Theory

Introduction

This book deals equally with the Internet and with institutions, the latter a dominant concern of political and social thought since antiquity. In governments around the globe, from Indianapolis to India, from San Francisco to Singapore, from Chile to China, policymakers view the Internet either as a force to increase the responsiveness of government to its citizens or as a means to further empower the state. In developing nations, new wireless information and communication technologies signal an unprecedented opportunity to hasten the pace of development and connection to the developed world. A marked increase in the growth of transnational financial, legal, and regulatory systems—made feasible by the Internet—has raised serious debate about the future, the location, and the structures of governance. In authoritarian regimes, the Internet threatens domination by the state over information and communication but at the same time, paradoxically, serves as an instrument of consummate state surveillance and control over society. The choices we face in the present regarding the use of digital tools and the institutional arrangements in which they are embedded will influence the way governments work around the globe during the next century and beyond.

The analytical framework I advance extends and refines institutional theory to encompass recent fundamental developments in information

technologies. This intellectual territory lies virtually uncharted by institutional theorists in political science, sociology, and economics or in the related practical fields within public policy and management and organizational behavior. As the use of the Internet unfolds, questions central to institutional thought persist with increasing force. How are bureaucratic policymakers using networked computing? Are they negotiating new institutional arrangements as a consequence? To what extent and in what ways are they constrained by current institutional arrangements? What extensions of institutional theory are necessary to take account of fundamental change in organizational communication, coordination, and control? My purpose is to advance theory to inform answers to these questions. By clarifying and extending concepts and relationships, central tasks of theory-building, this book also contributes to practice.

Enter the Virtual State

A key phase of the Internet's impressive growth began in 1993, coinciding with the initial period of a major government reform effort, the National Performance Review, led by Vice President Al Gore. Having focused initially on developing regulatory and legal regimes conducive to e-commerce, the government then turned to the task of building digital government, in part through the strategy of creating virtual agencies. The virtual agency, following the web portal model used in the economy, is organized by client—for example, students, seniors, small-business owners, or veterans; each site is designed to provide all of the government's services and information from any agency as well as links to relevant organizations outside government. Web portals, extending to government the business concept of 7 x 24 x 365 (being available seven days a week, twenty-four hours a day, 365 days a year), would restructure the relationship between state and citizen to be simpler, more interactive, and more efficient. A virtual state (my term) is a government that is organized increasingly in terms of virtual agencies, cross-agency and public-private networks whose structure and capacity depend on the Internet and web.

Cost savings, although sizable in many instances, have not been emphasized during these early efforts. Yet they are potentially enormous.[1] The U.S. Department of Commerce estimates that the cost to the government of processing a payment would be reduced between $1.65 to $2.70 for traditional administrative processing and from $0.60 to $1.00 for web-based processing.[2] Public agencies process hundreds of millions of paper-

based transactions annually in the form of bill payments and document submissions and could achieve similar efficiencies across a range of transactions. The Department of Education services approximately 20 million student loan accounts. It pays a contract fee of twelve dollars per toll-free telephone call for access to student account information in the department's central processing system, which stores the database of Title IV student aid, student loan origination, and aid disbursement to schools. Web-based queries to this database cost only a few cents.[3]

Movement from paper-based to web-based processing of documents and payments typically generates administrative cost savings of roughly 50 percent—more for highly complex transactions. This figure ignores additional savings of money, time, travel, and effort to citizens and intermediate institutions. The sum of the following transactions with government—birth registrations; elementary, secondary, and college enrollment; motor vehicle registration and inspection; voter registration; construction permits for new housing; and patent and trademark applications—was nearly $443 million per year in 1999, according to the U.S. Census Bureau.[4] The sheer volume of government transactions suggests the enormous savings electronic transaction processing alone could provide.

Forrester Research, a private research firm, predicts that by 2006 governments at the local, state, and federal levels will receive 15 percent of their total collections, or $602 billion, over the web.[5] This figure is significant not only for its impressive size, but also because private vendors and e-government providers typically charge a percentage fee for each transaction. Thus digitizing government can create a particularly lucrative new market. If no other pressure for electronic government existed, the market potential for businesses alone would move digitization forward. By the summer of 2000, nearly every federal agency and most state and larger local governments provided information and some services on the web. The median number of web-based state government services was four. Forms may be downloaded and taxes filed electronically, professional licenses obtained or renewed digitally, and state employment databases, sex offender registries, and government contracts searched online.[6]

The web's potential to support more efficient procurement means government benefits financially and administratively. In fiscal year 1999, U.S. government expenditures at all levels for procurement equaled $584 billion, of which $177 billion was federal defense spending.[7] Many large firms using web-based procurement to put supply chains on the web gain transparency and improve markets. Some have reported savings of 20 percent

annually from use of the web for business-to-business exchange, although more recent estimates are smaller.[8] Similar government savings are estimated to yield nearly $117 billion per year.[9]

In addition to the development of web-based government-to-citizen (G2C) services and government-to-business (G2B) digital procurement processes, development of government-to-government (G2G) connectivity promises to yield significant benefits. Agency autonomy, competition, and lack of interoperability ("stovepipes") have long hampered coordination, slowed communication, and diminished opportunities for joint policy problem-solving in government. Open standards and protocols on the Internet allow all computers to be connected, resulting in the remarkable connectivity, size, range, and richness of the web. Yet the technical infrastructure for linking the computers of the government is no substitute for the institutional infrastructure required to support coordinated practices, procedures, cultures, incentives, and a range of organizational, social, and political rule systems that guide behavior and structure agencies.

The major challenge for government is not the development of web-based G2C transactions but reorganizing and restructuring the institutional arrangements in which those transactions are embedded. Policymakers have barely contemplated integration or reorganization behind the web, in the bricks and mortar of government. Moreover, it is clear that the current information infrastructure in most government agencies could not support e-government at any appreciable level, meaning that the Internet alone cannot interconnect agencies and the public. The initial euphoria that greeted e-commerce has been replaced with a growing awareness of the painstaking and painful organizational and industry restructuring that will be necessary to further exploit the coordination, control, and communication potential of the Internet. Government is following a similar trajectory. Unlike private firms, however, government reorganization is far more difficult and highly political because of the embeddedness of agencies in long-standing institutions. The reorganization of government as a consequence of the Internet signals an institutional transformation of the American state.

These reform challenges demand scholarly inquiry. This book seeks to break new ground by incorporating networked computing into institutional perspectives on governance and organizations. The intellectual precursors of this study are firmly situated in three broad streams of theory and research rooted primarily in political science, organizational and economic sociology, and studies of technology and organization.

The first stream, the study of governance, has been inextricably linked to institutions since antiquity. Robert Dahl observed: "That the character of a regime and the qualities of its people are somehow related has been a commonplace of political philosophy since the Greeks."[10] Aristotle argued that effective democratic institutions are intimately connected to the social and economic development of the demos. Plato, in the *Republic*, noted that similar institutions of governance vary depending upon the cultural characteristics of the citizenry. In the mid-nineteenth century, as constitution building in the nation-states gained impetus, John Stuart Mill sought to devise the institutional structures and processes of representative government that would protect individual rights and interests.[11]

More recently, interest in institutions has encompassed a range of overlapping and, at times, competing research programs.[12] Robert Putnam has furthered our understanding of the relationship among democratic institutions, politics, and social capital.[13] James March and Johan Olsen have contributed to institutional thought by delineating both rational choice and boundedly rational organizational bases of politics.[14] Robert Keohane and Joseph Nye have argued that realism in international relations fails to account for the effects of complex interdependence, international institutions, and the importance of "soft power."[15] International relations scholars have long examined the underpinnings of international regimes that govern in the absence of overarching authority.[16] Historical and comparative studies of government institutions, particularly those that examine the autonomy, capacity, and development of the state, have emphasized the political conflict and negotiation underlying institutional change and development as well as the strong effects on development of history, culture, and structural inertia.[17]

Other political scientists and sociologists have used an institutional lens to examine individual and organizational relationships and behavior in the policymaking process.[18] Researchers in this stream tend to focus on policymaking as it is actually carried out by individual and organizational actors rather than on more formal models of legislative or interest group behavior.[19] As Hugh Heclo observed, political sociologists have attended to the social relationships and social conditions that lead to public policies and the effects those policies have on social structure. Political scientists cast their analytical gaze on the political relationships, political forces, and political effects of policy. Yet public managers and other government actors are both social and political.[20] The analytic distinctions are imposed on the phenomena. The organizational, and more structural, variant of

this mode of inquiry is perhaps best exemplified by Edward Laumann and David Knoke in *The Organizational State*, which views policymaking from the perspective of constellations, or networks, of public, private, and non-profit organizations.

The second broad stream from which this book draws is the new institutionalism in organizational theory and sociology.[21] At the turn of the twentieth century, Émile Durkheim, the founder of sociology, defined it as "the science of institutions, of their genesis and of their functioning."[22] John Meyer, Richard Scott, and Brian Rowan have explained the roles of symbols and rituals in institutions and their relationship to legitimacy.[23] Paul DiMaggio and Walter Powell accounted for similarities in organizational forms and practices within organizational fields not as the result of rational choice but more often as the product of institutional isomorphism, processes by which organizations in a given field conform to normative influences, mimic others, or are coerced by powerful actors in their environments to adopt practices.[24] Other sociologists incorporate self-interest and incentives into institutional analysis to construct a choice-within-constraints framework that overlaps substantially with the new institutional economics.[25]

Mark Granovetter, in a seminal article published in 1985, argued that economic action is embedded in ongoing social structures and social relations.[26] His clear conceptual account of embeddedness in institutional and economic life reinvigorated a long-standing but dormant line of research in economic sociology. Embeddedness, according to Granovetter, affects both individual action and institutions. His approach sought a "third way" between "an atomized, undersocialized conception of human action [developed] . . . in the utilitarian tradition" and an oversocialized conception of the individual as one who has internalized norms and obligations to such an extent that terms such as "interests" and "choice" lose meaning.[27] Subsequent research has further developed the antecedents, characteristics, and outcomes of embedded network relationships, explored the mechanisms by which networks and embeddedness influence economic behavior, and explored the links between institutions and networks.[28]

The third major stream of research informing this book considers the relationship between information technologies and organizations. Max Weber recognized clearly the rapid development of bureaucracy in the nineteenth century as a response to the industrial revolution. Bureaucracy was needed to control decentralized, complex operations and to coordinate rail transport. He explained bureaucracy as a technology of control

through its structuring of information into cases and channels, its strict reliance on impersonal relations, and inevitable tendency toward rationalization.[29] More recently, Alfred Chandler, the business historian, traced the evolution of the modern corporate form and its practices.[30] James Beniger has placed the "information revolution" in more than a century of efforts to gain speed and control over material processing. He argued that developments in computing typically respond to crises of control.[31] JoAnne Yates traces the dominant modes of managerial communication in complex organizations to their roots between 1850 and 1920 as written, formal communication subsumed earlier, less formal means.[32] Stephen Barley has explored the relationship between information technology (IT) and the organization of work.[33] Other researchers also have focused on the social and structural mechanisms by which individuals and organizations use new information technologies and on the effects of information technology on organizations and the design of work.[34]

This book seeks to integrate and to refine and extend research in these three broad streams. With few exceptions, little detailed inquiry on embeddedness and the role of networks has been conducted on government organizations and institutions. Laurence O'Toole has observed that public management "increasingly takes place in settings of networked actors. . . . Yet the standard writings to which most administrators turn for advice to improve performance devote relatively little attention to acting effectively in such situations."[35] Networked arrangements in government are prominent and likely to increase. The federal budget appropriates only a small proportion of the total to single-agency programs; nearly all major federal policies require a constellation of public, private, and nonprofit organizations.[36] Researchers have used the term "the hollow state" to denote that government increasingly takes place in the private and nonprofit sectors.[37] This book seeks to extend research on embeddedness and networks to better align research with current phenomena.

Studies of technology and organization have remained persistently ignored by social and policy scientists except those with an explicit interest in technology. Information technology has yet to be theorized in the institutional perspective or in other central paradigms of political science and sociology with the exception of communications studies. Although theories of technology adoption and innovation have a long history, particularly in economics, the ways in which information technologies interact with behavior, ongoing social relations, and organizational structure and process have yet to be adequately conceptualized and remain the province

of research programs relatively isolated from the mainstream. As Heclo wrote in a different context, "One of the things most astonishing to posterity about our own times will be not how much we understood but how much we took for granted."[38] A century from now, social and policy scientists will look back with amusement and no small amount of condescension at the glacial pace with which social scientists moved to consider fundamental changes in information processing and their implications.
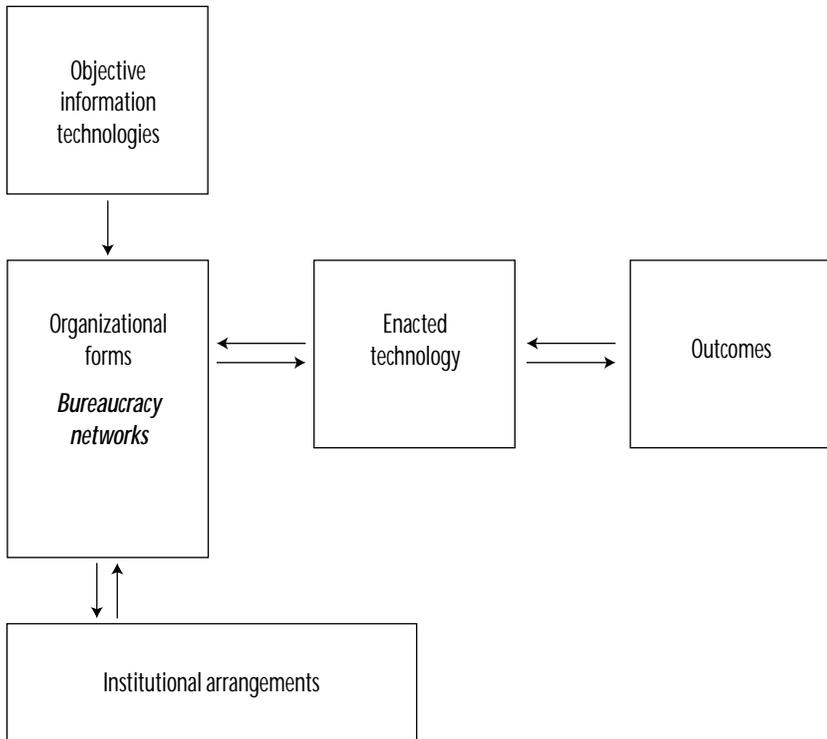
Enacting Technology

Institutional theories provide accounts of the constraints that institutions impose on action. These theories explain stability and coherence in collective and individual action but tend to leave essential and pressing questions unaddressed. How do institutions change? If institutions constrain action, how and why do only some actors and some organizations conform? How does technology enter institutional theory as a variable? By what mechanisms are institutions affected by fundamental changes in information processing and communication? In what ways do enactments of information technology strengthen or weaken constraints posed by institutions?

The analytical framework I advance is introduced here in simplified form in figure 1-1. Its elaboration and support form the substance of this book. This framework contributes to institutional theories by treating information technologies endogenously. Information technologies are transformed in the process of being designed and used. I distinguish *objective technology* from what I call *enacted technology*. Objective technology includes the Internet, other digital telecommunications, hardware, and software; enacted technology consists of the perceptions of users as well as designs and uses in particular settings. The Internet is merely a telecommunications spinal cord that computers connect with throughout the globe. It is a breathtaking achievement, but its force as an agent of change lies in the fact that it reduces some communication and coordination costs to nearly zero and affords an enormous array of new uses.

Information technologies differ from production or manufacturing technologies, the referent for "technology" in most institutional and organization theories. Information technologies are much more decomposable, flexible, and open to myriad designs and uses. Industrial technologies are brawn. Information technologies are brain and nervous system. Industrial technologies replace arms, hands, and muscle. Information technologies

FIGURE 1-1. Technology Enactment: A Basic Framework

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┌─────────────┐
│  Objective  │
│ information │
│technologies │
└─────────────┘
       │
       ↓
┌─────────────┐      ┌─────────────┐      ┌─────────────┐
│Organizational│     │             │      │             │
│    forms    │ ⟷   │   Enacted   │ ⟷    │  Outcomes   │
│             │      │ technology  │      │             │
│ Bureaucracy │      │             │      │             │
│  networks   │      └─────────────┘      └─────────────┘
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┌──────────────────────────┐
│Institutional arrangements│
└──────────────────────────┘
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replace communication, thinking, and calculation. They are far more complex in their application, use, influence, and effect. Institutional theory has not yet accounted for information technologies and their role.

Institutional and organizational arrangements mediate technology enactment. In this framework, organizational arrangements refer to bureaucracy and interorganizational networks, both of which are dissected in later chapters.

Political scientists often use the term *institution* as a rough synonym for government. Many social scientists, however, distinguish between organizations and institutions, although the analytical distinction is blurred. Organizations are technical instruments in which products or services are produced and exchanged in a market and in which rewards are given for "effective and efficient control of the work process."[39] In contrast, institutions generate rules and requirements to which actors and organizations

must conform if they are to receive support and be deemed legitimate in their authorizing environment. Organizational environments reward effectiveness, efficiency, and control over production. Institutional environments reward normative requirements for appropriateness and legitimacy and, in some cases, conformity to procedure, presentation, symbols, and rhetoric. Government agencies possess both organizational and institutional elements and must function in both environments. They are expected to be efficient and effective in their core activities but operate in a legislative, oversight, and political environment that requires conformity to a range of requirements that have little or nothing to do with economic output. Institutional arrangements range from micro-level elements in organizations to macro structures in the state and society.

Information technologies and organizational/institutional arrangements are connected reciprocally. Both function in this framework as dependent and independent variables. Each one has causal effects on the other. Institutions and organizations shape the enactment of information technology. Technology, in turn, may reshape organizations and institutions to better conform to its logic. New information technologies are enacted—made sense of, designed, and used (when they are used)—through the mediation of existing organizational and institutional arrangements with their own internal logics or tendencies. These multiple logics are embedded in operating routines, performance programs, bureaucratic politics, norms, cultural beliefs, and social networks.

Therefore, outcomes are unpredictable and variable in their rational, political, and social features. The effects of the Internet on government will be played out in unexpected ways, profoundly influenced by organizational, political, and institutional logics. In many instances the Internet does not lead to institutional transformation but is enacted to strengthen the status quo. Consider the use of information systems that speed up the processing of information, monitor employees more closely, and produce detailed monthly reports of activities. Little has changed structurally in this scenario. The same processes simply run faster and employees operate under tighter controls. In other instances technology is used explicitly to create change. Information technologies are not so much adopted or implemented as they are enacted by decisionmakers.

Reciprocal effects between technology and institutions are not sequential and direct but complex and highly interdependent, forming a new kind of virtual politics. When different logics intersect or conflict, the results are unpredictable. A high level of uncertainty, stemming in part from

the pace of technological change, contributes to the production of unanticipated consequences and externalities in positive and negative variants. The negotiations, conflicts, and struggles among bureaucratic policymakers constitute the building of the virtual state. The outcomes of these struggles will shape its contours.

In most accounts of information technology and its influence, the causal mechanism that connects technology and institution is direct:

information technology → predictable institutional change

In these accounts, networked computing leads to a set of predictable changes, including flattened hierarchies, greater use of cross-functional teams, and more collaborative cultures; and more permeable organizational boundaries lead to greater use of interorganizational networks.[40] However, at least two decades of research on technology and organization demonstrate conclusively that these predictions, while possessing a certain technological logic, are not borne out in general.[41] To cite one example, Harold Leavitt and Thomas Whisler predicted in the 1950s that information technology would lead to the disappearance of middle-management layers.[42] It was clear even fifty years ago that automation could easily accomplish many of the routine tasks performed by middle managers. Yet the inarguable logic of IT did not lead to this change until the mid-1980s, when organizations began deep restructuring efforts in the face of an economic downturn, increased global competition, and a political culture that allowed massive downsizing in the economy. As Fernand Braudel observed about the industrial revolution, the technologies for such a revolution were in place for many years and in several countries. They sparked a "revolution" in Great Britain when economic necessity and institutional arrangements interacted synergistically with technology.[43]

An institutional perspective alerts us to the fact that government is likely to use the Internet differently than firms in the economy use it. The development of the virtual state is not likely to resemble the growth of electronic commerce. Government reform is qualitatively different from restructuring in firms and industries. Ironically, the substantial efficiency gains driving the development of e-commerce and industry change are disincentives for bureaucrats to use the Internet in government. Whereas dramatic efficiency gains and cost savings in the economy are rewarded through profits, promotions, stock price increases, and market share, similar gains in government are rewarded with budget cuts, staff reductions, loss of resources, and consolidation of programs. In this instance, incentives

and rewards in the institutions of government are the obverse of those in the market. During the current first wave of digital government euphoria, when information and services are beginning to migrate to the web, efficiency gains and their political implications are not apparent. But during the next wave, when government-to-government channels develop further, bureaucratic decisionmakers will rapidly experience the perversity of incentives for institutional transformation.

Over the next decade, government decisionmakers will make important choices about the development of electronic government. Deliberate and informed decisions regarding alternative designs and uses of technology and institutional arrangements will require clarifications of the challenges and implications. Management and digital government consultants, eager to exploit the huge government market for digital tools, have already predicted that Congress will have to force the restructuring of agencies in order for government to take advantage of the benefits of the Internet and avoid bureaucratic gridlock.[44] These predictions suggest the pressure that governments might face to keep pace with changes in the economy. Without a conceptual framework to guide analysis and practice, researchers might simply document internecine bureaucratic struggles alternately with cases of dramatic innovation rather than helping decisionmakers to structure decisions and their consequences.

The Structure of the Book

The analytical framework summarized here is an outline for the chapters that follow. The study is grounded in the experience of the federal government, yet its lessons apply to state and local governments as well as to other democratic institutions around the globe. Part I of the book, which focuses on theory, dissects and analyzes organizational and institutional structures. Chapter 2 provides the historical and political context of national government reform in the United States during the National Performance Review (later called the National Partnership for Reinventing Government). Chapter 3 analyzes the chief properties of networked computing and its current uses in American government. Chapter 4 takes up bureaucracy, whose demise has been greatly exaggerated, and asks whether Max Weber would recognize the structures now called postbureaucratic. The network form and its characteristics are the subject of Chapter 5. Many experts have argued that networked governance replaces and

supersedes bureaucracy. Whether or not this is true, the network form is growing in use and importance. Chapter 6, the central theoretical chapter, addresses institutions and presents a detailed discussion of the technology enactment framework and some of the initial propositions derived from it.

Part II focuses on practice. Three detailed case studies examine the ways in which bureaucratic policymakers—senior civil servants and appointees—are enacting technology for public purposes. Government actors in the bureaucracy, more than any other group, will construct or reconstruct the American state in an information age. When institutional arrangements and technology affect one another, they do so as a consequence of the actions and decisions of political actors. Their engagement with the structure of government and the policymaking system—and their role in making sense of and integrating new technologies into the nervous system of government—dwarfs that of any other group.

At the beginning of the Clinton administration, government reform efforts emphasized technology as a catalyst for modernization and the importance of bottom-up change as a way to revitalize the bureaucracy. Chapters 7 and 8 examine the development of the International Trade Data System, a governmentwide G2G and G2B system for processing international trade. The case scrutinizes the relationship between state and economy as international supply chain integration increases the volume and pace of the movement of goods and services across international borders. The International Trade Data System represents the kind of restructuring likely for G2G channels to be developed. If the state is to adequately regulate a global economy in which agricultural products, pharmaceuticals, assembled goods, and inputs cross international borders with impressive frequency, it has little choice but to develop information systems that integrate and facilitate the work of the nearly sixty-three separate agencies with partial jurisdiction over trade.

Far less ambitious than a governmentwide information system, a G2C web portal integrates the information and services of "bricks and mortar" agencies in cyberspace. Presented in Chapter 9, the development of the U.S. Business Advisor, the nation's first federal government web portal, brought together for the first time information and services from several agencies that serve or regulate business. Small-business owners could search one website for all regulations, laws, and information enforced or available through the government. The Business Advisor provides online approval for small-business loans up to $150,000, online tutorials, and indexes of export opportunities and regulations from around the globe. This case

study explores the institutional and political challenges of building such virtual agencies.

Well before the Internet was publicly accessible, large organizations used intranets, including shared databases, e-mail, and other digital tools. No part of government pursued this path more vigorously than the army, in its efforts to modernize after the Vietnam War. In Chapter 10, I examine the user-as-developer approach followed in the Ninth Infantry Division, once the high-technology testbed for the tactical army, to develop automated battlefield management systems. The unanticipated consequences of technology enactment in the army provide surprisingly relevant and timely lessons for civilian government.

These cases were not selected at random and are not intended to be representative of all government technology efforts. They were chosen as examples of the intricate interdependence between individual action, institutional structure and practice, and networked computing. They allowed me to observe firsthand the processes by which government actors learn to use new technologies with transformative potential. The dramatic surge of activity following the release of the Internet for public use provided an unparalleled opportunity to observe a natural experiment in institutional transformation. I "test" propositions against empirical evidence to generate theory rather than to evaluate predictive theory. These cases represent cutting-edge experiments that were expected to achieve dramatically important results. In all instances, senior-level support was strong. The size of the effort and the political backdrop varies with each case, as does the level and type of interorganizational integration. The cases illustrate the sorts of challenges that will become more pressing and frequent as governments around the globe move beyond simply putting information and services on the web to the more complex challenges of institutional transformation.

Why is this inquiry important? In the face of momentous social transformation, a curious silence echoes through much of the academy. A review of the first-tier journals in organization theory and political science yields an almost imperceptible nod to the Internet. It is as if an information revolution were not taking place among experts on organizations and institutions. A troubling gap is growing between the importance of the Internet and its effects on government and society and the attention of social scientists to this empirical phenomenon. Social scientists, with few exceptions, have barely taken account of fundamental changes in communication, information processing, coordination, and control enabled by networked computing. It may be that the din of popular attention to the

Internet produces an understandable antipathy toward the topic among social scientists. Social science should avoid the trendy in order to focus on questions of deep and enduring concern to society. Yet the information revolution represents a fundamental, deep, and disjunctive shift in society, economy, and government. It is a revolution in its effect, not in its speed. This book fills a gap rather than standing in opposition to well-developed approaches to the topic. There are no well-developed approaches.

Evolutionary theories tell us that individuals will find the most efficient and best-suited forms of the Internet and its use in government through a competitive process that will separate the good ideas from the bad. If this is so, policymakers have only to continue muddling through until the separation process occurs. Such wishful thinking, though appealing, is highly problematic. Rational-actor models tell us that individuals will find the most efficient uses of the Internet in government, and that better performance and utility will result. If efficiency were the only, or even the chief, criterion of institutional performance in government, this might be a plausible account. Technological determinism tells us that the power and ubiquity of the Internet and the pace of technological change have overwhelmed human capacities to plan, design, or consider alternatives. In such a view, technology itself leads inexorably to new institutions that were planned and anticipated by no individual. These theories provide partial insights. This book is for those who believe that institutions matter.

If organizations, institutions, and technologies carry different and conflicting features, and if the emergence of interagency networks forces a confrontation among these different elements, what, exactly, can be said about the details of this new politics? Under what conditions are costs and disappointments likely to be high? What steps can actors take to improve governance? If we are to exercise control over our future we must understand our core institutions, their constituent elements, and the mechanisms by which they change with far greater clarity than we now do. If we are to control information technology rather than relinquishing control to fate, evolution, competition, determinism, cyberutopianism, a technocratic elite, or "the Internet," it will be more important to understand the interplay of technology and institution through human action than to develop dramatic predictions of a future over which we are powerless.