸

Meanwhile, the network phenomenon is not only modifying an old form — that of large hierarchical institutions — but also giving rise to a new form. The very forces that cause troubles for old institutions — e.g., the erosion of hierarchy — favor the rise of multi-organizational networks of small organizations. Indeed, the information revolution is strengthening the importance of all forms of networks — social networks, communications networks, etc. The network form is very different from the hierarchical form. While institutions (large ones in particular) are traditionally built around hierarchies and aim to act on their own, multi-organizational networks consist of (often small) organizations or parts of institutions that have linked together to act jointly. The new technology favors the growth of such networks by making it possible for dispersed actors to consult, coordinate, and operate together across greater

⁵⁷ This may mean that transaction-cost analysis — the approach to organizational economics that germinates with Ronald Coase and culminates in the writings of Oliver Williamson — should be modified, so that the concept of networks is added to its traditional emphasis on the concepts of markets and hierarchies.

⁵⁸ The literature on these points is vast. Important new additions include: Malone and Rockart, 1991; and Sproull and Keisler, 1991a. Also see work by Tora Bikson.

distances, for longer periods of time, and on the basis of more and better information than ever before.

One implication, then, is that many government institutions may evolve to become “networked organizations.” A second implication is that “organizational networks” may develop in between many of those institutions, their parts or their agencies, including across national borders. There is a third implication.

The rise of multi-organizational networks is an important trend less in the government than in the business world. But it seems most important in the realm of civil society. Growing numbers and varieties of nongovernment organizations (NGOs — some of them also called private voluntary organizations, PVOs) are forming network-like coalitions, in many instances to strengthen their efforts to influence the behavior of governments and businesses. The examples include new networks among special interest, public interest, pressure, lobbying, and/or advocacy groups. Some of the best examples may be found among activist movements on the left and center-left that revolve around human-rights, peace, environmental, consumer, labor, immigration, racial, and gender-based issues. These movements, especially those that use PeaceNet and other communications services, increasingly blend the organizational, social, and physical dimensions of the network concept.

A third implication, then, is that the network phenomenon may intensify interactions between state institutions and the organizations that deem to represent civil society. This may raise the requirements for the actors in a cybercratic state to have access to information and communications infrastructures that lie outside official structures, at the interface between state and society.

Concluding Comment: Revaluing Values

Not long ago, people worried that the information revolution and the relentless advance of technology and technocracy might mean that their lives would be run by heartless computers, and government would be reduced to a “Hell of Administrative Boredom.”⁵⁹ This will surely not be the case. The information revolution has led and continues leading to intense questions about values and to new debates about choices and conflicts among them. Indeed, the new technology is unsettling in part because it

⁵⁹ The phrase in quotation marks is from Lowi’s writings.

permits unprecedented exchanges of values, information, and propaganda, within and between nations.⁶⁰

Cyberocracy ultimately concerns the nature of governance. Because of this, the concept leads directly to questions about freedom, privacy, and security of information. The concept cannot be developed without raising broader value-laden questions about the nature of authority, freedom, equality, and democracy in the information age (or whatever one prefers to name the future). Whether and how to interconnect different parts of the government (not to mention state and society generally) and at the same time safeguard their autonomy cannot be answered without making value judgments.⁶¹

DEMOCRATIC AND TOTALITARIAN POSSIBILITIES

Will cyberocracy favor democratic or authoritarian and totalitarian tendencies? At present the information revolution seems to strengthen democratic forces around the world. But totalitarian cyberocracy also remains a possibility.

A Single-Edged Sword Favoring Democracy?

Many analysts have been optimistic that the information revolution should strengthen democratic tendencies. This optimism generally has three bases. First, it is argued that the new technology — all types and sizes, including computer hardware and software, radio and television receivers, cellular telephones, fax machines, cassette and video tapes, networks, etc. — is spreading into more and more hands around the world. Thus, no regime will be able to isolate itself or its country from the information revolution; nor will any regime be able to centrally control the technology or the people who use it.⁶²

Second, as a result of improved access to information resources, the presumably smaller, weaker actors should be able to compete on more equal terms with bigger, stronger actors. Power should accrue more to individuals than to institutions.

The power of entrepreneurs using distributed information technology grows far faster than the power of large institutions attempting to bring information technology to heel. Rather than pushing decisions up through

⁶⁰ Webster, 1984, p. 1162.

⁶¹ The excellent book by Brand, 1988, p. 263, notes that machines may serve the goal of humanism if they enhance both people's connectedness and their autonomy. For a sound cautionary statement, also see Michael, 1983.

⁶² Most readers forget that [in George Orwell's 1984] Big Brother was not all-seeing. Only about 10 percent of the people were monitored at any time.

the hierarchy, the power of microelectronics pulls them remorselessly down to the individual.⁶³

Second, the “open” societies of the world seem better suited than the “closed” societies to take advantage of the new technologies and respond to the challenges they pose to established concepts of national sovereignty and governance. Moreover, information and communications flows appear to be a powerful instrument for compelling closed societies to open up. Thus, U.S. Secretary of State George Shultz, writing in 1985 before the revolutions of 1989 proved the point in Eastern Europe, believed that:

The free flow of information is inherently compatible with our political system and values. The communist states, in contrast, fear this information revolution perhaps more than they fear Western military strength. . . . Totalitarian societies face a dilemma: either they try to stifle these technologies and thereby fall farther behind in the new industrial revolution, or else they permit these technologies and see their totalitarian control inevitably eroded. . . . The revolution in global communications thus forces all nations to reconsider traditional ways of thinking about national sovereignty.⁶⁴

If the Soviet regime risked adopting the new technologies, Shultz and others predicted (correctly) that its leaders would have to liberalize the Soviet economic and political systems.

Recent events in Eastern Europe, the former Soviet Union, China, and to a lesser extent Latin America have provided exciting evidence for the democratizing effects of the information revolution. So long as the aim in the West is the demise of communist and other traditional hard-line authoritarian systems, policymakers in the United States and Europe are well advised to expect that the diffusion of the new technologies will speed the collapse of closed societies and favor the spread of open ones.

However, the fact that the new technology can help sweep aside old types of closed regimes does not necessarily mean that it will also make democratic societies more democratic, or totalitarian ones impossible. The technology may have different implications for post-industrial societies than it has had for industrial and less developed societies

⁶³ Gilder, 1989, p. 346.

⁶⁴ Shultz, 1985, p. 716.

A Double-Edged Sword With a Dark Side?

A longer view of history provides little assurance that the new technology favors democracy. Centuries ago, the coinage of money and the invention of the printing press enabled liberal democracy to emerge:

With the arrival of the printing press, the dikes holding back the flow of information broke. The great increase in the circulation of knowledge stimulated the generation of additional knowledge in an explosion that echoes to this day. By democratizing access to recorded information, the printing press set in motion the spread of literacy and education, literature and the arts, science and technology, and commerce and industry that led to the industrial revolution and the creation of democratic governments serving at the will of an informed populace.⁶⁵

The printing press was a key technology enabling the Renaissance, the Protestant Reformation, the end of feudalism, the rise of modern science and capitalism, and the colonial expansion of the European empires to the New World and Asia.⁶⁶

Yet the printing press and later technologies, like the telephone and radio, did not prevent new and ever worse forms of autocracy from arising. Early on, these technologies contributed to the demise of the old monarchies and the broadening of popular participation in politics. But later, these same technologies were turned into tools of propaganda, surveillance, and subjugation that enabled dictators to seize power and develop totalitarian regimes. The fascist regimes of the 1930s and 1940s and the communist regimes of later decades are the prime examples.

In other words, we should not dismiss the possibility that the new technology may serve anti-democratic purposes in the future. This does not mean that technology is value-free, neutral, or apolitical. What technology does is widen the range of possibilities within a particular context. As Daniel Bell has pointed out,

the new revolution in communications makes possible both an intense degree of centralization of power, if the society decides to use it in that way, and large decentralization because of the multiplicity, diversity, and cheapness of the modes of communication.⁶⁷

⁶⁵ Levien, 1991, p. 210.

⁶⁶ The classic studies are Elizabeth L. Eisenstein, 1968, and the resulting book, Eisenstein, 1979. On the expansion of empires, see Innis, 1950.

⁶⁷ Bell, 1979a, p. 36.

The effects depend on the context. The new technology, like the old, may induce some cultural and political change, but it may also enable a given system to further refine the political structures that are most acceptable to its culture, which may not be democratic in the Western sense.⁶⁸

In short, the existence of democracy does not assure that the new technology will strengthen democratic tendencies and be used as a force for good rather than evil. The new technology may be a double-edged sword even in a democracy.

A classic but ignored set of studies sponsored by The Conference Board provided ample, grim warnings of this possibility in 1972. While recognizing that the new technology might help empower the individual, the authors — notably John Crecine, Theodore Lowi, and Donald Michael — variously emphasized that the results could instead include: increased susceptibility of the individual to outside manipulation, a rise in the number and diversity of ad-hoc interest groups and social movements, increased fragmentation and fractionalization of society and politics, greater stratification and centralization of society around information resources, and greater efforts by some policymakers to control access to information and use it to manipulate the public.⁶⁹

Evidence for these concerns has appeared in the conduct of party politics in the United States. Despite initial hopes that “electronic democracy” and “teledemocracy” would increase popular participation and government responsiveness, mainstream analysts have continued to worry that the new technology may be used to undermine democratic practices. Observations to this effect were made in the early 1980s by Richard [M.] Neustadt.

A wave of new technology will transform campaigning, political organizing, news coverage, lobbying, and voting. Some of these changes may make campaigning less costly and bring decision-making closer to the people. But the greatest impact may be to fragment our politics, narrowing people’s perspectives, shifting more power into special interest groups, and weakening the glue that holds our system together.⁷⁰

⁶⁸ The revolutionary change from the Shah to the Ayatollah Khomeini in Iran is an example where too much information of a modernizing nature may have helped induce a reaction and a return to a traditional Islamic preference to exclude outside information. Yet it should also be noted that in his quest for power, Khomeini took advantage of the information revolution by using smuggled cassette tapes to spread his message among the Iranian people.

⁶⁹ Lowi, 1972; Michael, 1972; and Crecine and Brunner, 1972.

⁷⁰ Neustadt, 1982, in Forester, 1985, p. 561. [Clarification: Richard M. Neustadt should not be confused with the famous political scientist, Richard E. Neustadt.]

With the development of “narrow casting networks” tailored to small audiences, “many people may end up knowing less.” Worried that power has been shifting from the political parties to narrow interest groups for decades, Neustadt raised the now widespread concern that “the new technologies will further dilute the fragile glue of the parties and of public identification with broad ideas.”⁷¹

For other analysts, the key concern is the effect on government administration. The potential dark side is captured in studies warning about the emergence of a “computer state” (David Burnham), a “dossier society” (Kenneth Laudon), and a “surveillance society” (Gary Marx) that may limit personal liberty in the United States.⁷² These studies show that the new technology may facilitate the monitoring and surveillance of people on the job and elsewhere, the amassing and merging of enormous statistical data banks for profiling individuals and their activities, and the restriction of access to “strategic” and “secret” information. After all, the U.S. government has more data on its citizens than any totalitarian government has on its citizens.⁷³

The enactment of sound privacy and security laws should prevent abuse. But these authors suggest that there may be a natural tendency for powerful, enterprising actors to use the new technology in ways that may limit if not jeopardize individual freedom and knowledge. According to Burnham, cheap computing power makes it easy to amass “transactional information” on individuals — e.g., records of phone calls, credit payments, medical and criminal histories — in huge databases, and transmit them anywhere. Instead of empowering the individual over the institution, these databases and networks favor “the growing power of large public and private institutions in relation to the individual.” The result is likely to be the abuse of individual rights, and “a gradual drift toward authoritarianism” that is subtle because of “a lack of obvious villains” in our democratic system.⁷⁴ The problem to guard

⁷¹ Neustadt, 1982, in Forester, 1985, pp. 564, 567. Groups that he felt had most exploited the new media included the churches.

⁷² Burnham, 1983, esp. Chapter 3. Laudon, 1986. Bell, 1979a, p. 32, also warned about these points.

⁷³ Heard on television program “Smithsonian World,” KCET (Channel 28, Los Angeles), April 16, 1991.

⁷⁴ Burnham, 1983, pp. 9, 234.

against is not only the “abuse” of “personal information” by public sector agencies, but also its “use” by the private sector for marketing, investigative, and other purposes.⁷⁵

Today’s concerns revolve mainly around database capabilities. But in the future, ubiquitous computing may raise additional concerns. Mark Weiser of Xerox PARC warns of the possibility that

hundreds of computers in every room, all capable of sensing people near them and linked by high-speed networks, have the potential to make totalitarianism up to now seem like sheerest anarchy. Just as a workstation on a local-area network can be programmed to intercept messages meant for others, a single rogue tab in a room could potentially record everything that happened there.⁷⁶

More ominous visions by less moderate thinkers raise specters of “technological terrorism” (Jacques Ellul) and “friendly fascism” (Bertram Gross) being imposed with velvet gloves. Ellul’s point is subtle. In his view, the entire, optimistic, uncritical “discourse” about the new technology, and the pervasive insistence that people must become acclimated to it, represent a form of “terrorism which completes the fascination of people in the West and which places them in a situation of . . . irreversible dependence and therefore subjugation.” In his analysis, a new “aristocracy” is leading people to believe that a computerized society is inevitable, and that they have no choice but to succumb to it.

The ineluctable outcome is dictatorship and terrorism. I am not saying that the governments that choose this as the flow of history will reproduce Soviet terrorism. Not at all! But they will certainly engage in an ideological terrorism.⁷⁷

The irony for Ellul is that people are being led to think the technology will enhance their freedom, when in his view it is bound to limit their freedom.

⁷⁵ Willis Ware of RAND writes extensively about this. For example, see Ware, 1991. Recent specific issues include the demise of “MarketPlace: Household,” an initiative of the Lotus Development Corporation to sell CD-ROMs full of household information, and the start-up of “Information America,” a little-known enterprise that can cull through all kinds of on-line records about individuals and organizations.

⁷⁶ Weiser, 1991, p. 104, but he also says that “A well-implemented version of ubiquitous computing could even afford better privacy protection than exists today.”

⁷⁷ Ellul, 1990, pp. 384–385, 386–387.

Unlike the other critics represented here, Gross does not focus on information technology. But its potential uses for surveillance and control undergird many concerns he raises:

[T]he means of control over this great mass [of technology] has been developed to such a degree that centralized systems can keep tabs on incredible amounts of information over long sequences of widely dispersed and decentralized activities.⁷⁸

Gross's work reflects standard socialist concerns that big government and big business in the advanced capitalist countries collude to the detriment of society. Nonetheless, his concept of "friendly fascism" contributes to this study by suggesting that the information revolution may, in time and in some places, give rise to political systems and practices that purport to be democratic but are not.

Totalitarianism Far From Finished?

Americans regard democracy (especially our own) as the highest achievement of centuries of political evolution. Moreover, many of us also believe that evolution favors democracy as its leading edge and strongest contender. Both beliefs may well be valid.

Nonetheless, the long history of man's political progress — from tribes and city-states, through theocracies, monarchies, and empires, to the creation of modern nation-states and republics, with their modern bureaucracies and political parties — has not yet given rise to either democracy or totalitarianism as a final political outcome. Democratic, authoritarian, and totalitarian tendencies have occurred and vied for preeminence at every stage. Thus, some monarchies provided people more individual freedom and protection under the law than did others. And in recent decades the United States and the Soviet Union coexisted as the democratic and totalitarian archetypes of the modern bureaucratic state and party system.

Moreover, across the centuries of political evolution, with each passing stage, the span between democratic, autocratic, and totalitarian possibilities has grown wider. There was less difference between the milder and harsher monarchies of the middle ages than between the capitalist and communist systems of recent years.

The development of cyberocracy may fit with this historical trend. Cyberocracy, far from favoring democracy or totalitarianism, may make possible still more advanced,

⁷⁸ Gross, 1980, p. 51.

more opposite, and farther apart forms of both. In the United States and other countries where democracy has deep roots, the information revolution may render up new instruments and opportunities for ordinary citizens to exercise their freedoms, improve their ways of life, make political choices, and protect their personal interests. But elsewhere the tools of cyberocracy may give a state apparatus and its rulers powerful new means of control over their citizenry, with an official ideology determining what information is allowed.

Perhaps the leading edge of history does favor liberal democracy. Yet behind that edge, regimes that are anti-democratic, authoritarian, and totalitarian have kept cropping up, especially where a charismatic leader is able to generate public consensus in favor of tyranny. The inequality of socioeconomic conditions around the world, the vigor of many national, religious, ethnic, and other rivalries, the interest of many regimes in exploiting technology to exert their power at home and abroad, and the vulnerability of many peoples to charismatic leaders, all continue to make it likely that in more than a few places, perhaps especially in the Third World, ruling elites and their security forces will use the new information technologies for anti-democratic purposes.

The Cold War may be over, and liberalism may be carrying the day in many places. But totalitarianism may be far from finished. The advent of cyberocracy may help us realize how fruitful democracy can be in countries like the United States. Yet it may also mean that we have yet to see how thorough totalitarianism can be. Far from favoring democracy or totalitarianism, cyberocracy may facilitate more advanced forms of both. It seems as likely to foster further divergence as convergence, and divergence has been as much the historical rule as convergence.

In the past, the divergence principle was most evident between countries. In the future, another possibility is that the principle may increasingly apply within countries. The information revolution may enable hybrid systems to take form that do not fit standard distinctions between democracy and totalitarianism. In these systems, part of the populace may be empowered to act more democratically than ever, but other parts may be subjected to new techniques of surveillance and control.

COMMENT ON POLITICAL PHILOSOPHY AND SOCIAL STRUCTURE

If the information revolution proves as powerful as its key theorists and enthusiasts expect, it is bound to change the nature of the philosophical concepts to which we are accustomed. Today's political labels (capitalism, socialism, liberalism, totalitarianism, democracy, autocracy) may prove wholly inadequate.

Cyberocracy may spell the obsolescence and transformation of standard Marxist theses. Karl Marx may have been a visionary with a sense of history; but he was still a man of his time, the mid-19th century, when industrialization was just taking off. Thus he made “capital” the key factor in his vision, and Marxism made it a central theoretical concern of intellectuals worldwide as industrialization gained momentum in the late 20th century.

Yet, while claiming to abolish capital as a basis of power, the Marxist-Leninist governments of the 20th century built huge states based on the centralization and manipulation of information.⁷⁹ In short, successive Soviet regimes followed Marxist-Leninist precepts to claim that they had abolished capital accumulation as the basis of political power and social structure. But in the process, they substituted another basis that Marx did not foresee and that may represent the antithesis of his initial ideals: the accumulation and control of information.

If a Marx were to reappear in the late twentieth century, is it not doubtful that he or she would again focus on “capital”? Would the focus instead be on “information”? In the post-industrial age, information may succeed capital as a central theoretical concept for political and social philosophy. This is suggested by some of the major writings cited in this study.⁸⁰ If true, it may bring a twist to the old Marxist dialect.

According to Marxism, the capitalist accumulation of “surplus labor” and labor’s exploitation by “monopoly capital” account for a society’s structure and its ills and inclinations. That structure is composed of socioeconomic “classes” that are defined by the “relation to the means of production of capital.”

But the post-industrial age may instead raise a new concern about “surplus information” or “monopoly information” that is concentrated, guarded, and exploited for privileged economic and political purposes. Moreover, a society may become structured into new kinds of classes depending on one’s relation to the means of production of information.

⁷⁹ Not just Marxist-Leninist regimes but all totalitarian regimes, rightist and leftist, show similar patterns of information control. The examples include François “Papa Doc” Duvalier’s regime in Haiti, and Fidel Castro’s regime in Cuba. A related aspect was the attempt in the 1970s and 1980s by some Communist and Third World nations to establish through UNESCO a “new world information order.” Its protagonists proposed international standards and a licensing system for journalists that would have subordinated news agencies to government dictates. They also proposed to have UNESCO finance improvements in the communications facilities of liberation movements.

⁸⁰ See the discussion about information and capital [above], and the citations to works by Bell, Drucker, Toffler, and Wriston. Communication theorist Howard Frederick says that “If Karl Marx were alive today, he would not write *Das Kapital*, but ‘Die Information.’” Frederick, 1993, p. 208.

Marxist theorizing placed the capitalist system, its wealthy elites and corporations, in center-stage, especially for societies where the private sector was powerful, labor struggles were repressed, and the public sector was small and weak. But the information age and the growth of cyberocracy may bring bureaucratic (and post-bureaucratic) administrative systems to center-stage as the new villains, especially where the state and related public sectors may try to dominate society and become the main repository and dispenser of information shielded from public accessibility. State bureaucracies seem as likely as private corporations to hoard “surplus” information.

Thus, were a new Marx to appear today, he or she might well be disturbed by statist systems based on the monopoly control of information. The United States and other market-oriented systems bore the brunt of anti-capitalist criticism. But in the future, leftist, rightist, and other kinds of systems based on large, secretive, authoritarian bureaucracies (or cyberocracies) may be the appropriate target for information-centered criticism.

The fact that socialism and communism have been proven unfit as routes to freedom, equality, and prosperity does not let the private sector off the hook. According to some accounts, the major threats to privacy now come less from government agencies than from corporations that are compiling vast amounts of demographic, credit, and other types of personal data that may be used for marketing, investigative, public relations, and other purposes.⁸¹

NEXT STEPS? [AS SEEN IN 1992]

New research is needed about the effects of the information revolution on government and politics. What follows is a sketch of some items for future research.⁸²

Methodology for Assessing Information and Communications Infrastructures

There are well-developed methodologies for analyzing political and economic systems. Moreover, an analyst who knows a lot about a nation’s economic system probably knows something about its political system too; and vice-versa. In contrast, methodologies are lacking for analyzing information and communications infrastructures and systems, except in limited technical and managerial senses.

A methodology needs to be developed for assessing institutions, elites, governments, and international relations from a cyberological viewpoint. Such a

⁸¹ Ware, 1991.

⁸² For another agenda, see Bankes and Builder et al., 1992.

methodology could help the analyst understand better a nation's economic and political systems, and what makes them function (or not function) together. It could help identify what information and communications infrastructures may be needed to support, for example, policies to liberalize an economy or political system, improve public education, foster regional integration, and/or build networks for global cooperation. A methodology might also serve to identify vulnerabilities that a country may need to correct, or that may be exploited in an adversary.

Trends in Government Technology Absorption and Organizational Change

As noted previously, this study has not sought to ascertain the status of the adoption of the new technologies by the U.S. and other governments. How well are various U.S. offices, departments, and agencies doing at installing and using computerized systems? How are these systems, especially their networks and data bases, affecting the policymaking process, within offices and across them? What visions, challenges, and concerns are driving (or slowing) the development of the nascent cyberspace(s) in government? No reports systematically address such questions; answers must be sought piecemeal from diverse sources, and few answers are readily available.

It would be useful to clarify the trends and issues not only for the U.S. government, but also for other major governments, including in Canada, Japan, and one or two European countries. Data and analysis are so lacking in this area that it is unclear which governments may be doing better than others, why, and whether this has any effect on their relative capacities for policymaking and implementation at home and abroad.

Intragovernmental, Intergovernmental, and Transnational Relations

The governments that succeed in using the information revolution and its associated technologies to develop advanced information and communications infrastructures may leap ahead of other governments in terms of their capacity to deal with current issues, assert their presence, build cooperative networks and partnerships, and cope with competition and conflict at home and abroad. But where is it most important to succeed: Inside the government, to improve internal policymaking processes? Between governments, to build new patterns of consultation and coordination? Or should the focus be on building new infrastructures that bridge between state and society, and between different states and societies?

Some governments may do better in some respects than in others. For example, even if the U.S. government were to lag behind the Japanese at using the information revolution and its technology to improve internal policymaking processes, the United States may do better than Japan at using it to build cooperative relations with its neighbors and partners. It would be useful to clarify these points, since they may have implications for the comparative advantages of governments vis-à-vis each other.

Support for Regional Integration: North America

As the world enters a new era, success at regional integration may become essential for major powers to continue playing strong roles on the global stage. Progress with regional integration will raise the requirements for the coordination of neighbors' domestic policies and for the establishment of new institutional mechanisms that cut across traditional notions of national borders and sovereignty.

It would be useful to identify whether and how the creation of advanced information and communications infrastructures may affect the prospects for regional integration efforts in Europe, North America, and around Japan. In another study, the author has recommended that this be done for the United States, Canada, and Mexico, one objective being to create conferencing networks and databases that will facilitate elite dialogue on issues of mutual concern across all three countries.⁸³

Global Interconnection: Networks versus Nations

We are moving out of an era of global interdependence, and into an era of global interconnection. The attention-getting trend today is the rise of global markets (e.g., for goods, ideas). Yet the spread of transnational and global networks (not only communications, but also social and organizational networks) among corporations, governments, advocacy groups and other nongovernment organizations, international and multilateral agencies, transnational elites, etc., may have equally profound effects on the nature of the new order.

As these organizational networks are built, cutting across public and private sectors and national borders and interests, influential new sub- and supra-national actors may increasingly compete for influence with national actors. As political and economic interests grow in protecting and expanding the networks, the networks themselves may increasingly take precedence over nation-states as the driving factor in

⁸³ See [Ronfeldt's] proposal, "CONAMI: A Council on North American Information," Appendix B in Bankes and Builder et al., 1992, pp. 31–34.

domestic and foreign affairs. The government that gains the lead in building and shaping these organizational networks may gain enormous comparative advantage to influence the direction the world goes in economically, politically, and socially.

The information revolution is a key factor behind the rise of these global (and regional) networks of organizations and elites. Research seems advisable to identify the relationships between the information revolution and the rise of organizational networks, for this may have significant implications for the domestic and foreign policies of the United States and other countries.

New Sources and Forms of Conflict

This study has avoided conflict issues. But while the information revolution may enhance the prospects for peaceful, democratic progress and prosperity under some conditions, it may also enhance the prospects for conflict under other conditions. Moreover, the need to respond to these new forms of conflict may strengthen the trend toward cyberocracy, although not necessarily its democratic possibilities.

Research may be needed on questions like the following: How will the information revolution alter the sources and forms of conflict? What will be their “information content” (conceptually and technically)? To what extent, and in what ways, may “more and better information” help lead to their resolution? What may be the implications for strategies and tactics for responding to internal and external conflicts? Will information subversion, blockades, and assaults be feasible? Will it be possible to exploit information and communications networks to damage an adversary’s economic or political system without attacking it in a conventional sense? What may be the implications for military doctrine, organization, and strategy?⁸⁴ What should countries and governments, not to mention non-state actors, be preparing for?

POSTSCRIPT (2008): NETWORKED GOVERNANCE — THE NEXT STEP?

How have trends evolved since the notion of cyberocracy was first broached over fifteen years ago (in Ronfeldt, 1992 [1991])? Today that term seems no more attractive than back then. But the themes posited around it have deepened, as follows.

Strategists do increasingly treat “information” as a form of power; and scientists and philosophers are continuing to elevate its significance as a theoretical principle. Even so, the concept still lacks its Adam Smith or Karl Marx. (And it is distressing that

⁸⁴ See Arquilla and Ronfeldt, 1992.

some efforts to convert power or capital into “information” have gone horribly astray, notably this decade in the generation of intelligence and financial instruments that have turned out to contain so much misinformation, if not disinformation.)

Meanwhile, cyberspace has grown immensely (and that term has taken hold). As a result, people’s orientations toward social space and time have continued to shift, for globalization has rendered a sense that distance matters little and time is speeding up. Actors from all sectors, in all societies, are increasingly concerned with their own and others’ abilities to collaborate across once-prohibitive boundaries. Who may connect to whom, and who has what rights to which information and communications sources, have become key policy concerns.

Network forms of organization are spreading far and wide. In some areas they are modifying hierarchical forms, in other areas offering distinct alternatives. The business world is still ahead of the government world — and civil-society NGOs and NPOs⁸⁵ are ahead of both — in adopting these flat, decentralized, distributed designs.

In many areas — notably, human rights, the environment, and disaster relief — transnational networks of civil-society actors are increasingly able to influence states and their policies. Influence in the information age is indeed proving to revolve around symbolic politics and media savvy — the “soft power” aspects of influence. Conflicts are increasingly about nations versus networks.

Furthermore, the information revolution continues to enable both democratic and totalitarian tendencies. New democratic revolutions have occurred in various nations. And the leading liberal democracies promise to become more so, through the growth of computerized voting, online organizing and campaigning, *e-government* (electronic government), *wikis*, *blogs*, and other new online mechanisms for enhancing democratic participation.⁸⁶ But at the same time, the new technologies are enabling vast expansions in surveillance and monitoring — not only of telecommunications, but also of physical activities — that raise new questions about what matters more: safety and security, or freedom and privacy. The information age is indeed leading to new hybrid amalgams of democratic and authoritarian tendencies, often in the same country.

Many of the foregoing dynamics are evident in the United States. In addition, bureaucratic patterns that were evident by 1992 — such as the White House using new

⁸⁵ The acronyms stand for nongovernmental organizations (NGOs) and nonprofit organizations (NPOs).

⁸⁶ One good resource is the Digital Government Society of North America (DGSNA) at <http://www.dgsociety.org/>. Its library page provides links to related centers, journals, and websites.

information and communications systems to dominate other parts of the Executive Branch, and the Executive Branch using them to dominate Congress, with offices in all branches lagging at improving their coordination — are even more noticeable now.

Thus, much of what seemed speculative 15–20 years ago is being borne out, both the positives and the negatives. Lest we claim that this makes the original cyberocracy paper look prescient, the real credit goes to the forward-looking social thinkers of the early decades of the information revolution — see the references to Daniel Bell, Peter Drucker, Elizabeth Eisenstein, Jacques Ellul, Theodore Lowi, Ithiel de Sola Pool, Alvin Toffler, and Willis Ware, among others — who wondered and warned so accurately about both the bright and dark implications of the digital information revolution.

Today, governments are still straining to adapt. Bureaucracy remains the rule, cyberocracy a speculation. Yet, indications abound that the nature of government is headed for transformations, such as when officials are seen conferencing from multiple locations via computers, accessing Internet and other digital media far beyond their offices, traveling with the latest laptops and cellular devices, and meeting with other networked actors to organize new kinds of inter-agency, cross-sectoral, and public-private endeavors — in short, seeking to communicate and collaborate in ways that surpass standard notions of government. Other intimations of transformation appear in the spread of networked surveillance systems for all sorts of purposes.

Against this background, this Postscript extends the ideas in the original paper by engaging in four new speculations about future trends. These speculations should be added to the original six “next steps” for research listed earlier.

- The advanced societies are developing new *sensory apparatuses* that people have barely begun to understand and use.
- A network-based *social sector* is emerging, distinct from the traditional public and private sectors. Consisting largely of NGOs and NPOs, its rise is leading to a rebalancing of state, market, and civil-society forces.
- New modes of multiorganizational collaboration are taking shape, and progress toward *networked governance* is occurring.
- This may lead to the emergence of the *nexus-state* as a successor to the nation-state.

Development of New Sensory Apparatuses Throughout Societies

Taking advantage of the information revolution, people and organizations in the advanced societies are building vast new sensory apparatuses for watching what is happening in their own societies and around the world.⁸⁷ Of all the uses to which the new technologies are being put, this may become one of the most important for the future of the state and its relationship to society.

These sensory apparatuses are not entirely new. Government agencies, public utilities, science centers, corporate market-research offices, news media, and opinion-polling firms have long amassed data and tracked trends in selected areas of interest. What *is* new is the burgeoning scope and scale of these apparatuses: the deployment of new kinds of sensors by all kinds of actors; the increasing roles of NGOs and NPOs in this activity; and the internetting and sharing of information that is becoming possible across agency, sectoral, and national boundaries, both publicly and privately.

Many of the new apparatuses reflect the perception of perils. Crime and terrorism are impelling new installations for watching cityscapes, monitoring communications, and mapping potential hotspots. But sensor networks are also being deployed for early warning and rapid response regarding many other concerns — disease outbreaks, forest protection, bird migration, and urban electricity spikes, to name a few. In addition, environmental, human-rights, and other social activists continue to develop new media — notably, IndyMedia — to keep watch and speed mobilization in case of a challenge or abuse somewhere, say against the Zapatista movement in Mexico.⁸⁸ In a sense, the partisan blogospheres amount to a gigantic, reactive sensory apparatus in the American body politic.

Many technologies are involved. Indeed, the diversity of devices being deployed is impressive — such as cameras on satellites in earth orbit, moisture sensors embedded in trees in fire-risk zones, postings broadcast on public Web pages, and silent alarms for remote private monitors. Networked computers, closed-circuit television (CCTV) cameras, and radio-frequency identification (RFID) tags play prominent roles today.⁸⁹ But looming advances in nanotechnology, robotics, biometrics, and alternative energy sources will enhance the trend.⁹⁰ Cell phones, smart cards, and other hand-held and

⁸⁷ This theme is from Ronfeldt (1996). More to the point, see Kelly (1994), Saffo (1997), Brin (1998), Florini (2005), and Hawken (2007).

⁸⁸ Thanks to Harry Cleaver for pointing this out.

⁸⁹ On RFID tags, see Gilbert (2006).

⁹⁰ For a RAND analysis, see Silberglitt et al. (2006).

embedded devices may become the key bearers of this new technology at the individual level.

Thus, technologists are fusing the decades-old goal of “ubiquitous computing” with the newer goal of “pervasive sensing.” Before long, what are called “anticipatory technologies” may become so widespread and effective that many surroundings are embedded with “ambient intelligence”⁹¹ — leading to so-called “smart buildings,” “sensible organizations,” and “sentient cities” set to autonomically monitor for everything from leaky pipes to lost children.⁹² Then, the sensor era will turn into a sensor/effector era, where devices not only detect but also can manipulate matters.⁹³ Meanwhile, citizens’ concerns about top-down surveillance may be countered by bottom-up “sousveillance” (or inverse surveillance), particularly if individuals wear personal devices for detecting and recording what is occurring in their vicinity.⁹⁴

This is not to say that societies will increasingly resemble “organisms” that have a central nervous system and brain. That’s going too far.⁹⁵ But something is taking shape for which *sensory apparatus* seems an appropriate term.⁹⁶ A term like *surveillance system* is too limited (and biased). Far more than surveillance is occurring, and the diverse arrays comprising this apparatus are far from forming an integrated system. Bits and pieces have existed for decades — they are normal for complex modern societies — and more pieces are being emplaced. Yet most are scattered and task-specific. They exist to do people’s bidding — such as responding to a change in environmental conditions, or to a signal from a nearby actuator, transponder or microprocessor. Some pieces are networked, but not all. And no central master hub exists (and presumably never will).

The scope and scale of this apparatus are growing far beyond what government, business, and civil-society actors have ever had at their disposal or had to cope with. They will all be challenged to figure out proper designs for the kinds of sensory organizations and technologies they prefer — and proper ways to regulate them. Their growth has already sharpened issues about privacy and security, but it may also open

⁹¹ Overviews include Abowd and Mynatt (2000), and Bohn et al. (2005).

⁹² On sensible organizations, visit the MIT Media Lab’s Responsive Environments Group at <http://www.media.mit.edu/resenv/>. On sentient cities, see Crang and Graham (2007).

⁹³ Paraphrased from Saffo (1997).

⁹⁴ On sousveillance, see Mann, Noland, and Wellman (2003).

⁹⁵ To reach almost that far, listen to Kevin Kelly, “Predicting the next 5,000 days of the web,” at http://www.ted.com/index.php/talks/kevin_kelly_on_the_next_5_000_days_of_the_web.html, filmed December 2007, posted July 2008

⁹⁶ A term technologists may prefer is “networked sensing systems.” For additional information, visit the UCLA Center for Embedded Network Sensing at <http://research.cens.ucla.edu/>.

new pathways for fostering transparency and accountability.⁹⁷ How information is assembled and accessed, how issues and options are illuminated, how public and private forces are mobilized, and how oversight is achieved will all be affected.

It has become standard fare to speculate that such apparatuses mainly benefit government and corporate actors, for good and ill. Less noticed, but we think equally likely and significant, is that the apparatuses will aid the rise of civil-society actors, by providing networked NGOs and NPOs with new tools not only for checking on the behavior of government and corporate actors, but also for participating in collaborative governance schemes with them. New mechanisms for attracting and combining diverse viewpoints under the rubric of “collective intelligence” could help foster this.⁹⁸ So could the continued advance of principles favoring freedom of information, the right to communicate, and open access.

Emergence of a “Social Sector” Alongside the Standard Public and Private Sectors

Throughout the modern era, government bureaucrats and technocrats faced an organizational landscape that featured a public and a private sector. The first consisted mainly of government agencies and public utilities, the second of business enterprises. Good governance mostly meant finding the right mix of public and private measures to enable government and business, plus an occasional nonprofit civil-society actor, to work hand in hand.

Today, this organizational landscape is in deep flux; a new sector is emerging.⁹⁹ State and market actors still predominate. But civil-society actors — NGOs and NPOs — are on the rise. Their numbers are mounting. The issues they care about — such as the environment, human rights, privacy, peace, health, poverty, consumer protection, disaster relief — are intensifying. The roles they play — as watchdogs, advocates, and service providers — are expanding, as are their abilities to affect the agendas of state and market actors. Civil-society actors also have a longer reach than ever; instead of standing alone, the usual case in the past, many now operate in sprawling collaborative networks that represent the rise of “global civil society” (Lipschutz, 1992).

⁹⁷ Lessig (2006) provides a good read on these matters.

⁹⁸ See Malone and Klein (2007), and visit the MIT Center for Collective Intelligence at <http://cci.mit.edu/index.html>. Also visit Sense Networks at <http://www.sensenetworks.com/>; Mobile Active at <http://mobileactive.org/>; and Pachube at <http://www.pachube.com/>.

⁹⁹ This theme is from Ronfeldt (1993, 1996, 2005).

No one is sure what to call this emerging sector, and no name has stuck yet. It is not fully in the public or private sectors, traditionally defined; and it represents only a portion of civil society. Peter Drucker (1993) originally proposed *social sector*.¹⁰⁰ Lester Salamon (1994), Jeremy Rifkin (1995), and Ann Florini (2000) prefer *third sector*. William Drayton uses *citizen sector* (Bornstein, 2004). Paul Light adds *social benefit sector* (Light, 2008a). Other viable terms include *public-interest sector* and *civic sector* (but the oft-used *nonprofit sector* and *voluntary sector* are too narrow). Drayton and Light, not to mention others, emphasize that the actors defining the sector are *social entrepreneurs* organized in networks. Paul Hawken (2007) deems much of it a global humanitarian movement that has no name and does not yet know it is a movement (much less a sector).¹⁰¹

While this sector began emerging decades ago, a huge growth occurred in the 1990s. What became known in governance circles as devolution led to new enthusiasm for NPOs as service providers. But what enthused many activists even more was the increasing effectiveness of NGOs at fielding transnational social movements to protest against government and corporate policies, as in the so-called “Battle of Seattle” during the WTO Ministerial Conference in 1999.¹⁰² In reaction, questions and criticisms grew regarding the legitimacy, accountability, transparency, and representativeness of many NGOs and their activities.¹⁰³ Moreover, governments and corporations began learning to counter the trend — in some countries, by fixing regulations for NGOs, or by creating proxy or front NGOs (termed GONGOs, if government-organized).¹⁰⁴

Partly as a result of such criticisms and countermeasures, the growth trend seems to have leveled off lately. Some proponents now voice doubts that the rise of NGOs and NPOs will favor democracy and equity as much as they once hoped. And some organizing efforts have proceeded more cautiously, on the defensive, as a result of the

¹⁰⁰ According to Drucker (1993), the classic nation-state turned into the unwieldy “Megastate” of the twentieth century by taking on excessive social, economic and military duties. He foresaw (p. 171) that: “[T]he post-capitalist polity needs a ‘third sector,’ in addition to the two generally recognized ones, the ‘private sector’ of business and the ‘public sector’ of government. It needs an autonomous *social sector*.”

¹⁰¹ For further discussion, also see Steinberg and Powell (2006), and visit the International Society for Third-Sector Research at <http://www.istr.org/>. A related notion is the *commons sector*, as articulated by David Bollier (2008).

¹⁰² In addition to now-standard sources, such as Wapner (1995), Keck and Sikkink (1998), Florini (2000), and Rheingold (2002), see writings about *netwar* and other aspects of the dark side of networking by Arquilla and Ronfeldt (e.g., 1992, 1997, 2001). Recent sources, read for this postscript, include Bollier (2004), Florini (2005), Tarrow (2005), and Hawken (2007).

¹⁰³ Among other sources, see Anderson (2005).

¹⁰⁴ An op-ed by Moises Naim (2007) provides an excellent critique of GONGOs.

demands for greater transparency, accountability, and representativeness. But even so, the sector's growth continues apace.

Optimism remains especially widespread in the liberal democracies where social activists believe that a new sector is emerging and will eventually bring radical change. In some enthusiastic accounts, civil-society NGOs could serve collectively as a "second superpower" to counter American power (Moore, 2003); and they even merit their own representative body in or alongside the United Nations (Attali, 2005).¹⁰⁵ But in other accounts, this new sector's potential as a counterweight to established political and economic actors is less important than its potential as a complement and collaborator, along with other actors, in new modes of governance.¹⁰⁶

And that's what is significant for this paper: The rise of this sector — and it is likely to keep rising and consolidating all this century — will transform the nature of governance as the information age progresses. Future cybercrats will operate in terms of three major sectors, not two. And whereas the public sector has revolved around the nature of hierarchies, and the private sector around markets, the emerging social sector (to favor Drucker's term) will rest on the nature of multiorganizational networks.

Indeed, the key factor behind the emergence of this sector is the rise of network forms of organization and related doctrines, strategies, and technologies. These enable myriad dispersed, often small actors to communicate, coordinate, and act conjointly as never before, without a central command, while preserving their autonomy. Network forms have existed for ages — they are as old as hierarchies and markets — but they are only now coming into their own as a major societal organizing principle. To function well on a large scale, multiorganizational networks require complex information and communications systems — even more than do hierarchies and markets — and those systems are finally afforded by the Internet and other new digital technologies.

The continued rise of networks as a distinct mode of organization, plus the new strength this is imparting to NGOs and NPOs, is one of the most important trends affecting the prospects for cyberocracy since the original paper was written.¹⁰⁷ Civil

¹⁰⁵ Alvin Toffler was ahead of his time in proposing similar ideas decades earlier.

¹⁰⁶ As Monroe Price observes (in Bollier, 2004, p.29), NGOs are assuming new roles "as *partners of governments*, supporting and implementing their policies in one way or another, and as *sovereign players in the market for loyalty*, independent of governments." Also, visit <http://www.extremedemocracy.com/> and peruse papers posted there.

¹⁰⁷ Recognition of this trend has grown steadily. Our thinking stems from Ronfeldt (1993, 1996) and runs through Varda (2007). Sources on the rise of networks as a form of organization, different from hierarchies and markets, include Powell (1990), Powell and Smith-Doerr (1994), Thompson et al. (1991),

society appears to be the key realm for the network form, the realm being strengthened more than any other — which is why the new sector is emerging from it. Innovative NGO/NPO networks promise to reshape the realm of civil society and rebalance its relations with state and market actors, at local through global levels. Classic definitions of civil society have often encompassed some state- and market-related actors, such as political parties, private businesses, and labor unions. As the network form spreads, the separation of “civil society” from “state” and “market” appears to be growing.

The social-sector networks that are emerging appear to be particularly suited to addressing social equity, care, custody, and justice issues that state and market actors have long tended to downplay or been unsuited to resolving well. This new sector also seems likely to press for something else that traditional state and market actors have resisted: a world order where “information about policy increasingly becomes a global public good” (Mayer-Schönberger and Lazer, 2007, p. 7).

Progress Toward “Networked Governance” and “Government by Network”

Where will all this lead? Perhaps eventually to cyberocracy. But *cyber-* is now passé as a prefix. Recent analyses about the future of government and governance have turned to terms that use *information* and *network* instead — in keeping with views that information is the key factor and networks the key form for heading into the future.

Thus *networked governance* and *government by network* are now preferred terms. But a lot of related terms are also in play, including *network governance* (Jones, Hesterly, and Borgatti, 1997; Dedeurwaerdere, 2005, 2007), *collaborative governance* (Donahue, 2004), and *multilevel governance* (in Europe). What’s emerging is the *networked polity* (Ansell, 2000), *networked government* (Goldsmith and Eggers, 2004), *network government* (Atkinson, 2003; Kamarck, 2007), the *network state* (Castells, 1998, 2008), the *informational state* (Braman, 2007), *information government* (Mayer-Schönberger and Lazer, 2007), or, to use other terms, the *virtual state* (Fountain, 2006), *high-performance government* (Klitgaard and Light, 2005), or the *next government* (Kettl, 2005). Also being created are new kinds of *government networks* (Slaughter, 2004; Slaughter and Zaring, 2006), *public management networks* for *collaborarchy* (Agranoff, 2007), and *multisectoral networks* (Benner, Reinicke,

Lipnack and Stamps (1994), Castells (1996), Podolny and Page (1998), and Borgatti and Foster (2003). See other footnotes here for studies about network forms enabling civil-society actors, sometimes creating a networks-versus-hierarchies dynamic vis-à-vis state actors. For an excellent early statement on economic organization, see Richardson (1972).

and Witte, 2004). In the evolving lexicon, the new designs are often advised to emulate *panarchy* or *heterarchy*.¹⁰⁸

Back in 1992, the literature on such matters was sparse.¹⁰⁹ Today it is budding profusely.¹¹⁰ But it is still rooted in a theme that arose decades ago: Policy problems have become so complex and intractable, crossing so many jurisdictions and involving so many actors, that governments should evolve beyond the traditional bureaucratic model of the state. A less hierarchical, more decentralized, pro-partnership model is needed, one that relies more on outsourced market measures and collaborative network designs. Metaphorically, this means a state that is less about (vertical) stovepipes and silos, and more about (horizontal) webs, bridges, and pools — a state where issues are deliberated less in channels and more on platforms. Thus, as the 1992 paper speculated, government institutions and agencies must become “networked organizations” despite their hierarchies, and they should also participate in “organizational networks” lacking true hierarchies that involve outside business and civil-society actors.

To this end, networked governance is emerging in several arenas. It is a goal of regional integrationists in the European Union, where “joined-up government” and “multilevel governance” have become abiding themes. In North America — the United States, Canada, and to a degree, Mexico — the emphasis is less on regional integration and mainly on constructing collaborative networks that span the public, private, and nonprofit (social) sectors in selected issue areas, mostly within but also between these nations.¹¹¹ In addition, networked governance is not just a matter for governments. It is progressing, albeit hesitantly, in the efforts of some corporations and civil-society NGOs to collaborate on matters of mutual concern, partly as a reflection of rising ideals about corporations having social responsibilities (e.g., see Schwab, 2008).

So far, the civil policy issues that seem most amenable to networked governance include healthcare, integrated social services (not only health but also education and

¹⁰⁸ Panarchy.com at <http://www.panarchy.com/> and the P2P Foundation at <http://blog.p2pfoundation.net/> extol and track *panarchy*. Triarchy.com at <http://www.triarchypress.co.uk/pages/triarchy.htm> prefers *heterarchy*. Another term long-favored by some scholars is *polyarchy*.

¹⁰⁹ Footnote 57 and related text above were on the right track, but it took another year for Ronfeldt (1993) to find that the early literature includes Boulding (1988), Chisholm (1989), Gerlach and Hine (1970), Hecl (1978), La Porte (1975), Powell (1990), and Rosenau (1990).

¹¹⁰ In addition to seeing studies cited here, visit the Harvard Program on Networked Governance at <http://www.hks.harvard.edu/netgov/>, the Oxford Internet Institute at <http://www.oii.ox.ac.uk/>, and the Global Public Policy Institute at <http://www.gppi.net>.

¹¹¹ See Varda and Arney (2008).

welfare), environmental and consumer protection, and disaster response — all areas of keen concern to social-sector organizations. National-security and law-enforcement matters, especially for counterterrorism and crisis management, are also prompting innovative efforts at networked governance.¹¹² Examples include inter-agency “fusion centers” operating across all levels of the U.S. government for coordinating intelligence and mobilizing a response in the event of an incident.¹¹³ The Internet is also inspiring new network designs for conducting diplomacy around the world (Grant, 2004).

And yet, despite all this activity, exactly what is networked governance remains rather unclear, even among experts. Theorizing is advancing, and case studies are accumulating — just look at the writings cited here. But the trend is in its early phases; there is still much to be worked out, for both theory and practice.

A lot depends on how “network” is defined. It has become a hot concept across all the sciences since the 1990s, and two rival views are in play. They are not entirely contradictory or incompatible, but they do differ, and the differences matter for how broadly, or narrowly, one then turns to foster networked governance.

In the broader of the two views, strong contingents in both the social and physical sciences — notably in the fields of social network analysis and network science¹¹⁴ — claim that a network exists wherever there are nodes that have links or ties. This view minimizes the requirements for calling a relationship a network. It means that virtually all forms of organization and interaction are amenable to network analysis, and are in fact networks. Networks are thus viewed as the master design. Specific organizational forms such as hierarchies and markets are treated as discrete kinds of networks.

The other view is narrower. Held by many sociologists and economists, it does not consider every relationship a network. It still analyzes networks in terms of nodes and links; but it adds other criteria to view networks as a specific form of organization that is distinct from other forms, such as hierarchies and markets. These additional criteria typically mean that a network is a design for enabling a variety of dispersed

¹¹² Arquilla (2008) illuminates the challenges in this area.

¹¹³ The best example is the El Paso Intelligence Center (EPIC), as described at <http://www.usdoj.gov/dea/programs/epic.htm>. Also see the Department of Justice’s guidelines for fusion centers at http://www.it.ojp.gov/topic.jsp?topic_id=209.

¹¹⁴ For basic references on social network analysis, see Nohria and Eccles (1992), Wasserman and Faust (1994), and Monge and Contractor (2003). Also visit the International Network for Social Network Analysis (INSNA) at <http://www.insna.org>. On network science, see National Research Council (2005), and Newman, Barabási, and Watts (2006). Also see web postings on behalf of the International Workshop and Conference on Network Science, specifically the NetSci conferences, 2006-2008.

actors to coordinate and conduct a shared mission as peers, without having a central command-and-control hierarchy, while engaging in a deeper pooling of information than supply-and-demand market relationships motivate.

For decades, theorists viewed hierarchies and markets as the two cardinal forms of organization. Networks were added to this typology in the 1990s, partly because they were becoming more practical than ever, thanks to the information revolution (as discussed above). Today, debates are still underway regarding the attributes of each of the three forms, their respective advantages and disadvantages, whether networks are a fully separate or more an in-between design compared to hierarchies and markets, and how hybrids of two or even all three forms is sometimes the reality. In any case, this view places networks on a par with hierarchies and markets.¹¹⁵

The field of networked governance is rife with both the broad and narrow views of networks, and it is sometimes not clear which of the two is being upheld. In some writings, networked governance appears to be an all-encompassing approach that subsumes all else, say to advocate shifting from traditional bureaucratic to new network models of government. But in other writings, especially where networked governance is known as “government by network,” it is only one of several alternative approaches to policy, the others usually corresponding to “government by hierarchy” and “government by market.” Thus, the field of network governance reflects over a decade of efforts to clarify exactly what networks are and how they differ from (or arch over) hierarchies and markets. But the two views of networks remain conceptually variant, and it will be a while before their overlaps and contradictions are sorted out.¹¹⁶

Both views will surely continue to develop apace, and new efforts are being made to reconcile them (see Hafner-Burton, Kahler, and Montgomery, 2008). The fields of network science and social network analysis have much to offer methodologically, even though we are wary of their expansive tendency to subsume all forms of organization under a minimal criterion of networks.¹¹⁷ As policy analysts who wonder about the

¹¹⁵ See footnotes 106 and 108 above.

¹¹⁶ In addition to other studies cited here, these remarks are also based on checking Börzel (1998); Considine and Lewis (2003); Adam and Kriesi (2006); Ansell (2008); and Hafner-Burton, Kahler, and Montgomery (2008).

¹¹⁷ This brief postscript is not the place for an extended discussion. But let us note this: It's one thing to claim that all patterns of organization and interaction can be subjected to the tools of network analysis. It's quite another to claim that all are networks — that networks are the master form. It's as though economists, because their tools can be used to analyze all sorts of interactions, were to claim that all forms of interaction are markets. Such claims, pushed hard, amount to conceptual imperialism.

future of governance, we are more interested in the view of hierarchies, markets, and especially networks as alternative forms of organization (and Ronfeldt would add tribes to the typology, as mentioned later). Sometimes we think it might help if the kinds of networks we see operating in the social sector and in “government by network” were called by a different name, but the current list of cognates — e.g., rhizome, peer-to-peer, lattice, web, mesh, grid, matrix — does not offer anything preferable for that.

Meanwhile, some researchers have just moved beyond this high-level conceptual preoccupation. They are intent on drilling a level deeper to identify exactly what kinds of multiorganizational networks are in fact being implemented by government agencies and their partners, particularly for the delivery of services by nonprofits. How is such a network laid out? What are the best ways to pool information? Where are oversight, responsibility, and accountability located? Does it matter whether the government acts more like an orchestrator, a broker, a monitor, or what? Does self-regulation work? What new laws and regulations might help public agencies increase their capacity to partner with NGOs and NPOs? What are the best ways to practice connectivity, so that “tied in” does not turn into “tied up” or “tied down”? These are some of the questions being asked. And beyond them lie still more questions as to what are good measures and explanations for understanding network effectiveness and network failure.¹¹⁸

All this is significant because networked governance, however defined, looks to be the next step in the evolution of cyberocracy. As networked governance goes, so go the prospects for cyberocracy. This may take decades to unfold, for it is not just a matter of reinventing government, reforming bureaucracy, and wiring the state with new computers — the hierarchy-altering notions of the 1990s. It is mainly a matter of getting a potent new form of organization right. And getting information-age networks right is as difficult and complex a job as getting hierarchies or markets right — it’s a job for generations.

Networked governance depends on government and nongovernmental actors collaborating better. Learning to work with and through NGOs and NPOs to create new governance schemes for addressing social problems is the cutting edge of policy and strategy. And multiorganizational networks — not hierarchies or markets — offer

¹¹⁸ Scholarly studies that assess different types of mixed public-private networks include Goldsmith and Eggers (2004); Agranoff (2007); and Provan and Kenis (2008). Also see Slaughter (2004) and Kamarck (2007). Studies of network effectiveness include Milward and Provan (2000), and Provan and Milward (2001). Also see Hagel and Brown (2006). On network failure, see Meyer and Baltes (2004); Varda (2007); and Hafner-Burton, Kahler, and Montgomery (2008). Look for future publications by Peter Monge and associates on network carrying-capacity.

civil-society actors the most appealing mode for partnering with government actors. Traditional bureaucrats and technocrats focused on what was in their offices. Future cybercrats will focus more on what arrays they are plugged into elsewhere.

Emergence of the Nexus-State: The Network Is the Solution

In the decades ahead, the evolution of network forms of organization and related doctrines, strategies, and technologies will attract government policymakers, business leaders, and civil-society actors to create myriad new mechanisms for communication, coordination, and collaboration spanning all levels of governance. Aging contentions that “the government” or “the market” is the solution to particular public-policy issues will give way to inspired new ideas that, in some areas, “the network” is the solution.

This is starting to happen, but the trend remains nascent. Policymakers and other government officials in the advanced societies still frame policy choices mainly in terms of the two standard sectors — the public and private sectors, however redefined. And efforts to shift burdens from the public to the private sector, especially for the provision of services, have led to a set of pro-market repertoires — e.g., outsourcing, deregulation, privatization, subcontracting, public-private partnerships, third-party management — that are presently in full sway. Moreover, the market system has spread so enormously around the world lately, both strengthening and circumscribing what states can do, that “the market” seems more of an answer than ever before. Notions have even arisen that a “market-state” is superseding the nation-state (from Bobbitt, 2002; Treverton, 2005).¹¹⁹

However, the market form has been spreading and maturing for centuries. As discussed above, the form that is newly on the rise, still far from maturity, is the interorganizational network. As it gains strength and networked governance schemes spread across agency, sectoral, national and other boundaries, what we foresee emerging is the *nexus-state*. That is what will supersede the nation-state, not to mention the market-state.

The nexus-state will be more complex than the postbureaucratic networked state that many analysts have envisioned these past two decades. Above all, it will continue to exercise what we’ll call “government by hierarchy.” States, not to mention societies as a whole, cannot endure without hierarchies. Familial tribes and clans were the first

¹¹⁹ While we use Bobbitt’s (2002) term here, Rosecrance (1986, 1999) provides a more seminal analysis using the terms *trading state* and *virtual state*. For a futuristic analysis in which markets overwhelm states, see Attali (2007).

major form of organization to arise centuries ago; hierarchical institutions were second — and the state remains the home realm of this form. Information-age government may well undergo “reinventing” and be made flatter, more networked, decentralized, etc. — but it will still have hierarchy at its core.¹²⁰

At the same time, the nexus-state will have equally strong capacities for engaging in government by market and by network.¹²¹ By “government by market” we mean what other analysts have meant: recourse to the market-oriented measures mentioned above. Yet, development of this mode of governance is pretty far along and pretty well understood. It is an important aspect of the nexus-state, but not the transforming mode.

What will make the nexus-state so transformative is the rise of “government by network.” But as discussed above, our notion of it differs somewhat from others. Yes, as many analysts reiterate, it involves linking actors from anywhere into web-like collaborations. But that notion alone is so broad it can encompass matters that are better viewed as variants of government by hierarchy or by market, or as hybrids.¹²² In our view, the essence of “government by network” is — and increasingly will be — recourse to the NGOs and NPOs comprising the network-oriented social sector discussed earlier, in ways that are distinct from government by hierarchy or by market. Outsourcing to private businesses pertains mainly to “government by market,” though some analysts presently categorize it as “government by network.”

Finally, if not first of all, the nexus-state will rest partly on the most ancient mode of governance: “government by tribe” (and clan). All states do this to some extent, for example by favoring some aristocratic families over others in past eras, by drawing on figures from “the establishment” in modern eras, and in all eras by benefiting business

¹²⁰ As Agranoff (2007, p. 220) notes, “Management by network and network management have . . . become equally important endeavors, but under current conditions the network will neither replace the bureaucratic organization nor is it likely to displace its long-run power.”

¹²¹ Our formulation resembles Kamarck’s (2007) three ways to improve governance: reinvented public-sector organizations, government by network, and government by market. We are pleased with the parallels. But our formulation is from Ronfeldt’s (e.g., 1996, 2006) work on tribes, hierarchical institutions, markets, and networks as the major forms of organization that lie behind social evolution. Also, we have a somewhat different view from Kamarck, not to mention others, about what pertains to government by market and by network.

¹²² For example, one or two writers view the 1950’s “military-industrial complex” as an early example of government by network. But it looks to us more like a hybrid of government by hierarchy and by market. Also, at least one writer views the extensive U.S. subcontracting to private military companies in Iraq as an example of government by network. Again, this looks to us more like government by market.

cronies and ideological partisans.¹²³ The nexus-state will not — indeed, cannot — be immune to government by tribe; it is too normal and useful to discard. But what will distinguish the nexus-state is the formation of a new generation of professional cadres — a kind of memetic tribe with its own convictions and *esprit de corps* — of forward-, outward-looking cybercrats who believe in advancing government by network, even more than by hierarchy and market. And they will appear in all sectors, replacing older generations of administrators, managers, bureaucrats, and technocrats.

In other words, the world may well be entering “the age of the network” when many a “network society” will have “network state” and a “networked polity,” to use well-known terms from Lipnack and Stamps (1994), Castells (1996), and Ansell (2000) respectively.¹²⁴ But it will not be solely a world of networks; and the next evolution of the state will not be all networks all the time. The tribal, hierarchical, and market forms will remain essential too; societies and their states will still depend on people’s abilities to use all four forms of organization.¹²⁵

That’s why *nexus* is a preferable term. A nexus is a juncture, an intersection, a site of linkage and convergence. It is a meeting-place for communication and coordination. It may be a clearinghouse for initiatives that take place elsewhere, but it may also be a center where initiatives are taken. The term normally means a network is present, not a hierarchy or a market — but a nexus can also involve hierarchies and markets (not to mention tribes). This definitional range assures the term’s appropriateness here.

The nexus-state, then, will be centered around what states are always centered around: a set of hierarchical institutions. Yet it will have all four modes of governance at its disposal, and it will be deeply embedded in society — more so than older types of the state. Moreover, that society will be characterized as much by the information-age network as by the other, older forms — it will have a networked sensory apparatus and a network-based social sector. Thus the nexus-state will be more robust and resilient than previous types of the state, but it will also be more circumscribed and interwoven with society. It will have more instruments for wielding control, but its strength will also stem from its capacity for decontrol to other actors. It will have to be effective at

¹²³ For background on the tribal form, see Ronfeldt (2006).

¹²⁴ Rosenau (2005) provides an interesting counterpoint that the future belongs to the “networked individual” — not to empires and states.

¹²⁵ For a European view that would integrate hierarchical, market, and network forms under a concept of *metagovernance* or *multi-governance*, involving a capacity to mix and switch forms as a situation changes, see Jessop (2002) and Meuleman (2008).

both orchestrating and delegating — at both knowing more and doing less by itself, in part because it attracts reliable private-enterprise and civil-society partners who know even more. In a sense, to use metaphors currently in play, the cybercratic nexus-state may thus be both “thicker” and “hollower” than the modern nation-state has been.¹²⁶ Furthermore, the nexus-state may well be more democratic, but some instances may also turn out to be more authoritarian than ever — all in innovative ways that we just don’t foresee yet. Indeed, the idea of “consultative dictatorship” enabled by advanced information technology continues to have stronger allure than liberal democracy in parts of the world.

These points may sound contradictory, but the history of social evolution bears them out.¹²⁷ The rise of the market system had those effects on the state, beginning a few centuries ago. As the state relinquished the control of commercial activities to private companies, both the nation and the state became stronger. Likewise, as the social sector expands and activities are transferred to it, the state should again emerge with a new kind of strength, even though it loses some scope in some areas.

Over the long run, growth of the sensory apparatus and the social sector will be essential for the development of government by network and the nexus-state. Societies that cannot make space for network designs — that restrain the formation of a social sector and a nexus-state — will stall on the ladder of social evolution. At present, North America, Western Europe, and Scandinavia, along with Australia and New Zealand, have the advanced democratic societies most likely to lead the way in reorganizing to accomplish the shift.¹²⁸ It is unlikely that societies elsewhere will do so, for they remain even more mired in aging games of tribes, hierarchies, and markets that restrict or distort the advance of information-age network designs.

¹²⁶ Milward and Provan (1993, 2000) propose that, by contracting out to networked nonprofits, government may be made so lean it becomes a “hollow state.” We like their analysis, but not the metaphor. Far from being “hollow,” the nexus-state will be quite full, more capacious and resilient than previous states. Another problem with the term is that national-security experts use it to denote a failed state that has been penetrated, weakened, or robbed by insurgent, terrorist, or criminal groups or corrupt incumbents (e.g., see Robb, 2007, and his blog: globalguerrillas.typepad.com). Meanwhile, research by Paul Light (e.g., 2004, 2008b) shows that the federal bureaucracy keeps “thickening” — a trend and a metaphor quite different from “hollowing.” For a critical analysis of government contracting trends, see Rostker (2008).

¹²⁷ Again, this theoretical view is from Ronfeldt’s work (e.g., 1996, 2006) on tribes, hierarchies, markets, and networks as the key forms of organization that lie behind social evolution.

¹²⁸ In writing about the United States, Atkinson (2003, p. 6) claims that “the party that embraces network governance first will be the party that gets the allegiance of the American people for the foreseeable future.”

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ACKNOWLEDGEMENTS

For comments on a prior version of the postscript, or for other insights, we thank: John Arquilla, Wally Baer, Ed Balkovitch, Peter de Leon, David Lazer, Peter Monge, Richard O’Neill, Stephen Ronfeldt, and an anonymous reviewer for *First Monday*.

NOTES

[placemark for endnotes, to be converted and inserted here from footnotes]

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