CHAPTER 1

Scope, Causes, and Consequences of Electronic Government

THIS BOOK LOOKS at the phenomenon of electronic government, that is, public sector use of the Internet and other digital devices to deliver services, information, and democracy itself. Although personal computers have been around for several decades, recent advances in networking, video imaging, and graphics interfacing have allowed governments to develop websites that contain a variety of online materials. As more and more people take advantage of these features, digital government is supplanting traditional means of access based on personal visits, phone calls, and mail delivery.

In Indiana, for example, citizens can register their vehicles and order subscriptions to government databases online. California allows people to personalize websites depending on whether they are tourists, students, state employees, businesses, or state residents. Arizona and Michigan have been innovators in online voting. At the national level, Americans can access private companies through the Internal Revenue Service (IRS) website that will file tax forms for them electronically.

Governments around the world have created websites that facilitate tourism, citizen complaints, and business investment. Tourists can book hotels through the government websites of many Caribbean and Pacific island countries. In Australia, citizens can register government complaints through agency websites. Nations such as Bulgaria, the Netherlands, and the Czech Republic are attracting overseas investors through their websites.

But despite the prevalence of these online options, there are three unanswered questions that form the heart of this research. First, how much are the Internet and other digital delivery systems transforming the public sector? Second, what determines the speed and breadth of e-government adoption? Third, what are the consequences of digital technology for public sector performance, the political process, and democracy?

One of the problems in deciphering these topics has been a bifurcation of e-government research into detailed case studies on the one hand and highly abstract theoretical treatises on the other hand. There are a variety of case study publications that focus on particular agencies or jurisdictions. These are very useful, but hard to generalize to a larger universe of cases. At the other end of the spectrum are highly theoretical treatments of e-government that either glorify technology or study it at abstract levels. With either brand

of theorizing, it is a challenge for practitioners and policymakers to figure out how to use this information to improve their performance.

My goal in this book is to bridge the worlds of theory and practice. E-government is a field in which practitioners and theorists need to address one another and share their respective insights. It is vitally important that we have clear conceptual frameworks for the analysis of e-government. It also is crucial that these frameworks rest on empirical analysis that actually shows what is happening and what problems need to be addressed.

Consistent with this objective, I look at the scope, causes, and consequences of digital government. Using multiple methods (case studies, content analysis, public and bureaucrat opinion survey data, an email responsiveness test, and aggregate multivariate analysis), I present a conceptual model in which factors such as organizational setting, budget resources, group conflict, and political leadership set the parameters on the speed and breadth of technological change. I also explore the consequences of e-government for service delivery, the needs of special populations such as the disabled and non-native speakers, bureaucrat attitudes and behavior, citizen trust in government, public sector responsiveness, and overall political dynamics. With the exception of impact on bureaucrats, most of these topics have attracted little scholarly attention.

After examining a variety of data sources, I argue that e-government falls more within models of limited than transformational change. There are a variety of forces that restrict the ability of policymakers to make effective use of new technology. Although digital breakthroughs offer the potential of revolutionary change, social, political, and economic factors constrain the scope of transformation and prevent government officials from realizing the full benefits of the Internet.

The Scope of E-Government: How Much Change?

The origin of the Internet dates back to 1969 when a United States Defense Department project spawned ARPANET, a digital system connecting computers in different geographical locations. These connections allowed scientists at fifteen different universities and American defense officials to exchange information and post notes at common computer spaces that could be viewed simultaneously by interested parties.[1]

Unlike telephones, which required communicating parties to be on the line at the same time for the transmission of material, ARPANET allowed people to send information even if the other person was not at the other end to receive the transmission. Scientists could transmit emails or access bulletin boards, and thereby see ideas on which others were working without physically being

in the same location. This type of asynchronous communication proved very popular with scientists and members of the defense establishment.

It was not until 1991, though, with the formation of interfaces with the World Wide Web that the Internet was created as a means of communication among the general public. The Web integrated text, images, and sound, and therefore facilitated the instantaneous communication of several modes of information. Unlike past electronic systems that required extensive technical knowledge or involved specialized programming, it was simple to use.

Within a few years, government agencies discovered that the Internet was a useful way to communicate with citizens, businesses, and other agencies. Information and services could be put online and made available to a wide variety of people.[2] Right now, the Internet remains the most popular e-government delivery system. Eighty-one percent of federal e-government initiatives are delivered that way, with the remainder coming in the forms of kiosks, telephones, email, bulletin boards, and wireless networks.[3]

Citizens enjoy the convenience of digital communications as a means to contact government officials with problems they are having. A July 2003 Pew Internet Survey found that of those Americans who had contacted the government in the past year, 26 percent called on the phone, 18 percent visited the government website, 12 percent went to the agency in person, 10 percent sent a letter, and 10 percent relied upon email.[4]

By the turn of the twenty-first century, some governmental units were employing the Internet for direct democracy. When faced with a controversy over the repainting of a prominent Baltimore expressway bridge (a local artist wanted rust red-brown while the mayor preferred Kelly green), Mayor Martin O'Malley turned to an online plebiscite at the City Hall website. Voters were asked to choose which color the Howard Street Bridge should be painted. Over five thousand people cast ballots, and the mayor's choice lost on a 52 to 48 percent vote. In his concession speech, O'Malley said "I submit to the will of the people. To paraphrase Jefferson, I fear for my countrymen, that they may receive the bridge colors they deserve."[5]

Government websites at various levels generate considerable traffic. As shown in table 1-1, the U.S. Internal Revenue Service is the most frequently visited individual site with 6.7 million monthly visitors, followed by Fed-World, a federal government portal with 4.6 million visitors, the U.S. Treasury (3.63 million), and NASA, with 3.33 million visitors.

Unlike traditional bricks-and-mortar agencies that are hierarchical, linear, and one-way in their communications style, digital delivery systems are nonhierarchical, nonlinear, interactive, and available twenty-four hours a day, seven days a week. The nonhierarchical character of Internet delivery frees citizens to seek information at their own convenience. The interactive aspects of e-government allow both citizens and bureaucrats to send as well as receive

TABLE 1-1
Most Frequently Visited Government Websites in February 2001

IRS (irs.gov)	6.7 million
FedWorld (fedworld.gov)	4.6 million
U.S. Treasury (ustreas.gov)	3.63 million
NASA (nasa.gov)	3.33 million
California state government (ca.gov)	2.89 million
Natl Institute of Health (nih.gov)	2.49 million
US Education Dept (ed.gov)	2.46 million
Natl Oceanic and Atmospheric Admin (noaa.gov)	2.2 million
US Geological Survey (usgs.gov)	1.43 million
US Navy (navy.mil)	1.41 million
Library of Congress (loc.gov)	1.17 million
White House (whitehouse.gov)	1.09 million
Social Security Admin (ssa.gov)	1.06 million
Texas state government (state.tx.us)	1.06 million

Source: Jupiter Media Metrix, March 13, 2001, press release
Note: Figures represent number of unique agency visitors for the month of February 2001.

information. Convenience is probably the strongest selling point for e-government as ordinary citizens love the ability to access public information and order services twenty-four hours a day, not just when a particular government agency happens to be open.[6]

The fundamental nature of these advantages has led some to predict the Internet will transform government.[7] By facilitating two-way interaction, electronic governance has been hailed as a way to improve service delivery and responsiveness to citizens. Stephen Goldsmith, President George W. Bush's Special Advisor for Faith-Based and Community Initiatives, says "electronic government will not only break down boundaries and reduce transaction costs between citizens and their governments but between levels of government as well."[8]

Jeffrey Seifert and Matthew Bonham argue digital government has the potential to transform governmental efficiency, transparency, citizen trust, and political participation in transitional democracies. Using examples from Asia and Eastern Europe, these authors suggest that with proper political leadership, the power of the Internet can be harnessed for major system change.[9]

In making these claims, proponents suggest that the pace of Internet change is consistent with the classic model of large-scale transformation. System transformation is defined as a "complete change in character, condition," or "epochal breakthroughs."[10] In this perspective, change is rapid and abrupt, and visible to social observers. Often spurred either by scientific breakthroughs or economic improvements that facilitate the availability of the new

technology, large-scale change produces revolutions in individual behavior and organizational activities.[11]

For example, the novel aspects of digital technology in the public sector led Reed Hundt, former chairman of the Federal Communications Commission, to conclude "the central lesson of technology in our time is this: The Internet Changes Everything. The lesson applies to the economy, education, community, individualism, and . . . democracy."[12] Similar statements have been made about the impact of the new information age on the political process. Writers such as Dennis Thompson and Bruce Bimber have suggested some aspects of interactive technologies bring about institutional change because they weaken the factionalization that plagues democratic political systems. New technologies enhance communication by overcoming geographical distance, promoting ideological variety, opening citizens to more diverse viewpoints, and encouraging deliberation.[13] These benefits give the Internet unusually great promise as a tool for democracy.

Others have written about the potential of the Internet to recast bureaucracy. Jane Fountain has discussed the ways in which information technology (IT) alters the capacity and control features of traditional bureaucracies. IT, she notes, has the potential "to substantially redistribute power, functional responsibilities, and control within and across federal agencies and between the public and private sectors."[14] By encouraging bureaucrats to work together and develop cross-agency "portals," websites that integrate information and service offerings, e-government offers the prospect of considerable change in how the public sector functions. Indeed, Fountain cites estimates demonstrating "cost performance ratios to be declining at a rate of 20–30 percent a year."[15]

Not all technological innovation, however, leads to large-scale transformation. An alternative model stresses incrementalism. First proposed in 1959 by Charles Lindblom in regard to organizational decision making, this kind of change is characterized as a "muddling through" process.[16] In looking at how organizations make choices, Lindblom asked whether change was rational and dictated in key respects by economic trade-offs or was it rather a political process characterized by small-scale shifts constrained by budgetary and institutional processes?

In the world of government, Lindblom suggested, politics dominates and organizations are more likely to muddle through decisions and rely on small-scale change. Political dynamics affect the way in which decisions get made. It is not always the most rational decision that emerges based on costs and benefits. Rather, choices get made based on who is best organized, strongest politically, or in control of the bureaucratic structure. The political character of public sector decision making limits the speed of change and how quickly new technologies get incorporated into the governmental process.

Taking off from this insight, Aaron Wildavsky and others generalized Lind-

blom's process model to policy outputs.[17] Government policies typically evolve through small-scale steps, not large-scale transformations, he argued. The best predictor of next year's budget is this year's budget. Change generally takes place in small increments, which leads to gradual change over time. Abrupt and dramatic revolutions in political behavior are rare. Evolution, not revolution, is the more common norm.

IT research in the 1970s and 1980s found considerable evidence of incremental change in government organizations. Work by Kenneth Kraemer, John King, and William Dutton demonstrated that American governments at every level were slow to adopt new technologies.[18] Rather than being an impetus toward transformation, computer technologies were not used to produce fundamental change.

There are a number of reasons why political change tends to be small in scale and gradual. Government actions are mediated by a range of factors: institutional arrangements, budget scarcity, group conflict, cultural norms, and prevailing patterns of social and political behavior, each of which restricts the ability of technology to transform society and politics. The fact that governments are divided into competing agencies and jurisdictions limits the ability of policymakers to get bureaucrats to work together promoting technological innovation. Budget considerations prevent government offices from placing services online and using technology for democratic outreach. Cultural norms and patterns of individual behavior affect the manner in which technology is used by citizens and policymakers.

In addition, the political process is characterized by intense group conflict over resources. With systems that are open and permeable, groups organize easily and make demands on the political system. Given the fact that financial resources are limited and institutions in which decisions are made are fragmented and decentralized, it is difficult to produce large-scale changes even with the benefit of new technologies.

With many government planners emphasizing a vision of electronic governance that is technocratic and service-oriented rather than a tool for grassroots empowerment, system-level transformation has been slow to develop. Regardless of the type of political system, many government officials are conservative when it comes to change. Rather than rushing to embrace new technology, major political and economic interests slow the pace of technical innovation until they can figure out how to make sure their own vested interests are well-protected. This keeps the danger from new technology as low as possible, and forces technology to accommodate existing power structures rather than the other way around.

These kinds of political constraints are so widespread that Richard Davis, Michael Margolis and David Resnick, Andrew Chadwick, and Christopher May predict in the long run that Internet technology will *not* transform democracy. If anything, technology reinforces existing social and political

patterns rather than creating new realities. In regard to technology, Davis notes, "that complex bureaucratic maze also has been duplicated on the Web." Agency websites serve to perpetuate their own mission and do little to enhance responsiveness or citizen participation.[19] Margolis and Resnick argue that "far from revolutionizing the conduct of politics and civic affairs in the real world, we found that the Internet tends to reflect and reinforce the patterns of behavior of that world."[20] Chadwick and May found government websites in the United States, Great Britain, and European Union to be "predominantly non-interactive and non-deliberative," and concluded e-government was not likely to reshape governance.[21]

Transformation and incrementalism are the major poles in the debate over the pace and breadth of technological change. In the debate over the transforming power of new technology, however, it is important to remember that change represents a continuum running from incrementalism to transformation. Change discussions often focus on the end points of this comparison without looking at other types of models. There are lots of ways in which shifts can occur in the middle of the change spectrum. Or to put it differently, there are other models of change between large-scale transformation and small-scale increments.

Secular change is an example of a midlevel model that demonstrates how "constrained change" can unfold. For example, James Quinn develops a model of "logical incrementalism" that suggests significant change can take place within organizations on a step-by-step basis even outside of a revolutionary change model.[22] The cumulative impact of steady, incremental change over a long period of time is major, he suggests.

In the same vein, Fountain's notion of "enacted technology" discusses change that is substantial even if it trails proponents' projections.[23] It is not uncommon for creators of particular technologies to "oversell" the significance of their invention. Many creations are said to be revolutionary in their potential to reshape human life. When the reality falls far short of predictions, however, the resulting change looks underwhelming and is dismissed as insignificant change. Yet Fountain points out that the alterations that emerge in this situation still can be significant even if they fall short of what was predicted by those who created the new technology.

In essence, both of these writers offer an insight into an alternative model of technological change emphasizing gradual, secular change that unfolds slowly but surely over time, and eventually leads to major changes in how organizations function. Revolutions do not have to be quick and abrupt for there to be widespread change.[24] It may take awhile for technical innovations to diffuse throughout a country. In the public sector, there may be a period of bureaucratic in-fighting that impedes the adoption of new technologies. Sometimes, years may pass before the price of helpful inventions drop to the point where it becomes feasible for individuals and organizations to adopt them.

The automobile is a good illustration of a secular change model. It took decades after the placement by German Karl Benz in 1885 of the internal combustion engine on a motorized carriage for the "car" to emerge as a dominant form of transportation that would have enormous social, political, and economic consequences. The first American automobile was built by Charles and Frank Duryea in 1893, but it took them three years to construct thirteen cars. Ransome Eli Olds started the first automobile assembly line in 1901, but his factory burned down before cars could be produced. Henry Ford introduced the Model T in 1908. He built a mass-production line and eventually this paved the way for the manufacturing of millions of cars.[25]

But it was not until decades later that cars began to transform the social and political landscape. In the 1950s and 1960s, the car plus the development of interstate highways encouraged people to move from central cities to the suburbs. This had enormous social and political ramifications. Jobs and residences moved to the suburbs, which drained population and economic vitality from the cities. Political power moved outside of metropolitan areas with these population flows and politicians began to play more to suburban interests. Eventually, central cities went into decline and became bastions of poor people, minorities, and senior citizens with few economic resources.

Ultimately, as with any political issue, it is impossible to know when a particular technological innovation will produce large-scale societal change.[26] Change is a mosaic that unfolds in a kaleidoscope of colors. It never is easy to decipher longer-term impact. But this does not mean that judgments must await the passage of decades after the technical invention was developed. If that were the case, it would be impossible to deal with the deleterious effects of change until it is too late. Given the uncertainty of long-term change, it makes sense in the short run to focus on the causes and consequences of new practices, and how substantial the alteration is in individual and organizational activities.

The virtue of studying short-term change is that it provides hints about longer-term shifts. By providing policymakers with benchmarks for evaluating how close they come to achieving particular goals, short-term change assessments help direct the future impact of particular technologies. In that way, then, policymakers can see where things are headed and what midcourse alterations are necessary to head off negative consequences.

STAGES OF E-GOVERNMENT: FROM BILLBOARDS AND SERVICE DELIVERY TO INTERACTIVE DEMOCRACY

There are four general stages of e-government development that distinguish where government agencies are on the road to transformation: (1) the billboard stage, (2) the partial service-delivery stage, (3) the portal stage with

fully executable and integrated service delivery, and (4) interactive democracy with public outreach and accountability-enhancing features.

This categorization does not mean all government websites go through these exact steps or that they undertake them in a linear order. It is clear from looking at agency websites that there is a variety of ways in which e-government has evolved. Based on our research of looking at thousands of websites, however, this sequence appears to be a prevalent course of action in many jurisdictions. The commonality of this model therefore allows researchers to distinguish agency progress based on how far along they are in incorporating various website features.

In the first stage, officials treat government websites much in the way highway billboards are used, that is, static mechanisms to display information. They post reports and publications, and offer databases for viewing by visitors. There is little opportunity for citizen interaction and no chance for two-way communications between citizens and officials. Visitors can read government reports, see the text of proposed legislation, and check to find out who works in specific offices.

Even today, some government offices, such as those of the U.S. Congress, remain stuck in the billboard stage. A study of member websites undertaken by Congress Online at George Washington University found most representatives and senators are using their sites as "promotional tools." Rather than having services or interactive technologies, legislators are employing their websites to post "press releases, descriptions of the Member's accomplishments and photos of the Member at events."[27]

The static nature of a billboard approach limits a visitor's ability to use interactive technologies. Citizens can see information, but not alter it to their own ends. Government websites utilizing this approach offer the advantage of access to information, but do not allow citizens to search the site, send feedback, or order government services. Without the ability to "engage" a government website, citizens cannot take advantage of the technology's capacity for two-way communications or personalize the website to their own specific interests.[28]

Due to these limitations, some government agencies have moved to a second stage, that of incorporating information search features and partial service delivery into the website. In this phase, citizens can access, sort, and search informational databases. Government websites start to place some services online, although the services offered tend to be sporadic and limited to a few areas.

This stage represents an advance over the billboard approach, but there are limits to what citizens can do online. In this situation, most government agencies are slow to incorporate truly interactive features onto their websites. Citizens are not able to "personalize" their website or engage in conversation with public officials. There is little way to take full advantage of the power of digital technologies.

The third stage features "one-stop" government portals with fully executable and integrated online services. This phase offers considerable convenience to visitors. The entire city, state, or nation has one place where all agencies can be accessed. This improves citizen ability to find information and order services. Agency sites are integrated with one another and a range of fully executable services are available to citizens and businesses. Officials show that they pay attention to privacy and security concerns on the part of the general public by posting policies online. No longer are websites static and presentational, but dynamic and interactive. By incorporating advanced features on government websites, citizens gain control over information and service delivery. Visitors can register to receive updates and newsletters, as well as other material that is useful to them.

The limiting factor of this stage, however, is that it is characterized more by a service-delivery mentality than by a vision of transforming democracy.[29] Government websites generally have been slow to take advantage of "democracy-enhancing" technologies that would improve responsiveness to citizens or help the public hold leaders accountable for governmental actions. Public planners are more apt to want to get new services online than seek to extend democracy to disenfranchised citizens. There is little interest in providing opportunities for government feedback and public participation in decision making.

This stage ignores the central virtue of the Internet: its ability to enhance the performance of democratic institutions and improve the functioning of democracy. Technology is available, though not widely implemented, for citizens to convey preferences to government personnel, participate in agency decisions, and improve the functioning of democratic political systems. Few of these attributes have been incorporated into the public sector, however, because government officials emphasize a model of e-government based on service delivery as opposed to system transformation. The public sector is less apt to think of the Internet as a tool for fundamental institutional change than for the delivery of particular services to businesses and the middle class.

While these two visions are not necessarily mutually exclusive, they do represent different emphases, and lead to major variations in e-government priorities. The more service delivery dominates e-government thinking, the less likely government websites are to incorporate interactive features that help the site achieve the full potential of democratic governance. Rather than devising opportunities for participation and representation, many government websites emphasize service delivery to current Internet users.

It is at the fourth stage—interactive democracy with public outreach and accountability measures—that government websites move to a goal of system-wide political transformation. In addition to having integrated and fully executable online services, these kinds of government sites offer options for website personalization (i.e., customizing for someone's own particular interests) and push technology (i.e., providing emails or electronic subscriptions that

TABLE 1-2
E-Government Stages and Models of Technological Change

Billboards	Partial Service Delivery	Portal Stage with Fully Executable and Integrated Services	Interactive Democracy
Key qualities include reports, publications, and databases, but no services or interactive features.	This stage allows visitors to search websites and order a few limited services. There are few privacy or security statements and no means to personalize site.	Site has online services, integrated across agencies. Substantial concern with privacy and security. Some means to obtain electronic updates.	Lots of online services and interactive features. Site features accountability-enhancing features and technologies for public feedback and deliberation.
Incremental Change			
Secular Change			
Transformational Change			

Source: Author compilation

provide automatic updates on issues or areas people care about). These features help citizens customize information delivery and take advantage of the interactive and two-way-communications strengths of the Internet. Through these and other interactive features, visitors can avail themselves of a host of sophisticated technologies designed to boost democratic responsiveness and leadership accountability.

As pointed out by Thomas Beierle, it takes a long time for agencies to become interested in incorporating principles based on online political participation into their mission. A study he conducted of the Environmental Protection Agency relied on a two-week online discussion entitled "Democracy Online: An Evaluation of the National Dialogue on Public Involvement with EPA Decisions." It brought together 1,166 people for an electronic discussion in the form of a bulletin board. According to his analysis, "most people reported being satisfied with the process." The major complaint registered was that "experts" tended to dominate the online discussion, thereby discouraging participation by ordinary citizens.[30] But this effort to incorporate citizen participation represented a novel use of interactive technology on government websites.

These four stages of e-government provide a rubric by which to gauge the effectiveness of technology and the degree of technological change. As shown in table 1-2, the movement from the billboard stage to interactive democracy represents the clearest evidence of transformational change. Governments that

incorporate tools of democratic outreach, interactive elements, privacy and se-
curity policies, and accountability-enhancing elements in their websites come
closest to fulfilling the revolutionary claims of Internet visionaries.

In contrast, movement from billboards to portals with fully executable and
integrated service delivery is consistent with models based on secular change.
Here, the changes are significant, but not revolutionary. Government planners
are incorporating elements that serve the middle class and make it easier to ac-
cess public sector services, but are not using the Internet as a tool for system
transformation. The vision is technocratic, rather than citizen-empowering.

Meanwhile, evidence of incremental change comes when websites move
from the billboard stage to partial service delivery. In this situation, officials
are incorporating new technology, but at a slow pace. They are not making
much use of interactive features. Their goal is not to transform the political or
governmental system, but to add discrete improvements that make it easier to
access online information and services.

The Causes of E-Government: What Drives the Speed and Breadth of Technological Change?

In assessing the factors that drive alterations in individual behavior and insti-
tutional performance, it is tempting to reify technology and emphasize a
technology-driven perspective. Rudi Volti, for example, notes how "techno-
logical determinism" pervades some analysis of change.[31] According to this
approach, technology itself determines change simply by the force of the new
invention. If the telegraph speeds up information transmission across the en-
tire country, then that aspect of the telegraph becomes the reason why news-
papers adopt a more national perspective. Or if television provides visual im-
ages, then the rise of telegenic politicians is attributed to the visual dimension
of television.

This approach, however, ignores the fact that the longer-term impact of
technology is mediated by organizational setting, political dynamics, media
coverage, and budget realities.[32] An organizational approach posits that the
pace and breadth of change is affected by factors such as the nature of work
routines within bureaucratic agencies and the degree to which the organiza-
tion is open to change. These factors have enormous consequences for the
speed of diffusion of technology, people's receptivity to using new technology,
and the extent to which inventions transform society and politics.[33]

As pointed out by Fountain, sometimes the bureaucracy is a barrier in
technological innovation because most new creations represent a change in
the status quo. Each new innovation forces bureaucrats to alter routines, de-
velop new working relationships, and sacrifice autonomy. Bureaucrats can
slow or speed the diffusion of innovation by placing barriers in the path of

new ideas. Even technologies with a demonstrated record of efficiency and effectiveness will not be adopted unless government officials decide that invention should be implemented.

In addition, the revolutionary potential of new technology is affected by political dynamics.[34] Because of their need to provide universal access, government organizations suffer from what is called the "two systems" problem.[35] This dilemma arises when agencies seeking to innovate technologically must maintain parallel systems of information and service delivery (face-to-face, telephone, and mail) at the same time they are building electronic interfaces. Interest group pressures dictate that public sector agencies cannot shut down government offices or stop answering the phone when they create email or Internet delivery systems because many people lack digital access.

The degree of political conflict has ramifications for how the two systems issue is handled and the manner in which new technology is integrated into the public sector. As Lindblom and Wildavsky have pointed out, the incorporation of technology into government inherently is a political process. Interest groups compete to make government decisions as favorable to their interests as possible. This could happen either through labor-management negotiations, use of government contracts, or lobbying by outside organizations.[36]

Groups that are well-organized typically are in a stronger position to gain favorable decisions from government because they provide votes, money, and/or volunteers crucial to the survival of office-holders. Regardless of whether a politician works in the legislative or executive branch, group demands and resources are important in determining whether particular innovations are adopted by government agencies. It is not merely a neutral or technical process in which good technologies rise on their merits. Group claims shape which technologies are adopted and at what rate.

Financial resources and budget conditions are other factors that drive the pace of governmental change. Technology requires up-front investment, and the relative scarcity or abundance of budget support makes a huge difference to the ability of government agencies to innovate. The more difficulty bureaucrats have financing new technologies, the more difficult it will be for those innovations to be adopted and produce large-scale change. During periods of economic prosperity, governments are in a stronger position to innovate than during times of budget deficits. Resources set the broad parameters under which government officials negotiate group demands and navigate bureaucratic settings in the public sector.

Media coverage is important to the dissemination of new technology because it affects both how people think about technology and their receptivity to change. Reporting that is positive about technology encourages people to be favorable to new creations. Inventions that have negative side-effects or get mired in partisan scandals and contracting controversies are going to diffuse much more slowly through the public sector.

Political leadership matters because strong cues from elected officials or top administrators encourage public sector organizations to speed or slow down the adoption of new technology. A governor who wants his or her state to be in the forefront of e-government can overcome bureaucratic intransigence, find resources that facilitate innovation, and resolve group conflict that slows down the pace of diffusion. Leadership that is open to innovation or sees an electoral payoff from adopting technology can make a tremendous difference in how technology gets integrated into the public sector.

As discussed at greater length in chapter 2, it is important to look at organizational, fiscal, and political factors that drive the pace of change. The bureaucratic setting in which individuals make decisions about new technology, the nature of group interests and conflict, and political leadership all affect how quickly technology is introduced into government agencies. Unless these forces are understood, it will be impossible to determine whether new creations fall within models of technological change based on transformation, secular change, or incremental alterations.

The Consequences of E-Government: How the Internet Affects the Public Sector, Politics, and Democracy

Technology has something of a checkered past with respect to its long-term impact on society.[37] For example, inventions such as nuclear fission have been used both militarily and pacifically. Sometimes, even peacetime applications of nuclear energy generation have created devastating environmental consequences. The ability of technology to produce both positive and negative consequences means observers have to be alert to the wide variety of changes that emerge from inventions. It is not enough merely to assess what is happening; one must also ascertain how desirable particular shifts are. Do they increase the effectiveness, efficiency, and responsiveness of a system? This question is particularly relevant to the subject of the Internet, which already has created considerable controversy concerning security, privacy, and content.

Given the complexity of technological change, it never is easy to determine the ultimate impact of new technologies on society and government.[38] As will be made clear in this study, assessing the long-term consequences of technological change is a challenging task. Sometimes, decades must pass before the ultimate impact of inventions becomes clear. Change does not unfold clearly or uniformly. Rather, there are a number of different avenues by which technology emerges.

When the Internet first appeared, people embraced it as the perfect tool for personal liberation. Due to its decentralized character and capacity for two-way interaction, proponents sold it as a nirvana that would give citizens complete control over their information requirements. Rather than having the

government or big media companies control information dissemination, the ordinary person would be empowered to make his or her own choices.

Yet in an era of unwanted spam, viruses, computer hackers, and security breakdowns, people are reassessing the societal benefits of electronic technology. Rather than a tool for liberation and empowerment, the Internet has been plagued by behavior that invades personal privacy, causes large-scale inconvenience, and threatens confidential material.

In 2001 and 2002, for example, the Computer Security Institute estimated that losses from computer viruses alone totaled nearly $50 million, not to mention the countless hours of personal aggravation suffered by computer users.[39] Researchers claim that 10.4 million spam emails are sent every minute of the day around the world.[40] Not surprisingly, in the face of this spam onslaught, a 2003 Pew Internet Survey found that 70 percent of email users complain that being online has become "annoying or unpleasant" and half report they are "less trusting of email" than before.[41]

In thinking about the impact of e-government on the public sector, there are a number of particular aspects that need to be assessed: information availability, serving special populations, online service delivery, democratic responsiveness, democracy enhancement through interactive features, and citizen trust in government. The most basic question concerns the availability of information and whether information is accessible to people with special needs, such as non-native speakers and the physically disabled. Further, citizens enjoy the convenience of accessing information online and not having to call, visit, or mail requests for government documents. Being able to go online and view government reports and databases helps citizens understand what the public sector is doing and how government officials are performing their basic duties.

Service delivery is another aspect of e-government evaluation. What services are online and how well are they functioning? Are they the types of services citizens find useful and that make their lives easier? For many citizens, being able to access services online is one of the most desirable aspects of e-government. It saves time and effort, and is much more convenient than having to visit a government agency in person and wait in line for an extended period.

Democratic responsiveness refers to the degree to which e-government improves a system's capacity to respond to ordinary people. The shared advantage of search engines, email contact information, and interactive features is the empowerment of the common person in his or her dealings with the public sector. Search engines give people control over information by allowing them to search for what they want, as opposed to what a government official may want to show them. Email contact points give citizens a means for notifying government officials when there is a problem or the person wants to lodge a complaint or make a suggestion.

Democracy enhancement refers to the ability of technology to improve democratic performance beyond responsiveness. This could range from simple things such as placing audio or visual materials online (such as broadcasts of hearings or speeches) to more interactive mechanisms that allow citizens to vote, make comments on proposed government rules, or personalize websites to their particular interests. Any of these mechanisms is helpful because it employs technology to tailor usage to the needs and interests of those accessing the site.

Finally, there is the question of how the Internet affects overall political dynamics.[42] How does it affect the relationship between politicians, bureaucrats, and information specialists? Will e-government alter the balance of power between these individuals and improve citizen attitudes toward government? In the long run, proponents have argued that e-government will improve service delivery at lower cost, and thereby transform citizen attitudes toward the public sector. It is important to examine such claims to see if there is improved government performance and whether these improvements lead to shifts in how people see the public sector.

Data and Methods

To get a full picture of how e-government is progressing, I relied on a variety of data sources from content analysis and survey analysis to case studies and aggregate multivariate analysis. I undertook a detailed content analyses of 17,077 American city, American state, American federal, and foreign government websites from 2000 to 2003 (see table 1-3). Our research team analyzed 5,005 city websites, 6,146 state websites, 274 federal websites, and 5,651 global websites.

The city sites were from the 70 largest American metropolitan areas, as defined by the U.S. Census Bureau. We looked at an average of 22 sites per city in 2001, 22 in 2002, and 28 in 2003. The state analysis was based on sites in each of the fifty states (an average of 34 websites for each individual state in 2000, 32 sites per state in 2001, 25 sites per state in 2002, and 32 sites per state in 2003). The global sites were from the 198 countries around the world. We attempted to get up to 20 sites per country, but found many small countries had only one or a few agencies on their website. So we analyzed as many sites as we could find for these countries, and ended up with an average of 12 sites per country in 2001, 6 in 2002, and 11 in 2003.

In terms of case selection, this analysis included sites from each branch of government in the various levels of government. Among the sites analyzed were those developed by court offices, legislatures, Congress, state and national officials, major cabinets and departments, and state and federal agencies serving crucial functions of government, such as health, human services,

TABLE 1-3
Number of Government Websites Studied in Content Analysis, 2000–2003

	2000	2001	2002	2003	Total
City	—	1,506	1,567	1,933	5,005
State	1,716	1,621	1,206	1,603	6,146
Federal	97	58	59	60	274
Global	—	2,288	1,197	2,166	5,651
Total	**1,813**	**5,473**	**4,029**	**5,762**	**17,077**

Source: Author's e-government content analysis database

taxation, education, corrections, economic development, administration, natural resources, transportation, elections, and business regulation. Websites for obscure state boards and commissions were excluded from the study.

For the global sites, we looked at those of executive offices (such as a president, prime minister, ruler, party leader, or royalty), legislative offices (such as Congress, Parliament, and various people's assemblies), judicial offices (such as major national courts), cabinet offices, and major agencies serving crucial functions of government, such as health, human services, taxation, education, interior, economic development, administration, natural resources, foreign affairs, foreign investment, transportation, military, tourism, and business regulation.

Recognizing that there is no agreement on appropriate benchmarks of what constitutes a good or effective government website, we developed our own analysis based upon online features that have been judged important by citizens in market research and opinion surveys: a page with contact information, links to publications and databases, access to services, privacy and security, usability by populations with special needs such as the disabled and non-English speakers, and readability level. Each website was evaluated for the presence or absence of more than two dozen different features at the point in time we visited that site (see appendix I for details on coding these websites).[43] We also conducted detailed tests of the readability level of government websites (using the Flesch-Kincaid test) and their accessibility to the disabled (using the automated "Bobby" software provided at http://bobby.watchfire .com). The entire site for every agency was studied to provide a complete picture of its contents.

I also analyzed the raw data of a national public opinion survey conducted August 14–16, 2000, with 1,003 randomly sampled adults across the United States. This telephone survey had a margin of error of plus or minus 3.5 percent and was undertaken by the polling firm of Peter Hart/Robert Teeter of Washington, D.C., on behalf of the Council for Excellence in Government. This survey sample (as well as follow-up surveys in 2001 and 2003) was devel-

oped using random-digit-dialing sampling techniques and included an over-sample of 200 frequent Internet users. Data were weighted in accordance with the demographic composition of the United States population. Seventy-nine questions were included, such as items measuring the use of government websites, evaluations of e-government (including ease of finding sites, overall rating, and past and future positive impact), views about government and political activity (trust in government, confidence in government, views about government effectiveness, and measures of political activity), and common political and demographic controls (sex, age, race, income, education, and party identification) (see appendix I for question wording and order).

This public poll was followed with another survey in 2001 that looked at whether opinions had shifted in light of the September 11 terrorist attacks. The 2001 survey was sponsored by the Council for Excellence in Government and completed by Hart/Teeter. It was based on interviews with 961 adults nationwide during November 2001. Several questions in 2001 were repeated from the 2000 survey in order to facilitate comparability. The 2001 survey had a margin of error of plus or minus 3.5 percent.[44]

In 2003, the Council for Excellence in Government sponsored another survey focusing on public opinion towards e-government. This research, also undertaken by Hart/Teeter, included interviews with 1,023 adults across the country in February 2003. It had a margin of error of plus or minus 3.1 percent.[45]

To see how bureaucrats felt about e-government, I studied a Council for Excellence in Government survey of bureaucrats undertaken August 10–18, 2000, plus follow-up surveys in November 2001 and February 2003. Each survey was completed by Hart/Teeter and investigated how directors and managers felt about electronic governance. The 2000 survey included interviews with 150 local, state, and federal government administrators; the 2001 survey was based on the views of 400 administrators; and the 2003 project interviewed 408 administrators. Each of these surveys utilized many of the same questions as on the public survey, such as overall assessments of e-government, what aspects of the public sector are being affected, and concerns about e-government. The 2000 bureaucrat survey had a margin of error of plus or minus 7 percent, while the 2001 and 2003 surveys had margins of error of plus or minus 5 percent.

In order to examine responsiveness to citizen requests, our research team sent an email in 2000 to four offices in each state—the governor, the legislature, the top state court, and the major human services agency—as well as to all major federal agencies. We undertook similar tests in 2001, 2002, and 2003. The message asked a simple question: "I am trying to find out when your agency is open. Could you let me know the official hours your office is open? Thanks for your help." Email responses were recorded based on the number of business days it took each agency to respond. These results help us

analyze the degree of e-government responsiveness to citizen requests and how that responsiveness changed over time.

I gathered budget data outlining state government expenditures on information technology for fiscal years 1998, 1999, and 2000. This information was compiled by the National Association of State Information Resource Executives (now known as NASCIO, or the National Association of State Chief Information Offices). These data show the percentage of the state budget devoted to information technology, and how those figures changed between 1998 and 2000. Of the fifty states surveyed by NASCIO, 46 percent (23 states) provided IT budget figures. The jurisdictions responding included both large states (Texas, Ohio, Michigan, and Pennsylvania) and small states, as well as a mix of "innovating" and "following" states.

I undertook a detailed case study of online tax filing at the federal and state level to get a sense of progress on the most widely used online service. Although there is considerable variation across the fifty states as well as between the approaches at the state and federal levels, the analysis sheds light on how this service was put online, the role of outside contractors, the cost of online service delivery, and the reactions of the general public.

Finally, I completed an aggregate multivariate analysis of e-government performance at the state (and national) level to explain why some states (and nations) have made greater progress than others. Using various indicators of e-government activity, I developed state-level (and national) indicators and modeled their ability to distinguish jurisdictions that have made progress from those that have not. Among the topics examined were the impact of wealth, organization, and democratization on overall e-government performance, number of online services, quality of privacy policies, and readability level.

Plan of the Study

The outline of this study is as follows. Chapter 2 examines the bureaucratic, fiscal, and political setting in which e-government has taken place. By studying these types of explanatory factors, I investigate how these determinants of technological change are affecting the ability of the Internet to improve government service delivery. In general, I find that several of these factors are constraining technological change and slowing the rate of innovation in the public sector.

Chapter 3 studies the content of e-government. Drawing on an analysis of thousands of government websites at various levels (United States city, state, and federal), I show how the rate of change is proceeding and how quickly progress is being made at putting materials online.[46] In addition, I investigate

the degree to which special populations such as non-English speakers, those who are not very literate, and the physically disabled are being served by e-government. This analysis demonstrates that e-government is adding features in a manner consistent with an incremental change more so than transformation.

Chapter 4 seeks to explain why some governments have done better at incorporating technology into their websites than have others. Using the various performance indicators presented in chapter 3, I develop aggregate statistical models that explain e-government activities, such as the number of online services, accessibility to the disabled, quality of privacy policies, and website readability. Briefly, I find that factors such as state wealth and legislative professionalism are keys to the development of online government in the American states. There is, however, considerable variation in explanatory factors depending on which aspect of electronic governance is being studied. There is no association between e-government performance and privatization or budget deficits in the states.

Chapter 5 presents a case study of state and federal online tax filing. Because this service generates revenue, it has been very popular with government officials. This case study examines how putting tax filing online has progressed, what problems have emerged, and what this area tells us about the ability of technology to alter people's behavior. By focusing on a particular online service that is being utilized by millions of Americans, I show both the potential of and the limits on the so-called e-government revolution.

Chapter 6 focuses on a particular aspect of e-government: its ability to improve democracy and responsiveness to citizens. These are key normative values in the governmental area. Proponents have claimed that e-government will improve responsiveness and bring citizens closer to political leaders. By looking at the extent of democratic outreach in American e-government (meaning using the interactive aspects of the Internet to reach out to citizens) and how responsive bureaucratic agencies are to citizen requests, I argue that e-government has not dramatically improved interactivity, responsiveness, or public outreach.

Chapter 7 incorporates a citizen perspective on e-government. It focuses on who is going online and what they like and dislike about digital government. Drawing on public surveys, I study the extent to which e-government is afflicted by a digital divide and how this affects the ability of the Internet to transform the public sector. Not surprisingly, there is extensive heterogeneity in terms of reliance on and attitudes toward e-government. Various groups of citizens differ considerably in how much they like electronic governance. There are big differences in usage levels by age and education, and these differences affect the ability of various groups to take advantage of online information and services.

Chapter 8 looks at the ability of e-government to improve citizen trust and

confidence in the public sector. For years, Americans have been cynical about the government, feeling that it is inefficient and inept at solving problems. E-government proponents, however, claim the Internet offers the potential to turn around citizen attitudes and improve citizen confidence in government. This section presents evidence showing the degree to which these hopes are being met, and ways in which e-government has the potential to draw citizens and leaders closer together.

Chapter 9 focuses on global e-government. How are other nations coping with electronic governance? How does the public sector in foreign nations compare to that in the United States in terms of e-government initiatives? Are the determinants of foreign e-government similar to America? In what ways do the varying cultures, bureaucratic settings, and political systems affect e-government? This section looks at the 198 nations around the world to see how e-government is progressing and whether factors such as wealth, organization, and democratization are constraining the incorporation of new technology. In addition to a detailed content analysis of foreign government websites, I undertake an aggregate analysis at the national level to determine why some countries have made faster e-government progress than others.

Chapter 10 steps back from the particular findings reported in this study and discusses the relationship between democratization and e-government performance. I show that nondemocratic systems are as likely as democracies to perform well on new technology initiatives. Some authoritarian countries have been successful with digital government because they have top-down political structures and are able to overcome bureaucratic and political intransigence. Most political regimes have features that limit technological change and discourage system transformation. To illustrate this point, I compare the Internet with historic inventions such as the printing press, telegraph, telephone, radio, and television, and argue that the slow rate of organizational change seen with the Internet is similar to that of many past creations. In each era, there have been a variety of political and institutional factors that have constrained the rate of diffusion. I close the volume by discussing what can be done to facilitate technological innovation and make public sector organizations more receptive to change.