

Chapter 1

Very Unsexy – Even for a Management Issue

1.1 Problems That Won't Stand Still and Won't Remain Solved

When Public Law 93-556 was enacted on December 27, 1974, a Commission of the US Congress was established to address a problem of long-term significance to all Americans. Scarcely one of the great issues of the day, considering the momentous political events of 1974 – Watergate hearings, President Nixon's resignation, and the Watergate trials – the study of federal paperwork management began with little political fanfare. The challenge before the Commission on Federal Paperwork was not heralded as especially significant; and its impact would not be seriously felt for more than a decade. That paperwork challenge is introduced in this chapter along with the primary focus of this research, understanding how policy issues such paperwork are transformed over time into management reform or concerns over electronic government.

In Washington policy circles, it's been said, management issues are not very sexy, and this -- federal paperwork -- was very unsexy, even for a management issue. The Commission established by Public Law 93-556 was explicitly instructed to "study and investigate statutes, policies, rules, regulations, procedures, and practices of the Federal Government relating to information gathering, processing and dissemination, and the management and control of these information activities."¹ At the same time, Public Law 93-556 implicitly signaled an opportunity for policy entrepreneurs, the opportunity to create a new policy subsystem extending beyond the visible policy horizon. Members appointed

¹ An Act to Establish a Commission on Federal Paperwork, *Statutes at Large*, 93rd Congress, 2nd Session, (1974), pp. 6661-6667.

to the Paperwork Commission could hardly foresee the full range of consequences flowing from the ideas they embraced, even as their concepts were converted into institutional structures, policies, and processes for managing the vast information stores and technology resources of the U.S. Federal government. And while scarcely concerned with providing a policy model for future state and local government activities, many of the commission's ideas have been adapted throughout our federal system.²

In the legislative follow-up of the commission's work, management reforms were prescribed to deal with many problems identified as resulting from federal paperwork.³ A key Commission recommendation, calling for a new management function, was subsequently codified in the Paperwork Reduction Act (PRA) of 1980. The PRA required Federal agencies to establish a new management function, called "information resources management" or "IRM", under the oversight of a new Office of Information and Regulatory Affairs (OIRA) within the Office of Management and Budget (OMB). The Senior IRM official in each agency was charged with implementing paperwork reforms, and managing the agency's information resources and information technology assets. Over the past quarter century the IRM-related agency responsibilities have been expanded in scope and been elevated in institutional stature, and now reside with agency Chief Information Officers (CIOs), the follow-on to the Senior IRM official.

The early years of the 21st Century confront Chief Information Officers of Federal agencies with an expanded array of issues: information assurance and network security; privacy, confidentiality, and accessibility of information; records retention and e-mail preservation; electronic submission of paperwork and public

² Conversation with Ms. Bette Dillehay, Deputy Chief Information Officer, Commonwealth of Virginia, August 20, 2001, in which she noted that the Commonwealth CIO's office had used much of OMB Circular A-130, *Management of Federal Information Resources*, with little modification as core policy guidance for managing the information resources of the Commonwealth.

³ Commission on Federal Paperwork. *Information Resources Management: A Report of the Commission on Federal Paperwork*. Washington, D.C.: Government Printing Office, 1977, pp. 67-76, summarizes the 16 key recommendations made by the committee. Congressman Frank Horton, chairman of the commission, notes that the Congress and the president were presented 770 recommendations for reducing the Federal paperwork burden. See Horton, Forest W., and Donald R. Marchand. *Information Management in Public Administration*. Alexandria, VA: Information Resources Press, 1982, p. vii.

key infrastructure; information technology acquisition, contracting out, privatization, and e-commerce; and management reform, institutional change, and electronic-government. As key players on agency senior management teams, CIOs are expected to craft intra-agency cross-functional information strategies that support all agency programs. Agency CIOs now manage billions of dollars in capital investments and budget outlays for the information resource needs of their agencies – resources that provide essential information and technology capabilities; enable service delivery; operate mission-critical communications; and contribute measurably toward accomplishing national and agency missions, goals, and program objectives.

Under the banner “electronic government,” Federal agency CIOs are situated at the forefront of transformational change in government. OMB policies call for agency CIOs to reach across agency boundaries to implement citizen-centric e-government capabilities.⁴ Inter-agency consolidation of common business applications is being pursued⁵ in order to realize the “citizen-centric government vision” of the President’s Management Agenda.⁶

This study seeks to understand issue transformation. Stated another way, how do policy issues such as those outlined above, change over time? The subject of this study is the information resources management policy subsystem.⁷ The key issues of this subsystem are traced over an extended period of time, and assessed within the context of policy change. The goals of this study are to detect and identify issue transformation, and to understand the nature of the relationship between issue transformation and policy change.

⁴ Executive Office of the President, Office of Management and Budget. *E-government Strategy: Implementing the President’s Management Agenda*. April 2003, pp. 7-15. Online at http://www.whitehouse.gov/omb/egov/downloads/2003egov_strat.pdf. Downloaded May 5, 2003.

⁵ Ibid., p. 32-34.

⁶ Executive Office of the President, Office of Management and Budget. *The President’s Management Agenda, Fiscal Year 2002*. Online at <http://www.whitehouse.gov/omb>. Downloaded May 5, 2003. The President’s Management Agenda is composed of five integrated management objectives that constitute a significant management reform initiative.

⁷ The policy subsystem, as the unit of analysis, is outlined in Sabatier, Paul A. and Hank C. Jenkins-Smith. “The Advocacy Coalition Framework: An Assessment.” In Sabatier, Paul A., ed., *Theories of the Policy Process*. Boulder, CO: Westview Press, 1999, p. 119.

Two purposes are served by this study, and two distinct audiences are addressed. For public administration and policy scholars this research advances policy knowledge and understanding of issue transformation within complex and dynamic policy subsystems; for public administration practitioners, this research examines core issues, policies, and coalitions comprising information resources management, and their relationships to policy change. It is hoped that this 28-year narrative will: 1) provide a basis for understanding issue transformation in policy issues, and the relationship of issue transformation to policy change; 2) illuminate the utility of theory for the practitioner; and 3) revalidate the role of practice in theory-building.

1.2 Issue Transformation Over Time

Issue transformation, as a public policy phenomenon, is neither adequately conceptualized nor sufficiently addressed in policy theory. Policy studies have traditionally employed a decision-centric or an event-centric perspective that provides a short-term "snapshot" view of policy activities.⁸ But when one examines policy choices over a significant period of time within a policy area, such as information resources management, the question of how and why issues and policies have evolved seems a natural question that merits investigation. An instance of issue transformation that appears obvious or at least readily apparent when one looks at the long view may likely be obscured when one focuses on individual decisions or isolated policy choices. Roquefort and Cobb view issue transformation as evolutionary, with language and knowledge construction playing key roles in evolving issue interpretations. "Viewed over a sufficient span of time, this evolutionary pattern of issue transformation is perhaps more the rule than the exception within our dynamic political environment."⁹ Viewing issue transformation

⁸ Rist, Ray C. "Influencing the Policy Process with Qualitative Research." In Denzin, Norman K. and Yvonna S. Lincoln, eds., *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage Publications, 1994, pp. 545-557. See also Weiss, C. H. "Policy Research in the Context of Diffuse Decision Making." In Rist, Ray C., ed., *Policy Studies Review Annual*. Beverly Hills, CA: Sage Publications, 1982.

⁹ Roquefort, David A. and Roger W. Cobb. "Problem Definition, Agenda Access, and Policy Choice." *Policy Studies Journal*, (21:1), 1993, pp. 56-71.

as an evolutionary phenomenon suggests that the temporal dimensions of policy activities should be valid research topics, and that policy techniques should incorporate longitudinal analyses along with traditional event- or decision-centric analyses. The notion of an "evolutionary pattern of issue transformation" also suggests a research concern with the causes and course of an issue's evolution. It leads us to ask, "How might one explain issue transformation in terms of policy theory?"

Policy theory has been inattentive to the operative questions of this study: "In what ways are the core issues underlying public policies transformed over time, and what is the relationship between issue transformation and policy change? Or, stated in terms of US Federal information resources management policies, "In what ways and by what means were the issues underlying Federal paperwork policies of the 1970's transformed into the issues and information resources management policies of today's agency Chief Information Officers?"

It is important at this juncture to differentiate between issue transformation and policy change.¹⁰ The focus of this research is on issue transformation; however, one must acknowledge a close but undefined relationship between issue transformation and policy change. It is hoped that this work can shed some light on that point. Issue transformation is viewed as change to the underlying issue structure of a policy area. Issues, by definition, embody the fundamental logic, the arguments, the ideas, the proponents and their values, and the justifications that underpin, explicate, and support other policy activities.¹¹ An issue also encompasses relevant public policies, the social conditions that those policies are intended to address, and the disagreements about goals, means, and interests.¹²

¹⁰ Unlike the topic of issue transformation, there is an emerging literature of policy change. See, eg., Howlett, Michael, and M. Ramesh. "Policy Subsystem Configurations and Policy Change: Operationalizing the Postpositivist Analysis of the Politics of the Policy Process," *Policy Studies Journal*, Vol. 26, No. 3, 1998, 466-481, and Howlett, Michael. "Policy Paradigms and Policy Change: Lessons for the Old and New Canadian Policies Toward Aboriginal Peoples," *Policy Studies Journal*, Vol. 22, No. 4, 1994, 631-649.

¹¹ Schneider, Anne Larson, and Helen Ingram. *Policy Design for Democracy*. Lawrence, KS: University Press of Kansas, 1997, pp. 73-75.

¹² Coplin, William D., and Michael K. O'Leary. *Public Policy Skills*. Croton-on-Hudson, NY: Policy Studies Associates, 1988, p. 3.

Issue transformation may be an initial step in initiating policy change – a necessary but not necessarily sufficient condition for initiating policymaking or policy change. Extending this logic, policy change could be viewed as the end result or acknowledgement of issue transformation, as policy subsystem actors make adjustments in response to transformation in underlying policy issues, and seek to realign issues and policies and reduce policy subsystem disagreements to acceptable levels.

Probing the topic of issue transformation, however, raises a number of related questions. What initiates issue transformation? How might one recognize or identify issue transformation? And what are the consequences of issue transformation -- for policy-makers, for policy theorists, and for policy practitioners?

1.3 Information and Information Technology in Government

This research examines the substantive policy area of information resources management as the setting for identifying and examining issue transformation in a policy subsystem. The outlines of the case study, briefly narrated in the following paragraphs, sketch the progression of information resources management as a policy subsystem and as a substantive management practice.

This case study is viewed through the lens of Sabatier and Jenkins-Smith's advocacy-coalition framework (ACF),¹³ a theory for assessing policy change over considerable periods of time. That framework includes a policy subsystem maturity model with two phases; a *nascent* phase that lasts through at least one "formulation/implementation/reformulation" cycle, followed by a mature phase of policy subsystem activity.¹⁴ The subsystem maturity model is applied to the IRM policy subsystem with the period 1981-1996 corresponding to the *nascent* phase, and the *mature* phase comprising the years 1997-2002.

Not addressed by the ACF, but included in this case study, is an examination of the policy subsystem's formation. This pre-policy subsystem stage surfaces issues, external conditions, and interests that coalesce for policy

¹³ Sabatier and Jenkins-Smith. *Theories of the Policy Process*, pp. 117-166.

¹⁴ *Ibid.*, pp. 119, 135-136.

subsystem formation.¹⁵ In the paragraphs that follow, the evolution of IRM's core issues, policy subsystem, and policy content is traced from the pre-policy subsystem beginnings (pre-1980), through its development as a nascent policy subsystem (1981-1996), to today's mature policy subsystem (1997-2002).

1.3.1 A Confluence of Concerns: The Pre-Policy Subsystem Evolution

“Ironically, much of the force for formulation of a national public policy for information systems was motivated by the desire to restrict information gathering,” with U.S. Commerce Department officials viewing Federal information gathering activities “a major productivity-impeding burden on American business.”¹⁶ The paperwork and red-tape of government were seen as resulting from increased socio-economic intervention in the 1960s and 1970s. A growing discomfort with the increasing size of government was fueling calls for government reform. Information technology was rapidly permeating Federal programs in agencies ill-prepared, policy-wise, to deal with the costs and unforeseen consequences of computers in government. Early legislative actions in this area, such as the Freedom of Information Act of 1966 and the Privacy Act of 1974 were narrowly drawn, reactive responses to address past agency failures to provide and protect information.

In response to the growing pressures for action, the Congress established a 2-year commission to investigate the growing problem of paperwork and recommend solutions. The Commission on Federal Paperwork identified, characterized, and examined the core concerns, from privacy and security to paperwork, records, and information management. Managerial attitudes that viewed information as a free good, they concluded, were the key contributors to the paperwork problem and its related information dissemination and records storage problems. In its final report, the commission articulated a vision of IRM as

¹⁵ Ibid., pp. 152-153. Sabatier notes that additional elaboration and refinement is needed into scenarios and factors affecting policy subsystem development over time. This and other contributions of this study are discussed in Chapter 5.

¹⁶ Garson, G. David. *Computer Technology and Social Issues*. Harrisburg, PA: Idea Group Publishing, 1995, p. 292.

a pragmatic management reform based in legislation; the mission was reducing the paperwork burden of government and effectively managing the government's massive stores of information.¹⁷

Assistance was needed to pass paperwork legislation, and was found in the form of a new and powerful ally, Representative Jack Brooks (D-TX). In return for his considerable support, paperwork concerns were reprioritized and information technology provisions added to the bill, shifting the characterization, perception, and definition of information resources management. By its passage, the Paperwork Reduction Act¹⁸ and information resources management not only defined the "relevant problems" of the fledgling policy subsystem,¹⁹ but also incorporated implicit notions about how to achieve the legislation's objectives.

1.3.2 A Nascent Policy Subsystem: IRM 1981-1996

The formative years of information resources management as a policy subsystem present a complete "formulation/implementation/reformulation"²⁰ policy cycle, and demonstrate the evolutionary nature of policy subsystem maturation. This nascent policy subsystem evolved from 1981 through 1996, and exhibited each of the three stages of the policy cycle outlined in the ACF. The formulation stage, 1981 through 1985, demonstrated the influence of external events on policy formulation; the deregulatory goals of the Reagan administration were often at odds with the aspirations and requirements of the Paperwork Reduction Act. The second, or implementation stage, encompassed the years 1986 through 1992, as Executive Branch policies for information resources management were implemented and became institutionalized in Federal agencies. The policy reformulation stage, from 1993 through 1996, was a time of assessing and reformulating IRM policies. These three periods are described below.

¹⁷ Commission on Federal Paperwork, *Information Resources Management*, pp. 10-18 and 67-68.

¹⁸ This might be considered the birth of information resources as a policy subsystem.

¹⁹ Weiss, Janet A. "The Powers of Problem Definition: The Case of Government Paperwork," *Policy Sciences*, 22 (1989), 97-121. See also Rochefort and Cobb, *Problem Definition, Agenda Access, and Policy Choice*.

²⁰ Sabatier, *Theories of the Policy Process*, p. 118-119.

Policy formulation for information resources management was a slow, laborious, and contentious process. While the broad policy goals and ideas were sketched by the Paperwork Reduction Act of 1980, the details of executive branch policies were not finalized and published until December 1985.²¹ It was a period of ideological gamesmanship and selective policy emphasis; the Reagan administration's regulatory reform initiative promoted certain information policies while avoiding others. Policies to realize the PRA's goals were debated in heated and sometimes contentious deliberations involving the administration, Congress, interest groups, and executive agencies. The Information Industry Association, for example, advanced the position that the government should not compete with the private sector in developing or disseminating information, and that government information services should be periodically reviewed with an eye toward discontinuing those activities that compete with private industry.²² This approach, according to Salvaggio, highlighted the administration's penchant for the "competitive model" of policymaking, where the marketplace assumes the role normally ascribed to public policymaking organizations.²³

Congressional committees held policy hearings; administration witnesses were taken to task for what was seen as selective policy emphasis. The administration responded by claiming paperwork reduction gains as a byproduct, or intended consequence, of their deregulatory efforts. The General Accounting Office tracked OMB's progress in realizing the PRA's intent despite OMB's refusal to allow GAO auditors access to policy deliberations and copies of draft policies.²⁴

Executive branch agencies also played roles in slowing policy formulation. For example, provisions for policy oversight and enforcement were the focus of an

²¹ Executive Office of the President, Office of Management and Budget. Circular A-130, Management of Federal Information Resources, December 12, 1985.

²² Information Industry Association. *Meeting Information Needs in the New Information Age*. Washington, DC: Information Industry Association, 1983.

²³ Salvaggio, Jerry L. "Social Problems of Information Societies," *Telecommunications Policy*, 7 (September 1983): 228-242. Analysis of the "competitive model" versus "public utility model" for information policy development is from Herson, Peter, and Charles R. McClure. *Federal Information Policies in the 1980's: Conflicts and Issues*. Norwood, NJ: Ablex Publishing Corp., 1987, pp. 173-176.

²⁴ Congress, House. *Implementation of the Paperwork Reduction Act of 1980 (Public Law 96-511)*. Committee on Government Operations, 97th Cong., 1st sess., 1981, p. 4.

extended feud between the Department of Defense (DoD) and the General Services Administration (GSA) over delegation of procurement authority (DPA)²⁵ for computers. This disagreement led to legislative intervention by Senators Nunn (D-GA) and Warner (R-VA).²⁶ At issue was GSA's role in control and oversight processes for acquiring computers. The Defense Department was adamant about retaining oversight of its computer acquisitions, especially for those related to intelligence information systems, command and control systems, and computers in weapons systems.

Meanwhile, coalitions of academic, library, and information science professionals, who believed their concerns about records and information management issues had been marginalized in the Paperwork Reduction Act, attempted to again inject a public service orientation into implementation policies using the Administrative Procedures Act. The act mandated that proposed Federal regulations be subject to a period of public notice and comment. Records managers and library professionals reiterated their concerns to the proposed OMB Circular Number A-130, *Management of Federal Information Resources*, by the number and specificity of their responses to this policy issuance.²⁷ Ultimately the Reagan administration's preference for the market model of information policy making resulted in "OMB making information policy decisions based on the criterion of cost-effectiveness."²⁸ Formal policy guidance for implementing the Paperwork Reduction Act of 1980 was finally issued on December 12, 1985.²⁹

Institutional concerns dominated the implementation phase in the evolution of IRM as a professional activity and as a policy subsystem. Agencies, many of

²⁵ Congress, House. *Letter from Committee Chairman Jack Brooks to the Honorable Harold Brown, Secretary of Defense, January 6, 1981*. Committee on Government Operations, 97th Cong., 1st sess., 1981.

²⁶ Department of Defense Authorization Act of 1982, *Statutes at Large*, 97th Congress, 1st Session, 1982. This act, Public Law 97-86, included the Nunn-Warner Amendment of 1982 that provided five categories of computer usage (such as intelligence, combat systems, computers embedded in weapons systems, etc.) where computer procurements were exempt from GSA oversight.

²⁷ Federal Register, 50 (December 24, 1985):52730-52751. OMB received about 350 letters of comment: 52% of these were from the library and academic communities; 28% were from other members of the public; and 20% from Federal agencies and Members of Congress.

²⁸ Hernon, Peter, and Charles R. McClure. *Federal Information Policies in the 1980's: Conflicts and Issues*. Norwood, NJ: Ablex Publishing Corp., 1987, p. 239.

²⁹ OMB Circular A-130, *Management of Federal Information Resources*, December 12, 1985.

which had earlier only acknowledged the notion of IRM, now faced the real work of implementing the Paperwork Reduction Act.³⁰ Spanning the years 1986-1992, implementing OMB Circular A-130's policy guidance in executive agencies resembled a balancing act, as the management reforms of the PRA were realigned with the Reagan administration's views. The "public utility" concept informing the Paperwork Commission's unifying vision of bringing together the disparate functions of paperwork reduction, information management, and computers as "information resources management" was inconsistent with both the agencies' organizational realities, and the market-oriented vision of the Reagan administration. Creating a cohesive management activity from the disparate institutional parts was destined to be both lengthy and problematic. Each of the technical and managerial specializations brought together under the IRM concept via the Paperwork Reduction Act had its own clientele; funding sources; champions; and basis for existence in policy, regulation, and legislation. Under the dual pressures of budgets and oversight, agencies implemented the IRM concept on paper, adopted the "market model" in information intensive programs, and operationalized the administration's mandates for informational and institutional efficiencies.

Information resources management was now defined as "the planning, budget, organizing, directing, training, and control associated with government information. The term encompasses both information itself and the related resources such as personnel, equipment, funds, and technology."³¹ Just as agencies were becoming accustomed to this definition, it was expanded to include telecommunications and automated data processing (ADP) services by the Paperwork Reduction Reauthorization Act of 1986.³² Adding telecommunications and ADP services to the already dissimilar IRM functions of ADP acquisitions,

³⁰ Caudle, Sharon L. *Federal Information Resources Management: Bridging Vision and Action*. Washington, D.C.: The National Academy of Public Administration, June 1987.

³¹ OMB, Circular A-130, paragraph 6j.

³² Paperwork Reduction Reauthorization Act of 1986, *Statutes at Large*, 99th Congress, 2nd Session, 1986.

records management, and information dissemination activities created additional and predictable disruptions in agency IRM organizations.

Organizationally, IRM was narrowly defined and situated within either the agency's comptroller or administrative organizations. Other information activities, such as printing and publishing, micrographics, agency libraries, audiovisual, and internal mail distribution functions were excluded from the definition of IRM.³³

Organizations struggled with a variety of structural approaches to integrate the four diverse professional and technical cultures now comprising IRM: the culture of computing, the culture of procurement (later redefined as information technology acquisition), the culture of telecommunications, and the culture of records management. Leadership of IRM organizations was heavily biased in favor of computing professionals; records managers were typically lower grade employees without the experience or perspective needed to lead the IRM organization. Procurement specialists were seen as too focused on their narrow, rule-defined specializations to manage complex computing projects and organizations, and communications specialists were seen as too narrowly technical. Throughout this period the computing orientation of IRM was reinforced by the IT-oriented policies of OMB and by the IT-focused leaders of IRM organizations. However, the efficiency-oriented goals of IT policies remained unrealized, and IRM organizations were only marginally successful in implementing efficient information policies and integrated information systems.³⁴

The policy reformulation phase of IRM as a nascent policy subsystem (1993-1996) witnessed a number of policy initiatives. Following the change of administration in January 1993, the Clinton administration and the Congress embarked on parallel agendas to reform executive branch bureaucracies, each responding to their perception of public sentiment. Congressional reform actions focused on making the bureaucracy more accountable by using traditional managerial interventions. The administration's efforts, on the other hand,

³³ Caudle. *Federal Information Resources Management*, pp. 32-37.

³⁴ U.S. General Accounting Office. *Information Resources: Summary of Federal Agencies' Information Resources Management Problems*. GAO IMTEC-92-13FS, February 1992.

emphasized the Gulliver approach, freeing good people in the bureaucracy to do the right thing through process reform. While Congress crafted and passed the Government Performance and Results Act of 1993 (GPRA),³⁵ the Clinton Administration initiated the 1993 National Performance Review (NPR) to identify and rid agencies of burdensome and unnecessary processes. Underlying many of the NPR recommendations was the assumption that newly reengineered processes would be enabled by information technology (IT) as a means to achieve a “government that works better and costs less.”³⁶ The administration's IT-enabled process reforms focused on achieving initial short-term results to support and justify longer-term process changes more heavily dependent upon information technologies. Congressionally mandated performance-oriented reforms of the GPRA were to be phased in over a seven year period.

The reform-oriented 104th and 105th Congresses produced an amazing volume of reform legislation involving information resources management activities. The Government Performance and Results Act (1993) was followed by the Federal Acquisition Streamlining Act (1994) and a significant revision to the Paperwork Reduction Act (1995). Reforms culminated with the Information Technology Management Reform Act and the Federal Acquisition Reform Act, combined as a significant amendment to the National Defense Authorization Act for Fiscal Year 1996 and initially codified as Divisions D and E of that Act (later renamed the Clinger-Cohen Act in honor of its House and Senate sponsors, William Clinger [R-PA] and William Cohen [R-ME]). Both Divisions D and E contained reforms targeted toward IRM activities: Division D, the Federal Acquisition Reform Act (FARA) of 1996, changed information technology acquisition guidance, while division E, the Information Technology Management Reform Act (ITMRA) of 1996,³⁷ brought Chief Information Officers (CIOs) into federal agencies, extended performance management and strategic planning to agency information technology activities, and closed out the era of the

³⁵ Government Performance and Results Act, *Statutes at Large*, 103rd Congress, 2nd Session, 1993.

³⁶ Gore, Albert. *Creating A Government that Works Better and Costs Less: The Report of the National Performance Review*. New York: Penguin Books, 1993. See especially Appendix C, Reengineering Through the use of Information Technology, pp. 315-317.

Brooks Act by repealing its 30-year-old provisions. OMB Circular A-130's information and technology management policies were similarly revised – to focus more clearly on information management rather than on technology, to incorporate statutory IT acquisition changes, and to reinstate aspects of the “public utility” perspective in information policies.

1.3.3 A Mature Policy Subsystem: IRM 1997-2002

The events discussed in the final period of this study, from 1997 to the end of 2002, should be viewed as the IRM activities or products of a mature IRM policy subsystem. As will be seen in the following discussion, the four necessary and sufficient conditions for a mature policy subsystem outlined by Sabatier and Jenkins-Smith were met by 1997.³⁸

By 1997 IRM specialists in agencies were accepted as peers of the traditional management specializations of finance, human resources, and program management, meeting the first criteria of a semiautonomous community with domain expertise. Many CIOs had become influential in formally organized policy circles, such as the Federal CIO Council³⁹ and the National Association of State Chief Information Officers,⁴⁰ satisfying the second criteria of influencing policy over a considerable period of time. Either IRM organizations, or their equivalent functions, became integral to nearly all Federal, state, and local institutions, satisfying criteria three for specialized subunits dealing with this topic at relevant levels of government. Numerous interest groups regarded information resources management and the effects of information technology in society as legitimate policy topics,⁴¹ the fourth characteristic of a mature policy subsystem.

³⁷ The Clinger-Cohen Act, *Statutes at Large*, 105th Congress, 1st Session, 1996.

³⁸ Sabatier and Jenkins-Smith. *Theories of the Policy Process*, pp. 135-136.

³⁹ Electronic Government Act of 2002, *Statutes at Large*, 107th Congress, 2nd Session, 2002. See also <http://www.cio.gov>.

⁴⁰ See <https://www.nascio.org>.

⁴¹ Some interest groups are narrowly targeted, while others are broadly interested in all IT-related policy issues. For example: Manufacturing – Information Technology Association of America at <http://www.itaa.org>, and the Computer Systems Policy Project at <http://www.cspp.org>; Public Interest – Consumer Project on Technology at <http://www.cptech.org>; Values Focused – Center for Democracy and Technology at <http://www.cdt.org>, or the Electronic Frontier Foundation at <http://www.eff.org>; Local Government Focused – Public Technologies, Inc., at <http://pti.nw.dc.us>.

Confirmation of IRM as a mature policy subsystem continues to be seen, as evidenced by the Bush Administration's views of IT as central to achieving electronic government and the goals of the President's Management Agenda.⁴²

Early on in this period, agency CIOs were challenged to implement legislated management reforms while simultaneously dealing with the administration's downsizing and reengineering initiatives. Successful agency CIOs assumed key leadership roles within their agencies and in the newly established Federal CIO Council. The Federal CIO Council, established in 1996 by Executive order (and later codified in the E-Government Act of 2002), was created to provide information technology policy advice to the administration.⁴³ Over the course of this period, new technologies, new uses for technology, and new concerns – such as the Year 2000, or Y2K problem – surfaced.

Rapid and sometimes unprecedented changes in technology and its uses sparked a number of reactive policy initiatives; technological innovations and adaptations transformed the policy lexicon. For example, the maturation and commercialization of the Internet through electronic commerce altered key IT acquisition policies; these same developments provided a myriad of new business opportunities, strained traditional brick and mortar business models, complicated the jurisdictional aspects of tax policy and economic development, and spawned both pro and anti-Internet taxation movements. The adoption of Internet technologies, such as the World Wide Web and the Hypertext Transport Protocol (HTTP), by government agencies profoundly transformed information dissemination opportunities. The Year 2000 date problem took on strategic national and global proportions, prompting public and private enterprises alike to verify and guarantee the technological sufficiency and security of their computing infrastructures. Not all changes were positive, as evidenced by the Melissa

⁴² OMB, *President's Management Agenda for Fiscal Year 2002*.

⁴³ Executive Office of the President. Executive Order. "Federal Information Technology, Executive Order 13011 of July 16, 1996." *Federal Register* (19 July 1996) vol. 61, no. 140, pp. 37657-37662.

computer virus, and electronic intrusion, alteration, and destruction of Web sites and databases by hackers, prompting additional computer security legislation.⁴⁴

Other technological advances had less immediate impacts, or affected other policy subsystems. Telecommunications deregulation and the sale of various portions of the radio frequency spectrum provided the foundation for wireless communications (cellular communications) and data communications (wireless fidelity or Wi-Fi). The rapid proliferation of pornography on the Internet is in part responsible for the Communications Decency Act and other law enforcement and public safety initiatives. Public key encryption, generally agreed as fundamental to verifying identity in electronic environments and a key to implementing electronic government was not achieved during the time period of this study.⁴⁵

Highly visible results of non-technologically driven policy change also became apparent as congressionally-mandated reforms, in the form of agency strategic plans, performance plans, and performance reports, were provided to Congress. Information technology strategic plans were required to show how the considerable resources invested in agency IT supported agency mission, goals, and programs. An interesting private/academic partnership between Government Executive magazine and Syracuse University's Maxwell School of Citizenship and Public Affairs jointly conducted the first academic study of government performance incorporating information technology.⁴⁶ Meanwhile a Congressional committee, trading on the grammar school metaphor, used "report cards" to report to the American public the progress or lack thereof toward Congress's goals.⁴⁷

⁴⁴ Government Information Security Reform Act of 2001, *Statutes at Large*, 107th Congress, 1st Session, 2001; Electronic Government Act of 2002, *Statutes at Large*, 107th Congress, 2nd Session, 2002.

⁴⁵ U.S. General Accounting Office, *Planned e-Authentication Gateway Faces Formidable Development Challenges*. GAO Report GAO-03-952, September 2003.

⁴⁶ See *Government Executive*, February 1999, and <http://www.maxwell.syr.edu/gpp/default.htm>.

⁴⁷ Tillett, L. Scott. "Rep. Horn gives agencies 'F' for Y2K work." *Federal Computer Week*. June 2, 1998. Available online at http://www.fcw.com/fcw/articles/1998/fcw_621998_horn.asp.

Downloaded June 10, 2003.

Entry into the new millennium posed anticipated as well as unforeseen challenges to IRM, in both its management specialization and in its policy subsystem manifestation. As the power and capability of information technology increased, agency and business managers became increasingly aware of social consequences stemming from information technology implementation choices. And as the social consequences have become more apparent, the policy challenges have become more visible and pressing. The interaction between societal desires, policy goals, and policy implementation through agency management actions necessitates a new look at this emerging and complex policy dynamic. For example, facial recognition technology that can enhance airport security is viewed by many as unnecessarily intrusive in terms of individual privacy. Computerized voting, supporting democratic voting processes and secret balloting, also creates an audit trail of voters. "Packet sniffers," software created to investigate computer fraud on the Internet, scans the e-mail and Web traffic of all subscribers using that Internet service provider. There is a dawning awareness, on the part of information technology professionals, IT-related companies, and society in general, that policy concerns are increasingly interwoven with technology. And as technology is increasingly viewed as an instrument of policy implementation, as is the case with electronic government initiatives, the policy questions are becoming more important, the issues are becoming more complex, and the policy environment more dynamic.

1.4 Technicians Become Policy-Makers

The purpose of this study is to identify and examine issue transformation in a policy subsystem over a significant time period, and to assess the relationship of issue transformation to policy change. The desired outcome is an understanding of and appreciation for the ways and means by which issues are transformed over time – at least in this policy area. In contributing to our understanding of issue transformation, this research feeds into two bodies of literature, one in policy studies, and the other in public administration. Within policy studies, this research builds on the small but growing literature dealing with understanding and defining

problems in public policy. It focuses attention on underlying issues and how their framing, articulation, and transformation guide and focus what is seen and acted upon. It further seeks to understand the role, if any, of issue transformation in policy change. Understanding, rather than prediction or generalization, is the goal. And while not explicitly intended as theory building, it is hoped that this research may provide some theoretically relevant insights.

The contributions to public administration are more practical, and potentially more far-reaching in their impacts. Issue transformation is fundamentally linked with issue definition and policy change, and our perceptions of problems and solutions. Information resources management, and its IT-centric solutions, is now generally seen as the key enabler of modern information technology-mediated governance. This view alters the traditional content and context of public management by its claims on resources, by bringing new players into policymaking and implementation, and by elevating information resources management to a level deserving scholarly study and educational focus in public administration programs.

In 1997 the U.S. General Accounting Office noted that "Information systems are now integral to nearly every aspect of over \$1.5 trillion in annual federal government operations and spending -- from national defense and air traffic control to revenue collection and benefits payments."⁴⁸ A few years later, annual *direct* Federal spending for information technology in Fiscal Year 2000 was estimated at \$30 billion⁴⁹ – in a \$1.7 trillion budget. The 35 years since 1965 saw a 1000% increase in direct Federal expenditures for information technology.⁵⁰ The President's Budget for Fiscal Year 2003 calls for \$52 billion in direct IT-related spending,⁵¹ continuing the trend. The level of resources devoted to information technology – and the linkages among program issues, resource issues, and

⁴⁸ U.S. General Accounting Office. *Information Management and Technology*. GAO High Risk Series, GAO/HR-97-9, February 1997, p. 6.

⁴⁹ Dorobek, Christopher J. "Clinton's Proposal Identifies 2000 Problem as No. 1 Issue." *Government Computer News*, February 8, 1999. Available online at <http://www.gcn.com/archives/gcn/1999/February8/1a.htm>. Downloaded June 10, 2003.

⁵⁰ Congressional Quarterly. "The Brooks Act of 1965, HR 4845," in CQ Almanac Volume XXI, 89th Congress 1st Session, 1965. Washington, D.C.: Congressional Quarterly Service, 1966, p. 682.

⁵¹ Frank, Diane. "IT Budget Takes on e-Gov." *Federal Computer Week*, February 13, 2002.

information technology issues – makes examining these new challenges imperative for understanding the evolving face of public administration practice.

It is also imperative to address the influx of information technology professionals into senior executive and policy positions, a trend that changes the knowledge and skills mix, experience base, and expectations of public administrators. Traditional public administrators are increasingly ill prepared to deal with the range of technology-infused issues facing today's CIOs and their staffs. Most agency Chief Information Officers are senior specialists, experienced in agency and technology matters, but relative newcomers to policymaking and policy implementation. Providing information technology professionals relevant policy models, grounded in research and theory, may increase their effectiveness in providing IT support for key programs and in implementing technology-based solutions to existing problems.

In addition, there is a long-documented need to include information resources management as an educational component in public administration education programs.⁵² The accelerating transition to information-technology-enabled processes, information-technology-based service delivery, electronic benefits transfer programs, and electronic commerce for buying goods and services – in short, electronic government – creates a compelling case for integrating information resources management into public administration education generally, and public management education specifically. Linkages to topics in policy education might then contribute to identifying and defining key issues, and sensing shifts in their definitions. In each of the public administration applications noted, understanding the impact of issue transformation, as an ingredient of policy change, is critically important in addressing the changes in public administration as a practice, and as a discipline involved in a theory-practice dialogue.

⁵² Kraemer, Kenneth L., ed. *Curriculum Recommendations for Public Management Education in Computing*. Washington, D.C.: National Association of Schools of Public Affairs and Administration, June 1985. For an updated assessment see also Brown, Mary Maureen, and Jeffrey L. Brudney. "Public Sector Information Technology Initiatives: Implications for Programs of Public Administration." *Administration and Society*, 30:4, September 1998, pp. 421-442.

1.5 Using the Perspective of Time in Case Study Research

This research is organized as a longitudinal case study, identifying the key issues and examining issue transformation within the information resources management policy subsystem since it began as the focus of a 1974 commission studying Federal paperwork issues. A longitudinal case study view, it is believed, has two distinct advantages over other likely research approaches. First, the case study methodology is an accepted research approach within many disciplines. Information resources management, as the field is defined in extant legislation and policy, has roots in a variety of disciplines. IRM draws directly on management, policy, and organizationally oriented disciplines, plus computer science. More peripherally, and depending upon organizational application, IRM also draws on perspectives in mathematics, engineering, telecommunications, and a number of other social science and humanities fields ranging from sociology and cognitive psychology to cultural anthropology. The case study approach accommodates this eclecticism. Second, the longitudinal view of policy phenomena provides the only research approach sensitive to the temporal nature of issue transformation as an operative phenomenon of policy endeavors. This allows the researcher to expand the research in two directions, stretching the research fabric simultaneously toward the temporal horizon, while also expanding and enlarging it substantively. Within that wider research landscape of policy activities, one can begin to examine the dynamics, complexity, and interaction of policy artifacts. From such a perspective, it is believed, one can visualize policy activities not apparent in the static "snapshots" of decision-centric portrayals of policy endeavors.

Case study research has a rich tradition in which both quantitative and qualitative approaches yield insights. Robert Yin, a proponent of quantitative case research, notes that "the major rationale for using this method [i.e., a case study] is when your investigation must cover both a particular *phenomenon* and the *context* within which the phenomenon is occurring,"⁵³ a condition which fits this research enterprise as outlined above.

⁵³ Yin, Robert K. *Applications of Case Study Research*. Newbury Park, CA: Sage Publications, 1993, p. 31.

Robert Stake, a social constructionist and advocate of qualitative approaches, advances a case study schema that includes both an *intrinsic* component and an *instrumental* component. With respect to issue transformation in policy theory, this research is *instrumental*, i.e., this "particular case is examined to provide insight into an issue or refinement of theory." But where other purposes are useful, such as applying the insights gained to understand the nature of information resources management or to educate public administrators in information resources management, the case study is *intrinsic*, "undertaken because one wants better understanding of this particular case. It is not undertaken primarily because the case represents other cases or because it illustrates a particular trait or problem, but because, in all its particularity and ordinariness, this case itself is of interest." Stake notes that the intrinsic and instrumental distinctions contain a certain amount of arbitrariness, by noting that, "The choice of [a particular] case [information resources management] is made because it is expected to advance our understanding of that other interest [issue transformation]. Because we simultaneously have several interests, often changing, there is no line distinguishing intrinsic case study from instrumental; rather, a zone of combined purpose separates them."⁵⁴ Rist favors an instrumental point of view, advocating the notion of learning and understanding through qualitative policy research, and emphasizing learning over time as analysts and policy makers develop mutual understanding of the issues and their complexities.⁵⁵ In terms of learning from this case, Stake notes that the researcher uses two methods to advance learning, the *didactic* -- teaching what has been learned -- and arranging for *discovery learning*, material provided "for readers to learn, on their own, things the teacher does not know as well as those he or she does know."⁵⁶ As with all research, the researcher must, at some point, exit the social experience of observation to choreograph the report and assist readers in the social construction of knowledge.

⁵⁴ Stake, Robert E. "Case Studies." In Denzin, Norman K., and Yvonna S. Lincoln, eds., *Handbook of Qualitative Research*. Thousand Oaks, CA: Sage Publications, 1994, pp. 236-247.

⁵⁵ Rist, "Influencing the Policy Process with Qualitative Research," p. 545-557.

⁵⁶ Stake, "Case Studies," p. 240.

Most contemporary research endeavors engage in knowledge construction using linguistic and textually-oriented approaches. This research challenges the comfortable confines of methodology by demonstrating an experimental adaptation called a virtual case study. This virtual case study of issue transformation is an electronic, virtual reality-based "Policy World"⁵⁷ that uses visual devices to portray policy artifacts. Knowledge construction occurs as the considerable information processing power of human visual capabilities is leveraged to examine, interact with, and understand the transformation of issues underlying public policies.

1.6 Pixelating Policy and Policy World: Parallel Dissertation Products

This dissertation consists of two research products, a traditional textual dissertation and a virtual reality "Policy World." The first product is the traditional textual dissertation following the conventional format. The reader will note, however, that research questions are substituted for hypotheses. The research questions are not "testable" per se, but serve to guide and focus the research, and help structure the second research product. The second product, a virtual reality "Policy World," is both the research vehicle and the research product, a virtual, visual, and interactive venue within which viewers engage in knowledge construction about information resources management and policy activities. Policy World visualizes the history of information resources management as a policy subsystem, enabling one to longitudinally investigate issue transformation and policy change within the policy subsystem. The virtual "world" is hyper-linked to relevant information, these electronic connections providing information to assist viewers in identifying and examining issue transformation, assessing policy change, and interactively investigating the temporally-based policy environment.

Virtual reality worlds employ visualization techniques to create a visible representation of phenomena within the virtual, electronic world. Typically, some degree of social agreement exists as to the visual nature of objects, be they literal

⁵⁷ "Policy World" is composed of three temporally delimited segments that correspond to the policy subsystem maturity model outlined by Sabatier and Jenkins-Smith (See note 11).

representations of objects in the physical world or abstract representations of physical or mythical objects.

This is the first virtual reality-based examination of a public policy topic. No model, description, guideline, or cue exists to suggest the form, color, shape, texture, and interactions of policy artifacts. Given the absence of exemplars, Policy World pioneers a mechanism for expanding the discussion of policy phenomena into the visual spectrum. Despite the lack of visual conventions for creating Policy World, the policy literature makes extensive use of image-evoking terminology. For example, recall your encounters with “sight” related terms in the literature; the terms *see*, *view*, *examine*, *shed some light*, *insight*, *foresight*, *hindsight*, *illuminate*, and *overview* all suggest a visual linkage to understanding. However, the illustrative graphics found in policy literature are notably traditionalist and rarely challenge the visual imagination. They consist primarily of tables or line drawings showing linkages, sequences, and relationships. These graphics are placed strategically within the particular article or chapter, and are intended to assist understanding by providing clarity, allowing selective emphasis, and explaining complex constructs.⁵⁸ In the literature, intellectual constructs are frequently discussed as if they can be seen, observed, and examined from every possible perspective. In fact, most policy graphics and depictions of policy models are static, two-dimensional constructs, described with an extensive but narrowly drawn professional vocabulary. Describing dynamic policy activities and artifacts demands additional tools and approaches with which to compliment and enrich traditional policy discourse.

This research seeks to extend and enrich the descriptive mechanisms of policy discourse to include visual symbolism, color, music and aural descriptions, lived experience, and interactions for knowledge construction. Visualizations are created with various combinations of metaphors, 3-dimensional objects, graphics, pictures, textures, colors, movement, sounds, and icons. Aural devices include musical backgrounds, explanatory voice narration, and sounds – to expedite

⁵⁸ Tufte, Edward R. *The Visual Display of Quantitative Information*. Cheshire, CT: Graphics Press, 1983.

sensory cross-cueing and increase policy learning. Interactive objects tie visual symbolism to information content, and provide a means of selectively illustrating the research and accessing textual explanations of policy phenomena. Policy World focuses on communicating through visualization, exploration, and interaction. Seeing and interacting provide important visual and sensory avenues for experiential learning about public policies, about issue transformation, and about policy substance.

1.7 Limits of the Study

As a research environment, Policy World provides an interactive venue for problem-centered learning about issue transformation and about information resources management. It is designed to stimulate inquiry, promote understanding, and create meaning for at least three audiences: an audience composed of academics such as the chair and the faculty members who have agreed to serve on this dissertation committee; an audience composed of public administration students and professional public administrators needing an introduction to information resources management policy; and an audience of information technology professionals for whom knowledge of IRM policy is a daily necessity. Insight and understanding is generated by viewing and interacting with Policy World rather than merely reading about it. Additional insights may result from confronting the representation of certain ideas, themes, or intellectual constructs in Policy World, or by knowledge construction in the face of competing issue definitions. In this regard, Policy World challenges the viewer to consider alternative explanations and appreciate communicative devices more closely associated with art, theater, and literature. Scene, setting, story line, character

attributes, visual metaphors, visual representation, textures, transparency, and sensory cues may all be relevant means of representing issues and political symbols.⁵⁹

As the first virtual reality "Policy World," this case study concentrates on *instrumentally* researching issue transformation in the history and development of information resources management policy. In telling the story, this case study focuses on the *intrinsic* elements of IRM policy of interest to academics, public administrators, and information technology professionals. And in using virtual reality as the vehicle to convey this case, the focus is on identifying visualization challenges; describing approaches; and assessing design, development, and fielding options.

Thus, Policy World is neither intended nor designed to support research generalization or statistical prediction. It is not intended as a mechanism to assess the educational effectiveness of virtual reality. That task, empirically assessing the educational effectiveness of virtual reality as an educational approach, is better left to follow-on studies. This is an exploratory research endeavor. Its humble goal is to generate at least as many questions as it answers.

In concluding, a word about the title "Pixelating Policy" is in order. The notion of "pixelating" is a metaphorical reference to a digital imaging technique, in which a portion of a digital image is progressively magnified until the individual pixels (or picture elements), the basic elements of a digital image can be seen. This research describes the entire "picture" of IRM as a policy subsystem, but progressively magnifies, or pixelates, that depiction to examine the basic elements and dynamics of public policy, policy issues, issue transformation, and policy change.

⁵⁹ See for example: Lasswell, Harold D., Daniel Lerner, and Ithiel de Sola Pool. *The Comparative Study of Symbols: An Introduction*. Stanford University Press, 1952; Edelman, Murray, *The Symbolic Uses of Politics*. Chicago: University of Illinois Press, 1964; or Mangham, Iain L., & Michael A. Ovrington. "Dramatism and the Theatrical Metaphor," in Morgan, Gareth, ed., *Beyond Method*, pp. 219-233.