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Computers and the Constitution: A Helpful, Harmful or Harmless Relationship?

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Early in 1986, while discussing the lawsuit challenging the constitutionality of the Gramm-Rudman-Hollings deficit reduction law, Congressman Michael Synar, primary sponsor of the suit, said he was compelled to challenge the law because he believed Congress may not delegate its constitutional responsibility to a computer. With the enactment of general revenue sharing in 1972, and with each successive renewal of aid over the following decade, critics decried the "politics by printout" arising from district-by-district computer printouts showing aid distribution based on complex formulas. And with the enactment of the Deficit Reduction Act of 1984, scholars argue that Congress has, in effect, reversed the 1974 Privacy Act by requiring all states to participate in file merging, matching, and linking programs to verify the eligibility of beneficiaries of social welfare programs.¹ Despite such concerns, the tendency towards computerization continues unabated with federal agency budgets for information technology reaching \$15.2 billion in fiscal year 1986, and forecast to reach \$23.8 billion by 1988.²

Computers have taken on a highly visible role as tools of government and as symbols in the ongoing debate about how government ought to function. Far to one side in this debate, computers form part of a demonic vision; an Orwellian nightmare in which autocrats eliminate democratic government and individual freedom through computerized surveillance. This view has been prominent over the years, beginning in 1964 with Vance Packard's popular book, *The Naked Society*, and it remains a strong theme in both popular literature and scholarly works such as Kenneth Laudon's recent book, *Dossier Society*.³ Far at the other side of the debate, computers form part of a beatific vision of efficient, effective, and truly democratic government. While seldom articulated in a single place, this vision is incumbent in works that laud the computer's role in eliminating waste, fraud, and abuse; streamlining the functions of government; and permitting electronic voting and plebiscites.⁴ These end points embrace a spectrum of widely divergent views about the role of computers in democratic government and raise the basic question of whether computers and computerization are altering or will alter the functioning of American constitutional government. A less common

■ *The growing use of computers by government agencies at all levels of the U.S. federal system raises fundamental questions of significance for the Constitution. Chief among these are whether computing will upset the delicate balances struck by the Constitution among the branches of government in the separation of powers doctrine, among the levels of government in federalism, between government and the people in the Amendments, and between various factions in the political system in the electoral process. These balances, which are under assault daily from computerization, currently tend to be affected primarily at the margins, as when computerization provides temporary advantage or disadvantage to one branch, level, or agency of government, or to one political faction over another. While computerization is not presently a fundamental threat to constitutional arrangements, it could be—especially with regard to personal privacy and political elections and, to a lesser extent, with regard to the separation of powers and federalism. Vigilance in the form of aware, informed leaders buttressed with systematic, empirical research on the interrelations of computers and the constitution could provide a powerful counterbalance to threats that stem from the growing computerization of government and the society.*

perspective that is orthogonal to these two, which raises equally serious questions, is Huxley's *Brave New World* view of technology as a seductive force leading to complacency in which liberty and freedom are given up to a benign and helpful social order facilitated by the technology.

As part of this special 200th anniversary observance of the American Constitution, this paper assesses the implications of computers within the constitutionally-defined structure, processes, and function of government in the United States. This topic is especially interesting because the original Framers of the Constitution could not have foreseen the introduction and massive deployment of computer technology, so they established no precedent to guide the use and influence of such technologies within the governmental system.

Making Sense of the Terms

Computers, in this article, refer to substantially more than the basic machines associated with computing. Computer technology is a "package" which encompasses a complex, interdependent system comprised of *people* (computer specialists, users, managers), *equipment* (hardware such as computer mainframes, peripherals, and telecommunications gear; software such as operating systems and application programs; and data), and *technique* (management science models, procedures, organizational arrangements). As suggested above, we include the expanding functional intersection of computing and communications technologies in our definition because computers and telecommunications are increasingly intertwined in the everyday functioning of computer-based systems at all levels of government. Other information technologies, especially mass communication technologies such as radio, television, and print, have implications for democratic government, but we do not include them in this analysis. We focus on computers and those key information technologies which tend to be closely linked with computers—namely, telecommunications and management science models for decision making.

No lasting power shifts will occur among the branches of government as a result of computers. However, temporary shifts in the balance of power could occur.

The Constitution refers to the documents and the ongoing mechanisms of constitutional government that maintain the operations of the U.S. federal system. The most important of these are the original Constitution, its Amendments, and the landmark constitutional interpretations of the Supreme Court.⁵ Three structural features of the Constitution are especially relevant to computers: (1) it establishes the three branches of the federal government and specifies their duties and constraints (the separation of powers doctrine); (2) it defines the functions which the federal government must perform, can perform, and cannot perform, thereby leaving the rest of the states and the people (federalism); and it (3) specifies relations between the government and the people, mainly the First, Fourth, Fifth, and Fourteenth Amendments.

Interrelation of Computers and the Constitution

In a broad sense, the issue of computers and the Constitution involves the sensitivity of the federal system, as established in form and function by the Constitution, to technological change. Four major nexes of the federal system are generally considered to be particularly susceptible to disruption via technological change:

1. Interactions between the relative power among the branches of the federal government — legislative, executive, judicial — in the context of their performance of their constitutional duties and the role they

play in governmental affairs. One of the fundamental principles of the Constitution is to check the central power of the national government by dividing it into three essentially equal, independent, and sometimes competing branches. However, the differential rate of computerization among the three branches has the potential to undermine the constitutional checks and balances by providing substantive, procedural, functional, or symbolic advantage to one or more branches.⁶

2. Interactions between and relative power among the national government and other governments in the federated governmental system. The construction of national information systems such as those in criminal justice and the growing linkage of federal-state-local information systems such as employment, tax, and welfare systems is viewed by some as increasing the power of the national government and nationalizing, or at least delocalizing, state and local policy and programs.⁷
3. Interactions and relative power distribution between "government" and the "people," both individuals and groups. The increased sharing of computer-based information on individuals and groups within the society by all branches of government is viewed as having the potential to subtly and pervasively undermine individual freedoms.⁸
4. Functions of the political processes that result in the election and appointment of officeholders under the structure provided by the Constitution. The exploding use of computer technology in political activity, including political party management, fund raising, public opinion monitoring, and direct-mail campaigning, has the potential to change the balance of power among various factions in the political system even if it does not change the constitutional structure of the government system.⁹

Computers and Federal Interbranch Relations

Ever since the introduction of computers in the national government, the public press has been rife with speculation that power shifts would result from who has more computers, more information, more analytic capacity, and/or more technical staff. In general, it has been argued that the executive branch would gain advantages over the legislative and judicial branches because of its relatively greater computerization. A recent example of this kind of speculation is provided by an article that appeared in the *Washington Post* by Michael Schrage entitled, "How you can profit from the coming federal InfoWar."¹⁰ Schrage's article consisted of a lengthy list of winners and losers from the advent of computers, particularly microcomputers. Winners ". . . bask in the advantages that clever exploitation of information technology can provide." Losers ". . . may be doomed to an impotent existence of technological obsolescence." The idea underlying all these speculations is that "the agency with the most computer and information firepower wins." More broadly, this idea lies at the heart of arguments that

computers and information systems provide strategic or competitive advantage.¹¹ While thought provoking, these kinds of analysis suffer from serious weaknesses when viewed in terms of the constitutional separation of powers among the branches of government.

The essence of the separation of powers doctrine is that each branch has separate functions, each is constitutionally and politically independent of the other, and each has inviolate recourse through which to check the others. Information technology does not and cannot fundamentally change these constitutional relationships, although it might occasionally tip the balance at the margins. Three examples serve to illustrate:

Example 1. The executive branch gains advantage over the legislative branch as a result of computerized information systems. It is most frequently asserted that the executive branch gains power over the legislative branch as a result of the executive's greater computerization.¹² The actual exploitation of computer-based information requires highly sophisticated software and people, easy access to the information, and powerful computers for processing the information. Such capability is most likely to reside in the executive branch because of its size, greater experience with computing, and relatively monolithic bureaucracy. Consequently, the executive branch would gain in power over the smaller, less experienced, and diffuse bureaucracies supporting the legislative branch. The power gain supposedly stems from the greater computing, information, and analytic capabilities available to the executive branch that allow the President to better defend administration policies and better control the bureaucracy, while at the same time withholding information from Congress and thereby weakening its influence with the bureaucracy.

Even if such power gains were to occur, the executive's advantage would be temporary because Congress has several responses available to it. First, Congress can limit and control executive branch computerization. It can stop executive purchase of new computer systems by legislation; it can "order" the executive branch to jump through many procurement hoops on equipment, software, and staff; and it can delay acquisitions by directing the General Accounting Office to look into questions of faulty procurement, cost overruns, mismanagement, and threats to privacy resulting from executive computerization.

Second, Congress can enhance its access to executive branch information by linking terminals to executive agency databases. Few in the executive branch want this because it potentially gives away too much of the executive branch's power to Congress. From a constitutional standpoint, one would say this potentially impairs the "independence" of the executive branch. However, Congress can always request data from executive agencies under the Freedom of Information Act; and agencies are usually only too willing to provide data in exchange for favorable treatment of their appropriations. Congress can also gain direct access to computer databases of the executive branch where they share functions as in the budgetary process. Though the

executive branch initially resisted on the grounds of executive privilege, it now regularly shares its computerized budget plans with Congress in the interest of timely congressional review and completion of the budgetary process.¹³

Third, Congress can increase its independence from executive information, expertise, and analyses by buying its own computers, developing its own information systems, and operating its own analytic models with its own staff. In this way, Congress can achieve parity with, as well as independence of, the executive branch. Congress has repeatedly found that if it has its own capabilities and people, members can get better determinations, analysis, support, models of legislation, drafts of legislation, tracking of bills, and monitoring of executive actions. Congress has moved increasingly in this direction in this century by establishing the Congressional Research Service, the General Accounting Office (GAO), the Office of Technology Assessment (OTA), and the Congressional Budget Office (CBO). Although a latecomer, Congress has added extensive computer technology and technologists to its expert staff and library tools.

The institutional arrangements of federalism have historically ensured a dispersion of power among levels of government. The distribution of computer technology throughout the federal system will reinforce rather than change this distribution.

For example, Congress has added considerable computer modeling capability to its Congressional Budget Office (CBO) and committee staffs. In 1974, the professional staff of the House Ways and Means Committee became concerned about evidence that the Nixon Administration had attempted to use the Internal Revenue Service for political purposes. Congress decided that it could no longer trust Treasury Department computerized models that enabled it to evaluate the possible consequences of new tax proposals. The Committee therefore brought the model in-house and developed an independent ability to examine tax proposals through the same base data by the Treasury.¹⁴ In 1976, in response to the Treasury's Office of Revenue Sharing having a computerized model, CBO developed the capability to simulate the effects of different revenue sharing formulas on congressional districts, regions, states, and specific locales.¹⁵ And today, CBO works with OMB and Treasury to insure that each uses the same base data and econometric models of the U.S. economy but develops independent economic forecasts.¹⁶ Although these examples illustrate that Congress has been largely reactive, getting the capability to use computers and models to equalize temporary imbalances of power between the executive and legislative branches, they also illustrate the inherent ability of Congress to restore the balance prescribed by the Constitution.

Example 2. The executive branch tries to influence judicial review or overload the judicial branch with data

from its vast stores of computer databases. The judiciary is the least computerized of the three branches of government and so is considered most vulnerable to the information that the executive branch can amass in support of its legal and policy preferences. However, the Judiciary also has several powerful responses it can employ in legal proceedings. First, the Judiciary, by virtue of its tremendous power to grant or deny standing of parties and materiality of information, can declare all or part of the executive branch's information to be "non-information" and therefore inadmissible. In a profound sense, the Judiciary can define what information "is."

Second, the Judiciary can require the executive to provide the information it wants, when it wants it, and in the form it wants it; and, the Judiciary can do so regardless of whether the information yet exists or what it costs the executive to get it. The Judiciary wields this power over all parties in litigation, as illustrated in the decade-long IBM antitrust suit. The Court would allow only a small portion of IBM's warehouse full of information to be admitted into evidence, while at the same time it felt free to require IBM to submit new information not readily at hand. Milton Wessel describes the situation as follows:¹⁷

The U.S. government's antitrust case against IBM had its tenth anniversary on January 16, 1979. At that point, "...the government had reviewed 60 million pages of IBM documents and IBM had inspected 26 million pages of government documents. By its fourth anniversary of actual court trial—on May 19, 1979, in addition to 1,309 witness depositions, there were some 90,000 pages of trial transcript, with the end nowhere, even remotely, in sight. Then, on June 15, 1979, the judge directed IBM to produce what it estimated to be an additional five billion documents, which IBM claimed would involve 62,000 man-years of work and \$1 billion production cost."

Although IBM eventually won the case, company lawyers were generally unsuccessful in their attempts to influence what the Court would consider as evidence in the hearings.

Third, where violations of federal law may be involved, the Court can overcome executive branch attempts to withhold information under claims of "executive privilege." The most dramatic example occurred during the Nixon Administration in the Supreme Court's order to the President to turn over the "Watergate tapes" to those investigating the incident.

In summary, because of the Judiciary's powers over executive branch actions the vast banks of computers, huge databases, and sophisticated analytical models of the executive branch have little substantive effect on the balance of power between the executive branch and the Judiciary.

Example 3. The legislative branch seeks to gain advantage over the executive through the use of computers for oversight. Although computers had been used by the Congressional Research Service in support of Congress since the mid-1960s, computers first really came to Congress in the early 1970s with the creation of the House and Senate information systems offices. Since that time computerization has primarily focused on the day-to-day operations of Congress including writing and track-

ing bills, tallying votes, publishing reports, paying staff, conducting research into social issues (through computer-based polling), and communicating with constituents.¹⁸

Congress has developed a renewed interest in oversight since the mid-1970s. This interest can be attributed to a post-Watergate disenchantment with executive power, the rise of a "new breed" of legislators, and the promise of computers to make comprehensive oversight feasible. Because of the computer revolution, many legislators and scholars believe that it is now possible to gather significant data about what really goes on within the bureaucracy. For example, Frantzich concludes that computer technology has "...put Congress in an enhanced power position relative to the executive branch."¹⁹ With respect to oversight and budget review in particular he says:

The Member Budget Information System (MBIS) provided by HIS [House Information Systems] allows the user to look at actual expenditures for previous years and get a feel for consistent patterns of surplus or deficit. The Program Review System developed by the Senate Computer Center takes the Office of Management and Budget tapes and identifies the line items for which each committee and subcommittee is responsible. This allows the committees to know exactly what they are responsible for very early in the process and less can be slipped by with little or no review. During the Budget process, the Comparative Statement of Budgetary Authority (CSBA) tracks the President's budget as it goes through Congress to provide a "snapshot" of an appropriations bill at any given point in time. Each of these make the Congress better informed on its dealings with the executive branch and thereby increases its relative POWER.²⁰

Frantzich also cites a study by Worthley which found that "legislatures with developed information systems do indeed function more influentially vis-a-vis the executive and the bureaucracy."²¹

However, a recent study of computerized systems for legislative oversight in state governments by Miewald, Muller, and Sittig²² concluded that none of the leading states have the "ideal" information system for legislative oversight—a centralized, comprehensive, regularized process of administrative review based upon independent information. Moreover, the legislature's concern for oversight is limited, with individual legislators preferring to rely upon particularistic oversight vital to their constituents and to good press (Frantzich agrees). The legislature is not anxious to create an independent body of information because most legislative staffs find agency data to be reliable and meaningful and because they are interested in ensuring that legislative and executive information systems do not become incompatible. Finally, computer technology has not significantly changed the nature of legislative oversight or vice versa. Miewald and his colleagues indicate that budget review, which is the oldest form of oversight and the most heavily computerized, "...may be one more elegant toccata and fugue on incrementalism." Thus, it seems that substantial power-enhancing effects of computer technology for legislative bodies remain in question.

Even if an "ideal" computerized system for legislative oversight were in place, the executive

responses can be many. These range from stalling in the provision of information, to provision of misinformation and disinformation, to outright refusal to provide information requested by Congress. But the most powerful response of the executive branch is the ability to present the President's viewpoint directly to the American people, thereby marshalling popular support and potentially nullifying the effects of oversight by Congress. Thus, we believe that computers are unlikely to produce power shifts from the executive to the legislative branch in this area either.

Other examples of the interrelations of computers with the constitutional powers of the three branches of government are possible but not necessary. What is clear from the foregoing discussion is that as long as the branches are able to check one another, for example, by the Supreme Court deciding what is information and what is not, Congress granting or denying funds for acquisition of pieces of the computing package, or the President having a fireside chat with the American people to make a point on a given issue, no *lasting* power shifts will occur among the branches of government as a result of computers. However, temporary shifts in the balance of power could occur, as the foregoing examples illustrate. Because such shifts are often incremental, subtle, and difficult to discern, the cumulative effects of many small changes could create an imbalance threatening to the constitutional separation of powers. Thus vigilance and systematic observation of computing use is needed.

Computers and Intergovernmental Relations

A number of scholars have pointed to the possibility that acquisition of vast computer databases gives the federal government exceptional power over states and localities or that clever state or local use of computing can do the reverse. For example, Benjamin says that:²³

...the location in Washington of a preponderance of computer expertise and of resources to obtain the new technology and make it available, conditionally, to other levels of government may enhance already evident centralizing tendencies. . . . Federal incentives, if sufficiently large, may result in centralization of information networks in some policy areas, as in the case of law enforcement. State mandates may occasionally result in forced uniformity for local jurisdictions because of the technical requirements of statewide systems.

This nationalization (or delocalization) of issues is somewhat more plausible than the interbranch power shifts above, since the U.S. Constitution does not spell out a clear relationship between the federal government and the states or localities. Federalism, or the balance of power between federal, state, and local governments, refer to the question of who shall define the goals, finance, and administer government programs and, ultimately, who shall monitor and conduct oversight of programs. According to Laudon, the last 50 years have demonstrated that federalism is evolving:²⁴

The specific balance of power between federal and state governments changed beginning in the 1930's with the development of the Social

Security Administration, and the initiation of federal responsibility for welfare and economic development programs. These early federal programs were administered by the federal government and only loosely articulated with state programs. By the early 1960's the relationship between federal and state governments was characterized by some as a new "creative federalism." In this period the federal government rapidly expanded funding and program responsibility, while the states and localities were given day-to-day administrative responsibility. In the Reagan period, the pendulum has swung towards less federal government involvement, and a greater reliance on state and local governments.

What, then, is the role of computer technology, and what is its likely effect on federalism? In general, we conclude that the technology will not concentrate power in the hands of one level of government over another. Whatever their evolution, the institutional arrangements of federalism have historically ensured a dispersion of power among levels of government. There is no reason to believe that this will change in the near future. Therefore, the distribution of computer technology throughout the federal system will reinforce rather than change this distribution. There are several reasons for this conclusion:

The issue is not whether individuals are imperiled by a faceless government armed with computers but whether duly elected representatives, working through appropriate constitutional mechanisms, will engender computer-dependent abuse of individual rights.

First, the national government already has the supremacy of federal law on its side. It does not need computers to obtain what is already has. The states' powers are not coordinate with those of the federal government because the laws and treaties of the latter are, in the explicit words of the Constitution, "the supreme law of the land, anything in the constitution or laws of any state to the contrary notwithstanding." Moreover, the states are not independent of the national government nor it of them. The states have wide powers of autonomous action (i.e., the residue of powers not conferred by the Constitution upon the federal government), but not independence.

Second, most intergovernmental relations do not involve the federal government "ordering" state and local governments to implement particular policies or programs. Rather, they involve the federal government (1) paying for national programs such as unemployment and social welfare which are implemented by state or local governments, or (2) holding out carrots and sticks to induce state and local governments to adopt particular policies or programs that the federal government would like to see implemented, but which it cannot or chooses not to order them to do. However, the careful use of computers could permit the federal government to be more heavy-handed in its superior role.

For example, as part of a campaign to reduce fraud in federal welfare programs, the Reagan Administration is

requiring states to investigate the backgrounds of welfare applicants before adding them to federal benefit rolls. Under regulations published early in 1986, states must establish income verification programs by fall. The programs will enable social workers to check a welfare applicant's finances by examining state unemployment wage and benefit records, Social Security wage records, and some Internal Revenue Service records. Pete Earley argues that while technically the federal government cannot require a state to computerize its records, "the White House's Office of Management and Budget has written its income verification programs so stringently that it will be difficult and expensive for states to comply without using a computer."²⁵ Thus the Administration is not only requiring that states implement income verification programs but, indirectly, it also is requiring that they computerize them. When all 50 states have complied, the Administration will have created a *de facto* national social surveillance system through the states. What is interesting about this case is that the Administration is being heavy-handed in its superior role. It is requiring states to implement "income verification programs"; these programs enforce federal standards for welfare applicants. By requiring income verification, the Administration is also creating an information system which will enable it to assess state compliance with federal standards. While this information system affects intergovernmental power relations only at the margins, it nevertheless enables federal agencies to better monitor state compliance with national standards.

The issue is no longer what authorities can do but what they choose to do in surveillance of the population.

Third, as the foregoing example illustrates, there could be a slow but significant shift over time toward the aggregation of federal government ability to administer policies and programs at the state and local level more effectively than in the past. But the current trend is mostly in the opposite direction. It is conceivable that at some time in the future the federal presence in service delivery at the local level could be intensified. For example, improvements in data acquisition at the local level, communication of those data upward to federal policy makers, and use of those data by policy makers in Washington with computer-aided models designed to identify deviations from federal norms could conceivably permit the federal government effective control of local program implementation. Laudon argues that this is already happening with law enforcement and perhaps social welfare.²⁶ However, the dominant trend of federalism at present seems to be the opposite—toward more devolution of funding, administration, and oversight responsibility to state and local levels. Moreover, federal presence at the local level in the near future is unlikely; the bigger the federal government presence, the bigger target that presence becomes for growth-stoppers and budget cutters. It is

likely that much of the explanation for state governments' recent emergence as the fastest growing sector of government lies in their comparatively low profile among the citizenry who are busy watching Washington and City Hall.

Computers and Relations Between Government and the People

No area of speculation about the impact of computers on constitutional matters has received as much attention as the relationship between government and the people. The Constitution was designed by the Founding Fathers in large measure to protect citizens from government tyranny, thus the concern is basic. At issue is whether the use of computer technology will give government the power to overwhelm constitutional safeguards against abuse of individuals or groups. The question is problematic because it requires a distinction between government as an entity and government as an agent of "the people." The Constitution clearly intends to protect citizens from abuse by a monolithic government, and given the power limitations on the separate branches and levels of government discussed above, computer use will not create a monolithic government. There is much greater ambiguity on the appropriate balance between the rights of individuals and the rights of a government that represents the will of the people. The issue is not whether individuals are imperiled by a faceless government armed with computers, but whether duly elected representatives, working through appropriate constitutional mechanisms, will engender computer-dependent abuse of individual rights.

Most of the concern over this issue is expressed in the debate about computers, databanks, and personal privacy. A voluminous literature deals with the issue of privacy in its own right, and a sizable component deals with the impacts of computers and communications technologies on privacy.²⁷ Much of the literature generates speculation and scenarios about the potential problems for privacy due to the computerization of government record-keeping activities. In contrast, there has been much less empirical evaluation of the privacy-related consequences of computerization.²⁸ The debate has at times been intense spurred by concern that the building of databases containing personal information may be the first step toward the complete abolition of personal privacy.²⁹ Of course, no one advocates building databanks for the purpose of reducing personal privacy, and therefore the counter-arguments to these concerns are essentially defenses of the status quo. The status quo, in turn, is continued discussion and modest legislative action aimed at privacy, on one hand, and continued construction and interconnection of computerized data bases containing personal information on the other.

In the absence of widespread privacy invasions to cite as cause for immediate action, the alarms over computers and privacy issue are largely ideological. A cogent articulation of the ideological issue is provided by James Rule in his description of the "surveillance

potential" created by the establishment of large computerized databases of personal information on individuals.³⁰ With enough data and the right computer systems, authorities become able to monitor the behavior of large numbers of individuals in a systematic and ongoing fashion. Surveillance has always been possible, but it has been expensive. Technology makes it possible to monitor many people inexpensively, thus lowering the costs of surveillance that once imposed a natural limit on the government's ability to monitor individuals. Lowering or eliminating that cost limit places the protection from unwarranted surveillance in the comparatively weak realm of law and policy. The issue is no longer what authorities can do, but what they choose to do in surveillance of the population. Rule and others argue that the establishment of systems with massive surveillance cannot be permitted because their potential for abuse is too great and the conventional legal constraints to contain abuses are insufficient to deal with this threat.³¹

Again we ask whether the Constitution, as our most basic set of laws, is sufficient to counter the concerns raised by the computers and privacy issue? We believe it is, but not as an *automatic* matter. Privacy as a concept is not well established. Although privacy has played a key role in past issues of constitutional significance, including the highly controversial *Roe v. Wade* decision legalizing abortion, privacy is also a matter of continuing interpretation. For example, in the 1965 case of *Griswold v. Connecticut*, the Court defined the right of privacy as implicit in the Constitution and covering very personal conduct such as marriage and procreation. In the 1976 case of *Paul v. Davis*, the Court reaffirmed the individual's right to privacy but held that privacy did not extend beyond the bedroom, e.g., criminal justice agencies were not required to keep confidential matters that are recorded in official records. Most recently, in *Howard v. Becker* (1986), the Court took privacy away from the bedroom when it determined that consenting adults could be arrested for performing illegal sexual acts. These cases also illustrate that although the Supreme Court is buffered from day-to-day political activity, it is influenced by the moods of the electorate. And although existing uses of computerized data banks have not yet abridged personal privacy sufficiently to require constitutional action or even substantial Supreme Court action on the matter, mass computer matching may yet require it. While constitutional remedies remain available for the time being, the privacy issue is being played out in the realms of rhetoric, legislation, and executive action.

It is likely that the controversy will persist for two important reasons. The first is the increasing creation and interconnection of large systems containing personal information. Many large government information systems such as those of Social Security, the IRS, and the FBI contain sensitive personal information that can be used for social surveillance — tracking individuals or groups by linking data about them from such systems. Despite provisions made to limit the dissemination and use of data in these systems at the time they were

established, the interconnection of these systems is eroding these safeguards.

The linkage of government information systems began in earnest as a response to rising crime rates in the mid-1960s, with efforts to interconnect criminal justice information systems at the local, state, and federal levels. Now, despite the lack of evidence about the cost-effectiveness of interconnecting these systems, linkage among other systems is being expanded.³² Recently, concerns have arisen in response to both back-end and front-end computer "matching" of personal data across welfare, tax, and unemployment systems. For example, the Parent Locator system uses Social Security data to locate parents who are delinquent in child support payments; similar systems are being implemented to locate individuals who have defaulted on student loans or defrauded welfare programs. In the name of income verification, systems for front-end matching of records are being proposed for "families whose children apply for low-interest college loans from the government, veterans who check in at VA hospitals, retired coal miners who request black lung benefits, and young families who ask the Farmers Home Loan Administration for a mortgage."³³ Such systems can greatly increase surveillance potential, and the creation of these integrated systems is actively being pursued by the current Administration.³⁴

The second cause for continued controversy over the privacy issue is the weak enforcement of existing privacy legislation. Proponents of linking systems argue that legislative, and if necessary, constitutional remedies will be able to control abuse of such systems. But these remedies must be enforced and maintained. According to David Flaherty, who has studied privacy legislation and enforcement in many western countries, the enforcement of privacy laws in the United States appears to be lacking in comparison to the situation in Canada, West Germany, Japan, and the United Kingdom.³⁵ The major national law, the Privacy Act of 1974, was never provided with either a Privacy Protection Commission (similar to the Civil Rights Commission) or a specific executive agency to see to its implementation. Instead, responsibility for oversight was handed to OMB and to Congress. Flaherty maintains that under the current Administration, OMB has stopped paying much attention to privacy or to the requirements of the Privacy Act. The 1974 law needs updating, but the Administration and Congress are preoccupied with other matters, and such a revision is not expected soon. Laudon and Earley point out the irony in the current situation where OMB, the primary executive agency for privacy oversight, has become the primary advocate for computer matching and national information systems, which in the name of governmental efficiency, pose serious threats to individual privacy.³⁶

The federal government has not as yet established a single, comprehensive system facilitative of surveillance of the population. It has, however, increased the use of multiple national and state systems to track individuals to such an extent that it may be creating a *de facto* national social surveillance system. This surveillance

potential created by linking government information systems, and the weak record of privacy law enforcement, warrants cause for continued concern and systematic study of the privacy issue. The privacy issue may yet warrant definitive Supreme Court rulings or perhaps even a constitutional amendment.

The Constitution does not directly address what is possible in government/citizen interactions. Instead, it comments on what is and is not allowable. The amendment process permits the creation of constitutional amendments to accomplish desired goals. It would be possible, as Westin has suggested, to amend the Constitution to classify certain kinds of data as simply "untouchable" for any use other than that for which they were collected. This would make questionable actions involving government use of personal data more difficult to commit and much easier to challenge.

Computers and the Political Process

The Framers of the U.S. constitutional government took great pains to design a political system that worked well for encouraging freedom and constraining tyranny. But the Constitution is more than a road map for government function; it is an embodiment of specific and ongoing debates about the nature of democratic government and the means necessary to preserve it. Contemporary views of the Constitution are a product of the thoughts and writings of the Founding Fathers, coupled with past experience and the realities of the current era. As noted in previous sections, the vision of the Founding Fathers has stood a remarkable test of time, and technological advancements in information handling do not appear as serious agents of change in the constitutional structure which that vision promulgated.

There is a chance, however, that computer technology will have a substantial influence on political processes that lead to the election of representatives and the mobilization of national political movements. The Founding Fathers were careful about creating a stable government that would represent the will of the people and ensure the rights of citizens. But they could not foresee the changes in technology that would reshape the processes by which public opinion is formed and guided. Much has been written about the effects of communications media, particularly mass media of radio and television, on political contests.³⁷ The addition of advanced forms of public opinion sensing and computerized direct-mail systems has created a package of tools that may transform the nature of the political process.

At one level, these new means of conducting political races are immaterial. Competing political groups have always sought to avail themselves of the latest tools and technology, and they have been quick to imitate their competition's use of such tools. In a healthy pluralistic system, the equilibrium is quickly reestablished. But at a different level, there is concern that the extensive manipulation of public moods through the use of technology will decrease overall electorate awareness of the issues and increase the tendency toward the election

of individuals on the grounds of media image and single-issue direct mail advertising. The ultimate concern is the deliverance of the role of political opinion making, and thereby the mobilization of political bias, into the hands of technicians who stand between actual political leaders and the electorate. This can result in reduced influence of the electorate over political leaders and, potentially, the means for wholesale distortion of the issues by political leaders with skilled "image-making" technocrats.³⁸

To a greater degree than with the issues discussed earlier, the impact of computers on political fund raising and campaigning could prove to have significant effects on the functioning of the constitutional system. This would not come about due to any particular weakness of the Constitution itself or as a result of changes in the structure of function of the governmental system. Instead, the changes would be part of larger effects of automation on the mobilization of bias among interest groups in the population. The existing examples of application of computing to political campaigns are not terribly significant in their own right. Their incidence is small as yet, and though some credit the use of such systems to unexpected political upheavals, such uses have not jeopardized the two-party system or the electoral process. Nevertheless, the concept of constitutional democracy depends on an informed electorate, capable of discriminating among candidates based on their overall strengths. Neil Postman contends that extensive use of television in campaigns has already decreased the quality of debate and reduced attention to the issues.³⁹ Highly targeted, single-issue fund raising and campaigning conducted through computer-assisted direct mail or targeted telephone solicitation could contribute to such a trend. This is a speculative point, and experience with use of such systems has been insufficient to determine their effects. Nevertheless, the potential for significant change in the processes of constitutional government exist because the Constitution only specifies what the offices of government are, how they are to be filled, and who can be enfranchised to vote. The Constitution does not address the means by which campaigns should be conducted or the grounds on which voters should make electoral judgments.

Although we cannot provide direct evidence of the effect of computers on our political process, a highly instructive lesson about our point can be drawn from the financial sector of the economy. In the past three years, major brokerage houses have invested millions of dollars in computerized securities trading analysis systems to help them capitalize on market movements. As the major institutional investors who control hundreds of millions of shares adopt such systems, some market watchers have begun to fear that they will force small investors from the marketplace, and more importantly, turn an important capitalization mechanism into a form of gambling.⁴⁰ Clearly, differences exist between the securities market and the country's political process, but the experience with computerized trading systems illustrates the power of computing technology to alter the behavior of complex social systems comprised of large

numbers of individual decision makers.

Computers and the Constitution: A Relationship That Requires Vigilance

Our overall conclusion is that computers have had very little effect on constitutional issues to date, but they might have considerable effect in the future. Relations between the branches of the federal government supersede issues of computing and even, to a remarkable degree, issues of relative information access. Since no effective way exists for one branch to gain a sustained monopoly on information, the technology to handle it, the expertise to manipulate it, or the right to determine when it will be applied, the question of computer impacts on the separation and checks and balances of powers appears moot.

Intergovernmental relations appear similarly unaffected by computerization. This is largely because the role that could be played by computer technology is subordinated to the existing constitutional definition of authorities and the political and practical nature of federal-state-local interactions. There is not much potential for computer technology to change this arena except at the margins.

Relations between government and the people are a somewhat different matter. The potential for abusing individual right to privacy is substantial and rapidly growing as a direct result of computer-based surveillance and action. Computer matching and national information systems are currently directed towards perpetrators of crime and fraud, but they could be directed more broadly. This potential for abuse poses a serious threat, especially given the instability of the privacy concept in the courts and the lackluster implementation, if not overturn, of the Privacy Act by the major U.S. monitoring agency. These conditions may require direct intervention by the Supreme Court, or possibly a constitutional amendment, to strengthen protection against governmental abuse of information in aggrandizing power over individuals.

Computer use can and probably will affect the political processes by which people are elected to public office. It is too early to tell what the actual effects will be. But since the Constitution itself addresses only the major offices and issues of enfranchisement, and not the protocols of party behavior or campaigning, it is possible that computing-based changes in the conduct of political contests will eventually have an effect on the ways the Constitution is interpreted and implemented.

Our analysis suggests three reasons why computer technology has had relatively little effect on constitutional issues to date. First is the relatively insignificant role computing plays in such affairs. Computer technology is a powerful tool, but it is only one variable among many in the larger social and political processes of society. Also, the effects of computerization are not immediate and therefore are not immediately observed. Computers are introduced into organizations incrementally, and their effects evolve. Computing is a social movement that makes a slow and gradual passage

through a web of economic, legal, organizational, social, and cultural constraints. In the process, the technology itself is shaped to fit the character of the adopting organizations to a remarkable degree. Even when it appears that computer technology is having an effect, the effect can be difficult to pinpoint and measure.

Second, computerization efforts do less than their promoters suggest they can under the best of circumstances. A cursory reading of GAO reports over the last ten years readily shows that the history of executive branch computerization is replete with examples of poorly conceived systems, frequent implementation failures, and extraordinary cost overruns. While many proposed systems are technically feasible, others are not, and all of them turn out to be very, very expensive. These large costs tend to brake federal computerization efforts and certainly dampen whatever potential effects computerization might have on constitutional processes and functions.

Third, aside from the technology itself, the very objective of information management is political and will be treated politically. As Alan Westin has noted, "Information is a power resource that no one gives freely. We can set boundaries and control access in very, very effective ways."⁴¹ Moreover, we can actually improve information control and responsibility in computerized systems more effectively than in manual ones. Most importantly, computers have not changed power distributions within government, or within society more generally; if anything, they have reinforced existing power distributions.⁴² Even though the technology may be applicable to various purposes, which groups in society get to use a new technology and which social ends get served are preeminently political questions. The past high cost of computers and telecommunications restricted their availability to large, powerful organizations such as government and business. Historically, information technology has been shown to be a power-enhancing tool; its costs of production and operation have guaranteed that it would be used first by elites, and that elites would dominate its use for as long as beneficial.

Some scholars suggest that the microcomputer could bring about a dramatic change in the traditional elitist domination of computing, thereby altering power relationships among groups within society.⁴³ They view the microcomputer as a power-distributing force in contrast to the mainframe computer which was largely a power-enhancing force. They suggest that microcomputers could be a major liberating force by democratizing computing access, information access, and decision influence, thereby providing the possibility for individuals and small groups to make their mark too. They cite the growing use of personal computers for work at home, for professional and technical group communication, and for mass mail mobilizations on political and social issues as contributing elements and embryonic illustrations of the potential.

While possible, we consider this scenario extremely unlikely for the reasons given in the foregoing analysis. In addition, recent research clearly indicates that

microcomputer use in organizations tends to follow the trends set by mainframe computing. Although the distribution of microcomputers encompasses more users than did mainframe technology, the proportionate distribution of microcomputer use among different groups within organizations is identical with that of mainframe use over the past two decades. Also microcomputer use in the home presently is dominated by middle-aged, high income, well-educated people in technical professions although students and the elderly are discernible minority users.⁴⁴ However, microcomputers have only begun to be deployed and networks that facilitate more horizontal information sharing have only begun to appear. It is possible, therefore, that these current tendencies towards reinforcement could evolve into other patterns that are power-distributing.

The effects of computing on constitutional government clearly avoid popular, extreme characterizations of technological impact. They clearly do not suggest the demonic vision of George Orwell's *1984*, in which technology permits malevolent autocrats to eliminate democratic government and individual freedom.⁴⁵ They do not even approach the unpleasant but less horrific visions of the mechanical society seen in Yevgeny Zamyatin's *We*, E.M. Forster's *The Machine Stops*, or Kurt Vonnegut's *Player Piano*. On the other hand, we do not see computers yielding the beatific vision of expanding freedom and democracy made possible through the beneficence of technological advancements that banish want and encourage understanding among people and nations.⁴⁶

In all, computer technology seems to be having a less decisive impact on constitutional government than these visions would suggest. Rather, the impact involves dynamic tension between what the technology makes possible and what the Constitution, the Amendments, the Courts, and our own experience tells us is wise. We have not been able, in this paper, to present the contention, conflict, and compromise involved in balancing these interests. For purposes of exposition and argument, we have treated these balances as historical fact. In reality, they are just the tally at the end of a day's trading in a political market; tomorrow is a new trading day. Consequently, we and most academic observers tend to have a cautious view of the potential changes, though generally it is a positive, incremental one.⁴⁷

There is a view of technology and its impact on social life that is orthogonal to this continuum, and that reflects another threat to our constitutional democracy. It encompasses the issues raised by the application of computing to mass surveillance, national information systems, and political campaigning; and, in particular, to the question of what is really important in the deter-

mination of who should govern. This concern is manifest in Aldous Huxley's *Brave New World*, in which technological advancements have been deliberately, and to a large measure democratically, applied toward elimination of need and stabilization of the social order. The new world is the epitome of successful technocracy to the point where circumstances that give rise to jealousy are preempted through ubiquitous use of technology. Technology is used not to give expression to our most malicious and destructive tendencies, but to our best-intentioned efforts to eliminate the causes of strife. In the process, it seems, the removal of strife has eliminated existential choice and thereby freedom. Technology has maximized efficiency in exchange for unavoidable limitations on individual privacy, choice, and freedom.

The metaphor we find in the story is useful to our analysis of computers and constitutional government. The world depicted by Huxley evolved over a protracted period of time, and each step along the way posed a choice: live with the contradictions of the present or remove them with a technical solution. To the extent that American constitutional government is threatened by the application of information technology, the threat does not come from weaknesses in the Constitution or the government it shapes. Rather, the threat comes when the governed fail to protect and defend their rights to personal privacy and due processes. Whether the growing use of information technologies in mass social surveillance or in partisan political contests is leading to this end remains to be seen. However, this paper gives sufficient evidence to warrant renewed concern and increased monitoring of government computing activity.⁴⁸

* * *

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Notes

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5. Edward S. Corwin and Jack W. Peltason, *Understanding the Constitution* (New York: Holt, Reinhart and Winston, 1964).
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8. Burnham, *op. cit.*; David H. Flaherty, "The Need for an American Privacy Protection Commission," *Government Information Quarterly*, vol. 1 (February 1984), pp. 235-258; James Rule, *Private Lives and Public Surveillance* (New York: Schocken, 1974); Laudon, *op. cit.*; Alan F. Westin and Michael Baker, *Databanks in a Free Society* (New York: Quadrangle Books, 1972).
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23. Benjamin, *op. cit.*, 1982, pp. 6-7; Laudon, *op. cit.*, 1986.
24. Laudon, *op. cit.*, 1986, p. 15.
25. Pete Earley, "Watching Me, Watching You," *Washington Post Magazine* (May 11, 1986), p. 10.
26. Laudon, *op. cit.*, 1986.
27. The literature on privacy, particularly related to computerized data banks, is extensive. Major milestones include, Alan Westin, *Privacy and Freedom* (New York: Atheneum, 1967); Arthur Miller, *The Assault on Privacy* (Ann Arbor: University of Michigan Press, 1971); Alan Westin, "Civil Liberties Issues in Public Data Banks," in Alan Westin, ed., *Information Technology in a Democracy* (Cambridge, MA: Harvard University Press, 1971); U.S. Department of Health, Education and Welfare, *Records, Computers and the Rights of Citizens* (Washington: U.S. Government Printing Office, 1973); Alan Westin and Michael Baker, *op. cit.*, 1972; Rule, *op. cit.*, 1974; Privacy Protection Study Commission, *Personal Privacy in an Information Society* (Washington: U.S. Government Printing Office, 1977); James Rule, Douglas McAdam, Linda Stearns, and David Uglow, *The Politics of Privacy* (New York: Mentor, 1980); and Burnham, *op. cit.*, 1983. A comprehensive bibliography is provided by David Flaherty, *Privacy and Data Protection: An International Bibliography* (London: Mansell, 1984).
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 35. David Flaherty, *op. cit.*, 1984.
 36. Flaherty, *ibid.*, p. 245; Laudon, *op. cit.*, 1986; Earley, *op. cit.*
 37. Benjamin, *op. cit.*, 1982.
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 39. Neil Postman, "The Contradictions of Freedom of Information." Paper presented at the Annenberg Scholars Conference on Creating Meaning: The Literacies of Our Times, Annenberg School of Communications, University of Southern California (February 16-18, 1984). mimeo. 31 pp.
 40. Traditionally, decisions to trade securities rested mainly on evaluations of the companies whose stock was being traded, as well as background information about the conditions of the market and the economy. The new computerized analysis programs have begun to turn securities into commodities through manipulation of securities futures, which are essentially bets on the direction of the market. These computerized systems "watch" the market, looking for anomalies that suggest a trend in the market, and when the appropriate signals are released, they notify their operators who shift dollars from securities into futures or vice versa. In this way, profits are made from speculation when the market readjusts prices to equal the inherent value of the securities. See James Flanigan, "New 'Program' Trading Alters Face of Market," *Los Angeles Times* (September 16, 1986), Part IV, pp. 1, 4 and Debra Whitefield, "Program Trading, and Its Effects on the Stock Market, Under Scrutiny," *Los Angeles Times* (September 21, 1986), Part IV, p. 2.
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 45. Postman, *op. cit.*, 1984, contains an extended discussion of this set of metaphors. It is always useful to point out that the use of Orwell's *1984* as a mirror of contemporary society is risky because the setting of the book is the world after general nuclear war—a circumstance that surely would alter many aspects of society.
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puters, and Criminal Justice Records (Arlington, VA: Information Resources Press, 1980), pp. v-viii; John Leslie King and Kenneth L. Kraemer, *The Dynamics of Computing* (New York: Columbia University Press, 1985); Laudon, *op. cit.*; and Kenneth C. Laudon, *Computers and Bureaucratic Reform* (New York: John Wiley and Sons, 1974); Lowi, *op. cit.*; Theodore Lowi, "The Third Revolution Revisited" (unpublished paper prepared for The Conference Board, 1985); and Thomas E. Patterson, "Toward New Research on Communications Technologies and the Democratic Process," Report of the Aspen Institute Conference on Communication Technologies and the Democratic Process (New York: Aspen Institute, 1985).

48. Specifically, we suggest the following issues receive continued assessment and monitoring: (1) the real effect of computers on

the efficiency and effectiveness of government; (2) the actual cost-effectiveness of computer matching and other national information systems in reducing crime or preventing fraud; (3) the extent of change in control, oversight, and accountability of public bureaucracies due to computerization; (4) the effect of computerization on political campaigns and their outcomes; (5) the effect of computerization on the distinction between public and private sector responsibilities and prerogatives; (6) the opportunities and limitations of using computerization to enhance democratic processes via information dissemination and public opinion assessment; and (7) the effects of widespread computerization on centralized versus decentralized political power and effectiveness.