

## Jody Gruendel

---

**From:** Margaret Whitehead  
**Sent:** Friday, July 31, 2009 9:08 PM  
**To:** Jody Gruendel  
**Subject:** FW: dissertation copy?  
**Attachments:** Laprise John - Dissertation Final.pdf

Jody,

Please print this out for our files. This ought to be labled "John P. Laprise, Ph.D."

Thank you.

Margaret

----- Forwarded Message

**From:** John Laprise <j-laprise@northwestern.edu>  
**Organization:** Northwestern University  
**Reply-To:** <j-laprise@northwestern.edu>  
**Date:** Fri, 31 Jul 2009 15:52:30 -0500  
**To:** 'Susan Burgess' <skburgess@gmail.com>  
**Cc:** <mmww@cwX.com>  
**Subject:** RE: dissertation copy?

Dear Susan,

Per your request, I have attached a copy of my dissertation to this email. I have successfully defended it and have accepted a Visiting Assistant Professorship at Northwestern University in Qatar.

Best regards,

John P. Laprise Ph.D.  
Visiting Assistant Professor  
Department of Communication Studies  
School of Communication  
Northwestern University in Qatar

-----Original Message-----

**From:** Susan Burgess [mailto:skburgess@gmail.com]  
**Sent:** Tuesday, February 10, 2009 9:29 AM  
**To:** JohnLaprise2008@u.northwestern.edu  
**Subject:** Re: dissertation copy?

Thank you for your email, John.

We appreciate the information about your dissertation and would be interested in a copy of it when it's complete. In the mean time, we have been preparing a website to house Mr. Whitehead's original material from his work at the Office of Telecommunications Policy. We expect it to be available to the public in a short time and are happy to email you when that

happens. Please stay in touch and, if you visit Washington in the near future, please let Mr. Whitehead's widow, Ms. Margaret Whitehead, know. She can be reached at.

Many thanks,  
Susan Burgess

On Fri, Jan 23, 2009 at 11:17 AM, John Laprise <[johnlaprise2008@u.northwestern.edu](mailto:johnlaprise2008@u.northwestern.edu)> wrote:

> Hi Susan,  
>  
> I do remember your previous email and please accept my sympathies and  
extend  
> them to Ms. Whitehead on her loss. He is missed.  
>  
> My dissertation is not complete but will be in the spring. However,  
> the Nixon chapter of my dissertation focuses on computer adoption  
> within the White House which, according to the documentary records I  
> have been  
working  
> with were not within Dr. Whitehead's purview, but rather the task  
> assigned to Charles Joyce. However, I am planning on turning my  
> dissertation into a book and add additional material to discuss the  
> role of the Office of Telecommunications policy which will include material about Dr.  
Whitehead.  
> To that end, I would be very interested in obtaining access to the  
archival  
> material that you and Ms. Whitehead are currently assembling.  
>  
> Regardless of my request for access, I would also like to offer my  
> meager good offices. I am sure that both of you already have parties  
> interested  
in  
> Dr. Whitehead's materials. However, if you and Ms. Whitehead are  
interested,  
> I know a number of individuals and institutions which would be happy  
> and excited to assist with archiving and/or house such Dr. Whitehead's  
> papers and would be honored to arrange initial contacts and discussions.  
>  
> John Laprise  
> Doctoral Candidate  
> Media, Technology, and Society Program School of Communication  
> Northwestern University  
>  
>  
> -----Original Message-----  
> From: Susan Burgess [<mailto:skburgess@gmail.com>]  
> Sent: Thursday, January 22, 2009 2:32 PM  
> To: [j-laprise@northwestern.edu](mailto:j-laprise@northwestern.edu)  
> Subject: dissertation copy?  
>  
> Hi John,  
>  
> You probably remember that we emailed last year concerning your  
> interest in interviewing Mr. Clay T. Whitehead, which, unfortunately,  
> we could not arrange. I'm sure you already know this, but in case  
> not, Mr. Whitehead past away last July from cancer. Since then, I  
> have been working to help his widow, Margaret Whitehead, compile an

> archive of original and scholarly material about Mr. Whitehead and his  
> work. ' Ms. Whitehead wonders if you have completed your dissertation  
> and, if so, if we might have a copy for inclusion in our collection.  
>  
> Many thanks for your help,  
> Susan Burgess  
>  
>

----- End of Forwarded Message



NORTHWESTERN UNIVERSITY

White House Computer Adoption and Information Policy from 1969 – 1979

A DISSERTATION

SUBMITTED TO THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT OF THE  
REQUIREMENTS

For the Degree of

DOCTORATE OF PHILOSOPHY

Field Of Media, Technology, and Society

By

John Paul Laprise

EVANSTON, ILLINOIS

December 2009



© Copyright by John Laprise 2009

All Rights Reserved

## **Abstract**

### **White House Computer Adoption and Information Policy from 1969 – 1979**

John Laprise

The history of computers is a growing field of academic inquiry. Scholars have focused on government and military computer development during the mainframe era up until the mid 1970's and on the private and commercial sectors thereafter. The duality of this research agenda is grounded in the technological changes that reduced the cost and increased the accessibility of computer technology to the public. The White House straddled these two worlds, interfacing with the military and the private sector in the midst of the Cold War. It faced a variety of security and policy challenges in a dynamic and uncertain time. This dissertation is the first history and complementary analysis of how the White Houses of Presidents Nixon, Ford, and Carter initially adopted computers and developed information policy during the 1970's. This project consists of four historical cases drawn from archival documents and oral histories: computer adoption by Nixon's National Security Council; telecommunications security policy during the Ford administration; computer adoption by Carter's Domestic Council and the reorganization of the Office of Telecommunications Policy and development of information policy during the Carter administration. Using a multidisciplinary framework, the research invokes previous work in the history of computing, science and technology studies, diffusion of innovation, White House Administration Studies, and surveillance studies to show how an array of complex factors shaped how the White House adopted computers and developed information policy. It also shows how the adoption of computers and users' everyday experiences with them influenced the shape of information policy. Finally, this research asserts that Cold War security concerns were the pervasive factor influencing computer adoption and information policy. Moreover, these

concerns were effectively built into the technological systems and policies of the White House and exist to the present day, influencing post-Cold War technology decisions.



## Acknowledgements

Major projects are always group efforts even if only the author's name is written under the title.

This one is no exception:

My Research and Writing Wranglers: The archivists at the Hagley Museum and Library, The Rockefeller Archive Center, The National Archives (College Park), The Jimmy Carter Library, & The Gerald R. Ford Library; Kierra Miller for her unsung summer support as an undergraduate research assistant; my outstanding and unexpected editor Chris Miller; My special thanks and gratitude go to Charles "Charlie" Joyce who very kindly welcomed me into his home to interview him about his experience in the Nixon White House.

My Academic Associates: My committee; James Schwoch, Shane Greenstein, Rick Morris, & Mimi White; the NU faculty I've worked with over the years including Jen Light, Jim Webster, Pablo Boszkowski, Peter White, Jim Ettema, Susan Dun, Eszter Hargittai, Keith Murnighan, Noshir Contractor, Paul Leonardi & Rodda League; External faculty advisors including Paul Ceruzzi, Jeff Yost, Tom Haigh, Jonathan Winkler, Bill Aspray, Nathan Ensmenger & Jim Cortada; All my fellow NU graduate students including Bhuvana Murthy, Jason Gallo, Chris Karr, Sean Zehnder, Bernie Geoghegan, Brooke Foucault Welles, Emily Goodman, Max Dawson, Mary Pagano, Tom Ksiazek, & Gina Walejko.

My Financial Backers; The US Department of Education & research grants from Northwestern University, the Rockefeller Archive Center, the Hagley Museum.

All the friends who have kept me sane over the past six years...you know who you are.

My Loving Family: My Mom & Dad who are glad to see me happy; Bob & Barbara, Laura & Jen, Yvonne & Norm, Kathie & Jim, Judy & Bud, and Kay.

## Abbreviations

ADP: Automatic Data Processing

ARPA: Advanced Research Projects Agency

CIA: Central Intelligence Agency

COMINT: Communications Intelligence

CPIP: Committee on Privacy and Information Policy

CRP: Committee for the Re-election of the President

DARPA: Defense Advanced Research Projects Agency

DC: Domestic Council

DCA: Defense Communications Agency

DCCRP: Domestic Council Committee on the Right of Privacy

DCI: Director of Central Intelligence

DIA: Defense Intelligence Agency

DoC: Department of Commerce

DoD: Department of Defense

DoS: Department of State

DPC: Domestic Policy Council

DPS: Domestic Policy Staff

EO: Executive Order

EOB: Executive Office Building

EOP: Executive Office of the President

ESVN: Executive Secure Voice Network



FCC: Federal Communications Commission

FISA: Foreign Intelligence Surveillance Act

FOIA: Freedom of Information Act

FVPP: Ford Vice Presidential Papers

GRFPL: Gerald R. Ford Presidential Library

GSA: General Services Administration

GSA: General Services Administration

HEW: Department of Health, Education, and Welfare

HUMINT: Human Intelligence

ICT: Information and Communication Technology

IDA: Institute for Defense Analysis

IRS: Internal Revenue Service

ISA: Office of International Security Affairs

JCL: Jimmy Carter Library

NAM: New American Majority

NAR: Nelson A. Rockefeller

NMCS: National Military Command Center

NPM: Nixon Presidential Materials Project

NSA: National Security Agency

NSC: National Security Council

NSDM: National Security Decision Memorandum

NSF: National Science Foundation

NSF: National Science Foundation

NSTAC: National Security Telecommunications Advisory Council

NTIA: National Telecommunications and Information Administration

OA: Office of Administration

OA: Office of Administration

OF: Office Files

OIP: Office of Information Policy

OLC: Office of Legal Council

OMB: Office of Management and Budget

OSTP: Office of Science and Technology Policy

OTP: Office of Telecommunications Policy

OTS: Off the Shelf

PD: Presidential Directive

PFIAB: President's Foreign Intelligence Advisory Board

PRM: Presidential Review Memorandum

PRM: Protected Radio Modulation

PRP: Presidential Reorganization Project

RAC: Rockefeller Archive Center

RFC: Rockefeller Family Collection

RG: Record Group

SCC: Special Coordination Committee

SIGINT: Signals Intelligence

SMOF: Staff Member Office Files

STS: Science and Technology Studies

WHCA: White House Communications Agency

WHCC: White House Communications Center

WHCS: White House Computer System

WHS: White House Staff

WHSF: White House Special Files



## Dedication

To Kay, who suggested outlining and is always right.

Table of Contents	12
Abstract.....	3
Acknowledgements.....	5
Abbreviations.....	7
Dedication.....	11
Table of Figures .....	18
Chapter I: Computers in the White House.....	19
Introduction.....	19
Research Purpose.....	20
The History of Computing.....	21
Science and Technology Studies .....	27
Diffusion of Innovation.....	28
White House Administration Studies.....	30
Surveillance Studies.....	32
Form.....	39
Method .....	40
Limitations .....	40
Contributions and Overture.....	43
Chapter II: Kissinger's Information Automation Project: National Security Council	
Computerization, 1969-73 .....	49

	13
Introduction.....	49
History of Computing .....	52
Science and Technology Studies .....	53
Diffusion of Innovation.....	54
White House Administration .....	55
Surveillance Studies.....	56
Dramatic Personae .....	56
Source Material.....	61
Information and Communications Technologies (ICT) Beachhead: Computerizing the	
National Security Counsel .....	62
Early Project Development.....	63
Phase I.....	65
Phase II.....	65
Phase III .....	66
Project Approval .....	67
Early Interaction with the Intelligence Community.....	68
The System Decision .....	70
A Computer System for the White House .....	71
The White House Communications Center .....	71
The RAND NSC Information Study of 1970 .....	76



The RAND Information System Application Report of 1970 .....	14
NSC Reaction.....	79
Understanding the Discussion.....	82
RAND Reaction .....	85
Conclusions.....	86
Computer Applications for the President.....	90
Computers, Power, and Politics .....	91
Conclusions.....	92
Chapter III: Soviet Eavesdropping and its Effect on US Information Policy 1974-1977 .....	98
Introduction.....	104
History of Computing .....	104
Science and Technology Studies .....	109
Diffusion of Innovation.....	111
White House Administration .....	112
Surveillance Studies.....	113
Dramatis Personae .....	113
Source Material.....	115
Prelude: The Domestic Council Committee on the Right of Privacy.....	117
The Rockefeller Commission .....	118
Out of the Public Eye: The NSC and DUCK PINS.....	126
	128

	15
Out of Sight: the NSC and NSDM 338.....	134
Choosing to Remain out of the Public Eye: Ford and the NSC.....	137
Analysis.....	141
Conclusions.....	145
Chapter IV: Computer Adoption and Information Policy During the Carter Administration 1977-1981.....	150
Introduction.....	150
History of Computing .....	154
Science and Technology Studies .....	155
Diffusion of Innovation.....	156
White House Administration .....	157
Surveillance Studies.....	158
Dramatis Personae .....	159
Source Material.....	160
Reinventing the Wheel: The Case of the OTP and the NTIA.....	161
The Carter Administration .....	163
Information Policy Challenges .....	165
Information Policy and National Security .....	171
Epilogue .....	173
Harden: Architect of the Office of Administration.....	176



Office of Administration: Early Organization .....	16
How the ALTO Almost Came to the White House .....	179
The Mini-Computer Flap of April 1978 .....	181
Analysis.....	182
Chapter V: Reflection and Synthesis .....	191
Introduction.....	201
Putting It All Together.....	204
History of Computing .....	205
Science and Technology Studies .....	207
Diffusion of Innovation.....	209
White House Administration .....	211
Surveillance Studies.....	213
Implications for Current Presidential Policy.....	214
“Staff Finds White House in the Technological Dark Ages” .....	214
“Bush Moves to Shield Telecommunications Firms” .....	216
“Obama Says He Will Name National Cybersecurity Advisor” .....	217
“Obama to soon get secure BlackBerry” .....	218
The Primacy of Security .....	219
Sequels Anyone?.....	220
Approaching Multidisciplinary Research .....	221

	17
Denouement .....	222
Notes .....	226
Bibliography .....	251
Curriculum Vitae .....	257

**Table of Figures**

Table 1: White House Computer Requirements August 1970.....	73
Table 2: RAND Survey of Computer Applications at US Agencies March 1971.....	88
Table 3: Potential EOP Computer Applications June 1971 .....	94
Table 5: Nixonian Privacy Issues January 1974 .....	119
Table 6: DCCRP Proposed Privacy Initiatives July 1974 .....	120
Table 7: Ford Telecommunications Timeline 1974-1977 .....	129
Table 7: Carter Administration Information Policy Issues October 1977 .....	166
Table 8: Case Comparison Matrix .....	204



## **Chapter I: Computers in the White House**

### **Introduction**

In 2008, Barack Obama was elected president after running a technologically forward-thinking campaign that capitalized on Web 2.0 and social networking Internet sites such as Facebook and MySpace. The overwhelming volume of video, picture and text contributions to Obama Campaign pages on these and similar sites considerably shrank the campaign news dissemination times and forced mainstream media organizations to address stories that they might not have.

Six months after taking office, President Obama and his administration are struggling with how to create that same integrated information systems architecture in the White House. Currently, the White House's information systems architecture is incomplete and, in today's fast-changing technological environment, nearly obsolete. The White House faces a series of technological administrative and legal constraints and President Obama has called for the creation of a federal Chief Technology Officer and a Chief Information Officer to address this issue.

The Obama administration along with the preceding Bush administration also face the challenge of meeting these threats in the face of a resurgence of international terrorism. Not since the end of the Cold War and the demise of the communist threat has national security achieved such prominence in policy discussions. The widespread availability and low cost of computers, software, and access has changed the dynamic of command and control for terrorist groups and governments alike. The strong position of national security in computer adoption and information policy was also apparent during the 1970's when the US faced the communist threat in the midst of the Cold War.



The problem of implementing an information systems architecture for the White House in response to information flow is not unique. In 1970, President Richard Nixon and his administration faced similar challenges: the introduction of computers and a formal information technology policy into the White House. The story of how the White House adopted computers and developed information policy begins during the Nixon, Ford and Carter Administrations and included individuals from both the executive and legislative branches of government, as well as private sector companies. During the Nixon Administration, National Security Advisor Henry Kissinger, Chief of Staff Robert Haldeman, and Project Manager Charles Joyce successfully drove computer adoption forward in the National Security Council to avoid information overload. The primary leaders during the Ford Administration were President Gerald Ford and Vice President Nelson Rockefeller who together formulated information policy for the first time as they faced the threat of Soviet eavesdropping on US telecommunications networks. During President Carter's Administration, Richard Hardin and Richard Neustadt led efforts to computerize the domestic counsel and reorganize the Office of Telecommunications Policy into the National Telecommunications and Information Administration. These individuals did not operate in a vacuum. Government agencies that participated in the White House's deliberations included the Department of Defense, Department of Commerce, the Senate and the House of Representatives. The project also involved private-sector entities RAND Corporation, a non-profit think tank that works to improve policy and decision making through objective research and data analysis and Xerox.<sup>1</sup>

## **Research Purpose**



The purpose of this research is to address the conspicuous absence of pre-existing literature on the topic of information technology implementation and policy in America's Executive Branch of Government, specifically in the White House and to contribute to the documented history of White House management. To richly contextualize this history, this work draws on concepts and analytical frameworks from many different disciplines. For the history of computing, the 1970's is a pivotal decade in the history of computing, with emerging technologies and computer companies expanding their clientele beyond government to the private sector. For science and technology studies, this research provides a longitudinal analysis of technology adoption within the unique and influential organization that is the White House that emphasizes the role of technology users. The case studies presented in this research examine the diffusion of innovation within the White House from the National Security Council to the Domestic Council. These cases offer insight to scholars of White House administrative studies which begin with the Nixon administration. They offer insight into the institutional administrative challenges facing the White House administration. Finally, this research unearths the conceptual foundations of the federal idea of privacy which contrasts with many popularly espoused definitions.

### **The History of Computing**

Rapid changes in computer hardware and software made the 1970's were a particularly dynamic period in the history of computing. Historians of computing have explored the origins, development and adoption of many information and communication technologies (ICTs) including the Internet<sup>2</sup>; technological standards such as Ethernet<sup>3</sup>; and the evolution of hardware and software through corporate histories of such companies as IBM<sup>4</sup> and Microsoft<sup>5</sup>. Historians have shown interest in the role of the Federal government in the development of ICTs. During World War II and the Cold War, the federal government was the primary sponsor of most ICTs



as it sought to compete with the Axis powers and the Communist bloc.<sup>6</sup> As computers became more inexpensive and more versatile during the 1970's, private sector investment in and adoption of ICTs expanded greatly and became a separate independent source for innovation outside of the federal government. The commercial success of ICTs has led historians to explore the stories of individuals, groups, and companies in the public and private sectors-producers and users.

Previous literature by historians of computing have examining the history of computers and ICTs prior to 1970 have focused on the experiences of innovators and early adopters within the federal government and major government contractors such as IBM. A history of the federal government's use of computers is largely absent from the existing literature with the exception of James Cortada's recent entry.<sup>7</sup> Complementary and comprehensive work by Jon Agar looks at the role of computers in the British government.<sup>8</sup> Within the US government, these technology constituencies were concentrated within the defense establishment including the Department of Defense, NASA, the Atomic Energy Commission, and the intelligence community. These organizations manned the frontlines of World War II and the Cold War, producing the arms and technologies to maintain an edge in military technology over the Soviet Union and its allies. During World War II, computer technologies were employed by the government in two distinct roles. The then Department of Defense used computers for complex mathematical computations such as anti-aircraft ballistics tables and rocketry design.<sup>9</sup> A second, less-well documented use was within the secretive cryptanalysis community where computers were used to decrypt enemy communications.<sup>10</sup>



The defense establishment continued to use computers in these roles during the Cold War following the defeat of the Axis powers. Added to computers was the growing recognition within the Department of Defense (DoD) that communications technologies were becoming inextricably interlinked with computers.<sup>11</sup> Computers and telecommunications technologies were a key piece of surveillance technology that enabled the US to observe the activities of the Soviet Union through photography and telemetry interception.<sup>12</sup> The DoD recognized the power of the convergence of telecommunications and computing technologies and funded research to explore and expand networking technologies such as ARPANET and WHIRLWIND.<sup>13</sup> The defense establishment's interest in ICTs has continued through to the present day with the emergence of network centric warfare doctrine and the central role that computers play in the monitoring and interception of global communications traffic by US intelligence services.<sup>14</sup>

Historians of computing have noted the US intelligence community's continuing influence on the computer industry, but only in a cursory fashion. Martin Campbell-Kelly and William Aspray make a passing reference to the contributions of computers to cryptography noting that records surrounding these early computers did not enter the public domain until the 1970's.<sup>15</sup> Paul Edwards also makes a passing mention of intelligence's influence, mentioning Alan Turing's cryptography work.<sup>16</sup> This history of secrecy may explain why histories of computers during World War II focus on the ENIAC and its role in solving ballistic fire control formulae and the construction of solution tables.<sup>17</sup>

During the 1970's, US government agencies outside of the White House maintained varied levels of interest in ICTs. While a number of government bureaucracies including the Bureau of the



Census, the Department of Commerce, the Department of Agriculture, and the Social Security Administration used computers to manage voluminous records or analyze complex forecasting models, computer use was compartmentalized and limited to very specific tasks. Organizations “networked” their computers by physically transferring punch cards or magnetic tape between computers.<sup>18</sup>

Outside of the federal government, historians have examined the emergence of computer companies and their role in the development of computer hardware and software. Prior to 1970, IBM was the largest and dominant computer corporation.<sup>19</sup> Ceruzzi’s A History of Modern Computing describes the incremental evolution of information technology as an array of technological advances improving the power, efficiency and form of computers. Ceruzzi discusses the progression from mainframe computers used by large corporations, universities, and the government for number intensive analytical tasks such as accounting and the census. Mini-computers begin overtaking mainframes in the early 1970’s, providing computing power at a price affordable to smaller companies. By the end of the 1970’s microcomputers enter the field and begin to supplant their predecessors by offering effective computing power at a price that allows them to be deployed with normal employees. The US government occupies an early role as a consumer of mainframe computers but recedes into the background as consumer adoption outstrips government adoption. The story of computers prior to 1970 is the story of mainframe computers.<sup>20</sup>

As the computer hardware environment changed, so did the software environment. Campbell-Kelly’s From Airline Reservations to Sonic the Hedgehog describes this process in great detail



and shows how this technology was interlinked with computer hardware and demonstrates a theoretical progression in the composition of software.<sup>21</sup> Early mainframe computers relied upon custom designed software to perform specific tasks, sometimes massive in scope such as the SAGE fire control system or the SABRE reservation system. Programmers wrote these programs to idiosyncratic and designed for a particular hardware configuration. Programmers writing mini-computer software understood that their software might be used on many similar systems by different organizations. For example, mini-computer accounting software might run on a variety of systems meeting certain specifications and configuration requirements. However, even this software would require customization to run on a particular system even if it met the software requirements. Finally, off-the-shelf (OTS) software arrived with microcomputers was usable in a generic sense as long as a user's computer met specific requirements of language, and operating characteristics. Installation consisted of little more than the insertion of a floppy disk into a disk drive and required no technical skill on the part of users. Campbell-Kelly's work focuses upon a commercial producer-consumer framework. The government's reliance upon specialized mainframe computers meant that most of their software needs would by necessity need to be custom written for a particular purpose.

Pre-Internet computer networking during the 1970's was deliberate exercise in logistics. Ceruzzi notes that computer networking in the mid 1960's consisted of couriers carrying magnetic tapes filled with data between computers in different locations. Even into the mid 1970's, data sharing between IRS branches consisted of the physical shipment of magnetic tapes. Computer networking in the early days of the ARPANET was an exercise in physical logistics.<sup>22</sup>

The Advanced Research Projects Agency (ARPA) of the DoD was developing the ARPANET, the forerunner of the Internet during the 1970's. Histories of the Internet focus on individuals and companies. In Abbate's Inventing the Internet, the government is responsible for the funding and conceptual cause for the Internet while its development and present form are a result of the actions of non-governmental developers and early users. Later, the government removes itself from its administrative control by permitting privatization, retaining only an ultimate oversight and control role.<sup>23</sup> The US government's supporting role in the development of the Internet is echoed in other Internet histories.<sup>24</sup> Commercial histories of the Internet focus upon on the companies that sought to exploit it.<sup>25</sup> The role of the government in these histories is as a regulator of variable effectiveness depending upon the historian.

Metahistories of computing such as Edwards's The Closed World and Beniger's The Control Revolution explicitly frame computers within a government and military framework of surveillance and control. Viewing the computer as a critical part of the metaphor of human-machine interaction and cybernetics or computers as a necessary tool for managing complexity and asserting control, Edwards examines how the computer was a rhetorical metaphor and tool for the theory and practice of command and control that the military viewed as essential during the Cold War. Beniger looks at how government and industry used mechanization and computerization to organize and control society through technology.<sup>26</sup>

In short, one to view the literature of history of computing is to subdivide it into two periods based upon the nature of computer users and investors. The early period examines computers largely in the context of the federal government while the later period focuses on the role of



private sector. This is largely driven by the strong influence of users on the evolution of computer technology. The cases in the following chapters examine the blurring of this subdivision by looking at the White House as a unique part of the federal government which, in the 1970's had an uncommon degree of latitude with which to source and install computers, making it a useful window through which to observe the dramatic transformations that were occurring in computers.

### **Science and Technology Studies**

Weibe Bijker's model of the social construction of technology shows, through a series of case studies, how a variety of social, economic and historical factors influence the technological frames of users and producers of technology. Science and Technology Studies scholars have contributed to our understanding of technology as interpretive constructs.<sup>27</sup> Bijker's work explores technologies and their development as sociological constructs. In particular it emphasizes the social environment or frameworks that creators and users of technologies are embedded within. Bijker establishes that the needs and views of users and creators are not necessarily the same. Each framework places different value judgments on aspects of a technology based upon what they view as important based upon their experience and position. These frameworks often clash with successful technologies emerging after a merging of frameworks. This pattern appears frequently in communications technologies. Producers of the Internet and the telephone valued these networks as effective ways of conducting business. Users on the other hand viewed the technologies as efficient messaging systems. The system architects recognized this shift and adapted in the case of telephone system or acquiesced in the case of the Internet.<sup>28</sup>



Along with the social construction of technologies, Thomas Hughes's work on the power of technology managers on large projects and the influence of systems demonstrates how a culture of systems management has influenced the success and failure of large scale technological projects in the US.<sup>29</sup>

The cases presented in the following chapters reveal a rich narrative of social, technological, and historical factors that shaped the adoption and use of computer technology. The cases also point out both the successes and failures of technological systems within the same organization over a short span of time, enabling strong comparisons and evaluations. Finally, they demonstrate that the technological decisions taking place in the White House had an influential effect upon overall US technology adoption and policy and reveal it as an unexpected source of federal technology policy which has been overlooked by recent scholarship.<sup>30</sup>

### **Diffusion of Innovation**

Scholarship on the diffusion of innovation accurately models many of the constituencies and individuals identified in this research. In particular, theories of adopter categories, organizational innovation, and the consequences of innovation have influenced and shaped these cases. Other concepts within the corpus of diffusion of innovation theory are less applicable.<sup>31</sup> Adopter categories describe individuals by their response to technological change and innovation and their willingness to adopt new technologies. Innovators reside at the "bleeding" edge of the continuum and tend to be among the first to adopt new technologies regardless of any potential inherent risk. Early adopters are more risk averse than innovators but are also seek advantage

through the adoption of new technologies. Early majority and late majority follow afterwards and are more deliberate in their choices than innovators and early adopters. The late majority are more skeptical of change than the early majority and are moved to change due to economic imperatives and social pressure. Laggards are the least receptive to change and are traditional in their outlook.<sup>32</sup> Most White House staff members in this project's cases, in particular the Nixon case, fall into the latter two categories. The effect of information technology policy adoption within the White House is perceptible; the Carter White House is shown as being much more receptive to technological innovation.

In all three cases, organizational innovation was directly led by thought leaders of varying effectiveness. Rodgers describes this process in five sequential stages: agenda setting, matching, redefining, clarifying, and routinizing. In the following cases, the agenda setting phase occurs almost instantly as a senior administration official identifies a need early in during the tenure of an administration. During the matching phase, leaders seek out an innovation to meet organization needs. These two phases Rodgers identifies as initiation stages and constitutes the planning and study phases of a technology adoption. In the redefining phase, the technology and the organization change to enable a fit for the technology. The clarifying phase refers to the process by which the innovation is brought to the attention of the rest of an organization. Routinizing occurs when the innovation is thoroughly embedded into the organization's processes. These three phases are also defined as the implementation phase and constitute the embedding of a system into an organization. Problems can occur throughout the process but are particularly problematic if change is implemented before initiation is completed as the



organization tries to implement a half formed plan.<sup>33</sup> Chapter four which deals with the Carter administration illustrates this kind of peril.

Path dependence is a theory that intrudes into these theories of the diffusion of innovation. Path dependence refers to the effect that prior decisions have on later decisions, making them more or less likely. In this way, early technological choices can alter the costs and benefits of future choices. This research project reveals how path dependency early decisions made by the White House set the course for future policy decisions and effectively locked in future policy and technology.<sup>34</sup>

Finally, scholars of diffusion studies rarely take cases from the government sector. The vast majority of cases come from science, business, and communication. Government scholars, as we shall see below, have taken a different approach and have not chosen to apply diffusion theory. This research demonstrates the suitability of this framework for this application by showing how adoption types and path dependency function within the White House over time.<sup>35</sup>

### **White House Administration Studies**

The White House is an idiosyncratic organization which, in the 1970's endured almost a complete personnel change every four years while sitting atop one of the largest bureaucracies in the world. Some scholars of the American presidency have further narrowed their focus to examine White House Administration. Starting with Nixon, presidents have sought to give their cabinets administrative reins over America's enormous federal bureaucracy in an effort to bend the executive branch to executive policy.<sup>36</sup> This policy expanded after Nixon's tenure as

succeeding presidents fought battles with Congress and implemented broad interpretations of executive privilege and authority.

Among the president's powers is his right to appoint and fire appointees and manage budgets through executive orders.<sup>37</sup> Presidents are also able to create agencies by executive order.<sup>38</sup> Examples of these presidential powers are distributed throughout the next three chapters with varying degrees of success. The presidential struggle for bureaucratic control has taken on growing importance for scholars with the expansion of the federal government, though with a small but growing body of research.<sup>39</sup> Historians, as suggested by Andrew Rudalevige, can examine these examples of presidential power through the lenses of centralization, politicization, and their interaction in relation to administration. Centralization refers to the amount of direct control exerted by the president over legislative initiatives and the executive while politicization encompasses presidential hiring and selection on new employees whose loyalties and philosophies align with the president. Their interaction effect is largely unexplored. Scholars in this new area have identified examples of both simultaneous and substitutive use of these strategies, but scholars of presidential administration are still formulating their research agenda.<sup>40</sup>

President administration is not simply a discussion of executive control; politics is also an important component. Brandice Canes-Wrone points out that a president's public relations efforts are an increasingly important factor in presidential administration.<sup>41</sup> Public relations is an important factor in the decision making process in all of the subsequent cases, even if the president is not directly involved in the decision making process.



- Another area of interest is that of presidential coordination. George Krause notes that presidents are frequently challenged by the transitory nature of their office in relation to organizational complexity of the federal government. Krause identifies the following three issues/levels of coordination that arise repeatedly within the cases as leaders strive to move their agendas forward within the White House. Vertical coordination: coordinating between different levels in the same organization
- Horizontal coordination: coordinating across organizations
- Credible commitment: staying true to global organizational goals rather than local organizational goals.<sup>42</sup>

The common thread that binds the disparate work of the aforementioned presidential administration scholars is their united call for new research. The sheer number of theoretical models, data sources, and variables makes empirical research on the administrative presidency extremely challenging and scarce. Yet the importance of such research is manifest as teasing out models for efficiency and success for presidential administrations is highly valuable to current and future administrations.<sup>43</sup> Individually and in total, this research project provides a longitudinal and historical series of cases with a tight focus that provides crucial insights into many of the factors, models, and challenges raised by scholars of the administrative presidency.

### **Surveillance Studies**

Surveillance studies as the section will outline has two distinct lineages which rarely speak to one another. The first body of literature examines the history and use of communications intelligence (COMINT) within the US intelligence community and deals largely with the interaction of state actors. The second body of literature examines the effects of the surveillance

of individuals by states or organizations. These two bodies of literature neatly demarcate into groups: adversarial and custodial surveillance.

- Adversarial surveillance is opposed extra-legal observation usually conducted by states upon their competitors. Espionage is an example of this kind of activity.
- Custodial surveillance is unopposed or opposed legal observation usually conducted by states or organizations upon other organizations or individuals. This kind of surveillance encompasses everything from credit and background checks to the use of frequent buyer cards.

While both types of surveillance have been conducted since ancient times, modern computers and communications technologies have enabled fast, new, and more complex methods of obtaining and analyzing larger amounts of data.

States conduct adversarial surveillance on external bodies including foreign powers and try and protect their citizens from surveillance by foreign agents. Adversarial surveillance theoretically describes US COMINT efforts. Materially, US COMINT has depended upon the development of dependable, ubiquitous, and homogenous telecommunications and computer networks since World War I to gather large amounts of information and sift out important tactical and strategic patterns of its enemies and protect its own communications.<sup>44</sup> These networks are attractive to users because of these qualities which encourage adoption. Broad adoption gives US COMINT organizations a large pool of users to perform surveillance.

The history of the US Intelligence community is broadly and expansively chronicled by William Burrows, James Bamford, and David Kahn. In The Codebreakers, Kahn chronicles the historical



evolution of cryptography and cryptology from ancient times through the Cold War<sup>45</sup>.

Bamford's Body of Secrets examines the birth and growth of the National Security Agency (NSA) following World War II. These historical narratives provide strategy background for my dissertation and show the emerging power of communications intelligence in the United States and its influence at the highest levels of government.

Kahn discusses how, despite concerns about the security and control of its communication networks prior to World War II, US communications intelligence nonetheless operated in a series of fits and starts until the Japanese attack on Pearl Harbor.<sup>46</sup> General acceptance that advanced knowledge of the pending attack on the American naval base served to directly undermine Secretary of State Henry L. Stimson's position that "Gentlemen do not read each other's mail." Kahn goes on to describe how the US, in cooperation with the United Kingdom, developed an extensive communications intelligence capability to both gather information and decrypt sensitive communications. Kahn suggests, as have others that the allied intelligence effort was critical to the war effort and considerably shortened the length of the war and reduced the loss of life.<sup>47</sup>

While telecommunications were of primary importance to COMINT practices in World War II, computers also played a vital role. Computers offered a solution to a problem very different from generating gunnery fire direction tables and had a strategic rather than tactical importance attached to their use. Early computers were woven into the fabric of code breaking, overcoming the volume of encrypted communications traffic and providing timely, unencrypted translations to analysts. Computers were used by the British at Bletchley Park to decode German Enigma messages.

While Kahn does trace the history of cryptography into the Cold War period, Bamford focuses specifically on the NSA as an object of inquiry. As the main organization responsible for the acquisition of communications intelligence during the Cold War, its activities reinforce and build upon intelligence strategies developed by the United States during World War II. Bamford chronicles a series of intelligence gathering projects that rely upon monitoring network bottlenecks such as transoceanic cable landings and satellite downlink stations. These projects relied heavily upon computers to gather and sort data for human analysts, linking telecommunications and information technologies in the processes, practices, and activities of the communications intelligence community. Bamford's work reveals that the NSA was one of the largest consumers of telecommunications and computer technology and a major investor in these technologies.

COMINT has a few primary technical requirements to be effective. COMINT requires exploitable (capable of obtaining streams of information regardless of transmission route) telecommunications networks and computers with which to swiftly gather, decrypt, and analyze the accumulated information. Speed is considered important because rapidity enables one to preempt one's foe by getting inside their "decision loop" and acting before they do.<sup>48</sup> These technological requirements require an advanced and preferably superior technology base from which to work. While the US government allocates money to advanced research and design through the National Science Foundation and DARPA, private companies have driven technological innovation, growth of infrastructure, and consumer adoption bringing in existence the kind of complex, ubiquitous networks that enable modern COMINT.



COMINT also requires secrecy to prevent one's adversary from recognizing their private communications are being accessed. Since effective COMMMINT would allow a nation to prepare for, anticipate and pre-empt the actions of an adversary, a foe recognizing that their communications are compromised could and would feed false information to the agent or party performing surveillance, turning the tables by convincing the agent to plan for a false contingency. Note that general knowledge of surveillance does not necessarily compromise COMINT operations because specificity and knowledge of individual surveillance triggers a reaction. COMINT operations are kept secret by necessity for their own effectiveness.

There are many examples of public US COMINT activities that illustrate these operational requirements in a variety of communications networks. During Operation SHAMROCK, conducted by the NSA from August 1945 to May 1975, international cable companies Western Union, RCA, and ITT dispatched copies of 15,000 individual messages per month to the NSA for analysis. In return these companies were granted assurances by the government that they would not be liable for prosecution. These messages were analyzed by computers and sorted for key words. Key word lists were compiled by NSA, CIA and FBI personnel looking for criminal or suspicious activity.<sup>49</sup>

Undersea cables were also not safe from the efforts of the US intelligence community. Beginning in 1974 and continuing through the 1980's the NSA, with the cooperation of the US Navy, initiated a program of tapping Soviet undersea cables. Divers from specially-equipped submarines attached date taps to Soviet undersea cables in the Sea of Okhotsk. The content of the sometimes encrypted traffic included communications between Soviet military commanders

and data exchanges between various commands. This information was used by the NSA and the DoD to analyze the capabilities and intentions of Soviet military.<sup>50</sup>

In 1997, the existence of the ECHELON system was brought to the attention of the European Parliament in a report by its Scientific and Technological Options Assessment group of the Directorate-General of Research. The European Parliament convened a temporary ECHELON committee in 2000 to investigate. In its final report, it asserted that the US, the UK and Commonwealth partners operated a global surveillance system that listened to global satellite communications called ECHELON. Testimony given to the Committee indicated that ECHELON may have begun in the early 1970's.<sup>51</sup> ECHELON was used in the 1990's to identify and track the flow of illegal arms and defend against foreign corporate criminal activity such as bribery.<sup>52</sup>

The 1970's were a very active period COMINT period. The subsequent chapter on the Ford Administration delves deeply into that administration's concerns over significant adversarial surveillance being waged with the Soviet Union. At the same time, there is also a clear awareness of the dangers of "custodial surveillance." As stated earlier, custodial surveillance refers to the capturing of information largely, but not exclusively in a cooperative fashion about interactive partners. Custodial surveillance is seen most commonly in the private sector when an individual uses a frequent buyer card at their favorite store. The Internet "cookies" that track individual web surfing behavior for advertisers



At the state level, Edwards<sup>53</sup> and Beniger<sup>54</sup> both discuss the essence of custodial surveillance as a means of control and influence over a variety of diplomatic, strategic and industrial processes. Both examine how computer technology makes possible new kinds of custodial surveillance, shaping society and galvanizing it in the face of external dangers. Their narratives address the internal functioning of custodial surveillance within the US and more broadly, the West during the Cold War. The power of surveillance to influence individuals has been well fleshed out by Foucault and Lyon.<sup>55</sup> Lyon, like Turow is apprehensive about the power that ICTs give organizations and states to impose upon citizens and consumers. However, both make the point that such surveillance at some level is consensual. In consumerist cases, individuals trade convenience for privacy; for citizens the trade off is security for privacy. Both authors make the point that these tradeoffs are not necessarily equal nor do individuals necessarily have clear ideas about the utility and value of the privacy that they are giving up.

While private entities have few legal restrictions to govern their use of information, government has many owing to the early perception of lawmakers during the 1970's that the government was a repository for citizen information, that, in many cases citizens were required to surrender i.e. income records for tax purposes. As chapter three will demonstrate, policymakers were very concerned about the government's handling of personal information with which they were entrusted. Simultaneously the Ford Administration was wrestling with the challenge of adversarial surveillance posed by the vulnerability to US telecommunications to Soviet eavesdropping.



As illustrated, framing the White House's adoption of computers and related development of information policy within a narrow body of literature is an impossible task. Some literatures are directly relevant but too narrow in scope. Others are germane, but too broad in scope to be directly applicable due to the idiosyncrasies of the White House. Others still are directly relevant and well focused, but are too new and are struggling themselves in the search for applicable analytical frameworks and cases. These are not just challenges within the literature; they are also challenges within the extant scholarship. It is not an understatement to say that when presenting portions of this research, the most frequently elicited reaction is one of surprise, regardless of the scholarly audience. Clearly, this work is directly relevant to ongoing struggles by the White House to adopt new technologies and continue to make information policy.

## **Form**

This research project is comprised of three interlinked case studies examining computer adoption and information policy during the Nixon, Ford, and Carter Administrations. Chapter Two examines computer adoption in the national Security Council during the Nixon Administration. Chapter Three explores the challenges posed by Soviet eavesdropping to the Ford Administration. Chapter Four combines two smaller cases detailing computer adoption by the Domestic Council and the reorganization of information policy during the Carter Administration. Each case study will use a consistent format consisting of a brief literature review, a *dramatis personae* of important characters in the narrative, a description of the source material I employed, the case study proper and resultant conclusions. The fifth chapter is a synthetic chapter which draws conclusions across cases.

## **Method**

As a series of historical case studies, the primary research resources utilized in this project come from the National Archives in College Park, MD and the Nixon, Ford, and Carter Presidential libraries in College Park, MD, Ann Arbor MI, and Atlanta GA respectively. I have supplemented this primary research with additional materials gathered at the Rockefeller Library and Archive in Sleepy Hollow NY. I was also extremely fortunate to have the opportunity to collect an oral history from Charles Joyce, the chief computer project manager in the Nixon White House.

As previously discussed, this research spans a number of different scholarly literatures. Based upon the available source material, I have developed a historical narrative from the point of view of the White House and key decision makers within each administration. In the course of this narrative, elements of all of the relevant literatures will rise to the fore, though not all literatures will be equally prominent from case to case. While the Nixon chapter draws strongly upon science and technology studies, the Carter Chapter is more heavily influenced by the literature on presidential administration.

## **Limitations**

Many areas within this research examine the close link between communications intelligence strategy and information technology policy. When researching sensitive topics, especially within the sphere of intelligence, one frequently runs into the problem of classification. I do not hold a security clearance and am unable to access such information. To date, my Freedom of Information Act requests have not been fruitful. Bearing those constraints in mind, I do not feel that I have encountered significant information classification issues in my research. I attribute this to many factors but chiefly; my research has not sought out operational level details relating



to intelligence and my target time frame lies thirty years in the past and occurs just prior to digitization. This latter fact is especially important presently as the US government has embarked on a program of classification review since the events of September 11, 2001, reclassifying many documents. Indexes of documents prior to the widespread use of the computer to organize them (occurring first in the Carter White House) makes it time consuming to identify the content of such records without actually reading them. In some specific cases dealing with still classified reports, I was able to piece together the classified report by locating drafts or detailed commentaries of the final report.

In a similar vein, all documentary research projects rely upon the accuracy and completeness of the documentary record. I believe this to be the case based upon two factors. First, based upon my review of the documentary record, I have found that records from different offices depicting the same events to be congruent and hence reliable. Second, portions of this work reviewed in the present day by individuals involved or named in the relevant documents and they have confirmed accuracy of the narrative I have constructed. These conversations have also enriched this research by adding nuance and relative importance to many of the events described. This is not to claim a perfect understanding of the events. Many of the people I will be discussing are still living which presents the opportunity for further interviews and oral histories as well as disputes about the accuracy of this work's interpretations. However, I am confident in the accuracy of the accounts as written.

Terminology has proven to be another challenge to my research. While information technology is the common phrase used to describe all things computer today, there are a variety of phrases



which can refer to the same thing e.g. "information automation" "electronic data processing".

This is also true during the period I am examining. These cases take place during the earliest period of White House computer adoption and the terminology relating to it was sometimes unexpected. In the course of my research, I have developed an expert eye for these terms, to what they refer, and to show their relationship to other pieces of the puzzle.

Among the literatures, the history of COMINT poses significant problems for researchers.

COMINT is by nature a highly secretive and generally classified topic. Knowledge of practices and operations are limited by government secrecy and are kept out of public view. Knowledge of the Allied success in World War Two against the Axis powers was only revealed in the 1990's.<sup>56</sup>

The information in the public domain is limited but the available evidence does paint an extraordinary picture of the scope and breadth of US COMINT activities throughout the Cold War. COMINT-related secrecy also poses a parallel problem for researchers in identifying individuals with knowledge and access to COMINT related materials and programs.

Another COMINT issue is the dissemination of professional knowledge about adversarial surveillance. Hughes and others note that systems and operations analysis methods spread to the private sector from the government and academia in the 1960's as individuals became disenchanted with governmental policies and the Vietnam War.<sup>57</sup> The intelligence community maintained its insularity and secrecy until the end of the Cold War when budget cuts and opportunities in the private sector encouraged intelligence professionals to look outside the government, spurring the rise of the corporate intelligence industry.<sup>58</sup> The dissemination of

COMINT from the government does not begin until the 1990's, making it difficult to locate and observe at earlier points in time.

The ongoing War on Terror also creates obstacles. COMINT is an essential weapon used to locate and fight international terrorism and is being strongly defended by the White House in a number of ongoing court cases. The Bush administration aggressively classified documents to protect and hide information about these systems and techniques. As previously noted this is consistent with COMINT strategy but can make it challenging for the researcher. While I have been stymied in my attempts to ascertain the contents of some documents, they constitute a very small, though admittedly perhaps crucial percentage of the documents to which I have obtained access.

## **Contributions and Overture**

History of Computing: My dissertation points out that early telecommunications and computer policy was an outgrowth of strategy devised for harnessing telecommunications networks to national purposes. Reexamining the OTP, the NTIA, and even the FCC in light of this new connection between national interest, intelligence strategy, and telecommunications policy may give rise to new narratives about such things as the breakup of AT&T, spectrum policy, and Internet governance.

My dissertation has broad implications for policy. First, it calls into question US government motives and policy with respect to telecommunications and computer technology. Previous historical narratives about the history of computers have focused on piecemeal governmental



policy approach and do not hint that a broader strategy was being pursued. Looking at current policy on such topics as network neutrality, privacy, and open source software, government policy is somewhat schizophrenic with various branches and departments taking sometimes contradictory positions. The US government does not seem to have an overall strategy towards computer technology. My dissertation asserts that this was not always the case and perhaps is not the case at present. The current hodge-podge of policy conceals an overall strategy towards telecommunications and information technology which now, more than ever, recognizes the importance of the COMINT and the link between the two.

Similarly, my dissertation asserts that telecommunications strategy was rooted in World War Two experience of communications intelligence. Subsequent policy made by the OTP and the FCC are also areas deserving critical scrutiny. National security strategy as applied to telecommunications likely played a role in telecommunications deregulation, universal service, and spectrum allocation. Reexamining these narratives with attention to the national security agenda may provide new explanatory mechanisms with which to evaluate government policy and to scrutinize new policy, through the identification of heretofore unrecognized motivations. The influence of COMINT causes us to reevaluate US anti-trust actions pursued against IBM, AT&T, and Microsoft and their outcomes. In the COMINT framework, monopoly positions make it easier for the government access and negotiate with key technology and infrastructure provider and declassified Eisenhower documents identify this fact.<sup>59</sup>

Science and Technology Studies: My dissertation applies of Bijker's theories of the social construction of technology to the activities of regulators and policy makers in addition to



producers and users of technology. STS narratives focus on the individuals and organizations involved in the development and use of technologies. The role of regulators to shape technology by influencing the environmental factors surrounding the adoption and use of a technology is a critical area which has not been adequately examined by historians of computing who have focused on non-governmental organizations and individuals. My dissertation will address this shortcoming by beginning to examine the role of government policy in shaping computer history. This work also dramatically demonstrates the impact of Hughes's theories about the strength of US systems management expertise by showing how two parallel cases of technology adoption during the Nixon and Carter administrations diverge dramatically due, in large part to differences in project management. Comparisons can therefore be drawn to the effectiveness of policy initiatives backed by national security imperatives, strengthening the arguments of Beniger and Edwards about the rhetorical power of military control and the Cold War. However, the cases also point out the limitations of this rhetoric to White House personnel not involved with national security issues as the Carter case illustrates.

Diffusion of Innovation: This set of case studies provides a tight window onto a series of technology adoption decisions within a single organization. Combined, these case studies are an unusual longitudinal case study with which to examine the effect of leadership, and encouraging organization adoption of technology. The Nixon and Carter cases starkly contrast with one another in terms of how managers perceived user input. These cases also illustrate some of the complex resistances that exist in government to change and offer some successful solutions to the problems they present.

Presidential Administration Studies: The field of presidential administration studies is still trying to focus on a research agenda. Its focus on the presidency starts during the Nixon Administration and moves forward. The cases offered in this research offer a rich and interwoven series of stories showing how many of the theories about the nature of presidential authority and power are or are not expressed within a narrow field over the course of three consecutive administrations.

The Ford case offers new rationale for presidential action: national security. President Ford was highly motivated to secure US telecommunications systems in the face of Soviet eavesdropping. Ford was also specifically crafting policy with the express purpose of avoiding public opinion. This choice was a motivation to avoid public opinion rather than court it. Frequently, when issues of national security are involved, presidential administrative choices are made for overriding security rather than political reasons.

Surveillance Studies: My dissertation redefines and explores the theory of Surveillance Studies by positing the existence of adversarial and custodial surveillance. Today, the field of Surveillance Studies is largely focused on what I have defined as custodial surveillance such as that discussed by Foucault where parties have a defined power relationship. Adversarial surveillance operates in transnational spaces where parties may not have a direct power relationship. These two types of surveillance function in different spaces, characterizing different kinds of power relationships between the observer and the observed



Finally, this paper provides a new historical framework for understanding government policy during the current War on Terror. Government intelligence gathering policy, its relationship to telecommunications companies and the role of information technology in data acquisition and analysis are all traceable to the early emergence of a Nixon-era information technology strategy based upon post-World War II communications intelligence experience. News outlets reporting on US government intelligence programs seem to intimate that these activities are unprecedented and are unique to President George W. Bush's Administration. On the contrary, previous communications intelligence programs such as SHAMROCK were highly invasive and Vice President Cheney and former Secretary of Defense Donald Rumsfeld have direct ties to the Ford White House where they may have developed their strategic thinking linking information technology policy to communications networks.

This research shows how predominant Cold War national security interests during the 1970's strongly influenced the trajectory of US government computer adoption and information policy. It demonstrates the power of national security as a *raison d'être* for the adoption of new technology and policy. National security interests can also cause policy to skirt the bounds of legality and undermine civil society. In an environment where national security is the prime if not sole motive factor, its absence can leave policy adrift. As will be shown, many of these same conditions exist today and the perils are just as formidable.

The Obama administration's technological challenges did not begin with his inauguration. The technological challenges facing the unique institution that is the White House were first recognized by people within the Nixon Administration in 1969. The National Security Council

was in danger of losing its institutional credibility because it was unable to process the torrent of information flowing into it, and in so doing threatening the national security of the United States.



## **Chapter II: Kissinger's Information Automation Project: National Security Council Computerization, 1969-73**

### **Introduction**

The following case study examines the computerization of the National Security Council (NSC) during the Nixon Presidential Administration. Computerization of the National Security Council (NSC) began during Richard Nixon's Presidential Administration with an information automation plan from Nixon's National Security Advisor, Henry Kissinger. Kissinger recognized that the flow of information to the White House was overwhelming the NSC and therefore undermining the organization's ability to effectively analyze and develop national security policy. The problem of information management was exacerbated by the President Nixon's transformation of the NSC from a research and advisory body to the primary manager of US Foreign Policy. Under the Nixon administration, the NSC was required to make, execute and coordinate defense and foreign policy. The NSC's ensuing effort to address the problem of information overload moved computers and information automation squarely into the center of US national security policy. The situation was unacceptable to the Kissinger and the Nixon Administration in light of the US's involvement in the Vietnam War and the ongoing Cold War.

The Nixon Administration was not the first presidential administration to recognize the growing difficulty of information management in the US Government. The Executive Branch has been struggling to organize and prioritize information since the beginning of the Cold War and the

signing of the National Security Act of 1947 in order to make better decisions and reduce the decision cycle time in relation to foreign competitors and adversaries

The ability of the White House and the NSC to manage the problem advanced significantly during the 1970's, as the development of new information and communications technologies, primarily computers, began to increase pace. The case of computerization in the 1970s is important because it recounts a highly successful story of technological adoption that met users' needs while being implemented early and under-budget in the face of a variety of constraints and challenges. This case also underscores the persistent challenge of information management and shrinking decision cycle times in the national security policy spheres and offers insights with respect to the successful adoption of technological aids and tools. The story of the adoption of computers by the NSC during the Nixon Administration shows how skilled and knowledgeable leadership backed by powerful political support was able to effectively overcome a variety of institutional barriers and implement an information management system that increased the effectiveness of the NSC.

This case traces the adoption of an information automation system by the NSC between 1968 and 1973. It describes the early reaction of Kissinger and his advisors to the embarrassing information management situation at the NSC and their decision to draw upon existing resources at the RAND Corporation and the DoD to remedy the situation. The case goes on to examine the competing viewpoints of information automation and the NSC's own technological skepticism culminating with RAND's dismissal and the adaption and adoption of pre-existing DoD systems. The case concludes by describing the positive reaction of Nixon's staff to the advent of



computers in the White House and explores the roots of the surprising affinity of Nixon's political supporters towards computers.

The NSC's response to the threat of information overload was ad hoc. Kissinger and his advisors appropriated resources that they felt would be effective and threw them at the information automation problem. The White House, unlike other federal agencies was not an entrenched bureaucracy with an institutional memory. It was a congregation of committees whose members were chosen on the basis of political loyalty, effectiveness, and expertise in specific areas. White House leaders such as Kissinger did not consider nor account for paradigmatic technological change. Furthermore, the White House's communications technology support was provided by the Defense Communications Agency (DCA) as part of their mandate to support the command and control infrastructure of the US military and specifically the President in his role as Commander in Chief. When confronting the challenge of information overload, Kissinger called upon outside experts from the RAND Corporation and the Department of Defense. After appointing Joyce as project manager, Kissinger stepped back. Joyce adroitly wielded the power of the White House to gain the cooperation of key government agencies such as the OMB and the DoD and the resources at their command to build an information automation system for the NSC. Internally, Joyce worked to gain the trust and cooperation of the NSC staff which was essential to successful technology adoption. This problem solving approach succeeded because of the effectiveness of Charles Joyce as a project leader. Had Kissinger and his advisors chosen another leader with a different range of experiences, it is unlikely that this project would have been completed early and under budget as was historically the case. The project manager was given by Kissinger and his advisors a great deal of power and latitude to implement and

information automation system for the NSC, an organization which could be characterized as a technology adoption laggard if not somewhat Luddite. Finally, White House information automation was a completely new concept and Joyce was able to take advantage of the power vacuum that existed due to the absence of competing claims for authority over the new technology. Indeed, most White House staffers had little familiarity or understanding of computers and Joyce was their source of knowledge. The unqualified success of this project would lead to wider adoption of computers throughout the White House setting the stage for the creation of the Office of Administration during the Carter Administration. It also changed the way the NSC thought about computers. Through their use, the NSC came to see computers as information management systems rather than glorified calculators suitable for complex arithmetic.

### **History of Computing**

The computers of the early 1970's were large mainframe computers running proprietary operating systems and frequently custom designed applications. The majority of computers were also designed as complex numerical engines for the manipulation of large numerical arrays. Textual processing was in its infancy and word processors were a new concept.<sup>60</sup> The cost of computers had declined to the point where private industry was beginning to rival the federal government in terms of their annual percentage of overall computer sales.<sup>61</sup>



In the early 1970's, the computer hardware market was dominated by IBM's System/360 mainframe<sup>1</sup> which commanded 75% of the global market for computers. Even as IBM was in ascendency, however, it was under assault by the Department of Justice for anti-trust and monopolistic practices.<sup>62</sup> Nevertheless, in spite of its legal troubles, IBM was earning \$7.5 billion annually. Mini-computers, the next step on the path towards microcomputers had just begun to be produced by IBM's competitors.<sup>63</sup> Moreover, the federal government was a major IBM client using its computers throughout the federal bureaucracy.<sup>64</sup>

The software market was just emerging as an independent entity—it was only in 1968 that IBM fashioned a software division out of their computer division. Part of IBM's power in the marketplace soon became their creation of software for customers using their system/360.<sup>65</sup> In 1970, IBM began selling software packages where previously software had been a free good or rolled into the cost of hardware deployment and maintenance. Being charged for software was a sore spot for many businesses as software development cost estimates in both time and money were frequently far lower than the actual final cost. IBM's OS/360 chronically ran over budget.<sup>66</sup> Meanwhile, for fledgling software companies who were beginning to develop standardized software packages, the economics of developing, marketing, and selling a software package were challenging but promising. As will be shown, IBM's market power and brand would be an important consideration in the vendor decision to automate the White House.

## Science and Technology Studies

---

<sup>1</sup> The IBM System/360 was the archetypal room-filling mainframe computer of its era. It could accommodate 248 data terminals while handling commercial and scientific work. The System/360 also was the first computer with an expandable storage capacity as well as accommodating a variety of peripheral devices.

The ensuing case presents two different philosophies of technology usage and adoption that draw directly from Edwards, Hughes, and Bijker. RAND's proposal for NSC computerization draws directly out of their history of system management and deployment. Having developed large scale information systems for the DoD, RAND believed in the Cold War rhetoric that Edwards explores in his work. Centralization, control, and cybernetics are all present in the RAND proposal. Absent from it are the unlimited budgets and generous time frames needed to implement them. The system also needed to work reliably. Finally, had RAND's systems approach only been heard by Kissinger, the Cold War rhetoric may have been effectual. As we will see, the future system users were privy to RAND's proposals and their comfort level with technology was not the same as many of RAND's military clients.<sup>67</sup>

Joyce's plan was differently focused. Recognizing his constraints and making use of his expertise in systems management, he focused on user needs. He worked with and listened to the needs and concerns of the NSC secretariat in proceeding with the information automation project. Joyce was also well versed in the political landscape of the executive branch and successfully managed the project through many administrative hurdles. He was also, unbeknownst to him, being aided by the user needs of H.R. Haldeman's political operatives who, unlike the NSC secretariat were comfortable with computers and had plans to use them for electioneering. Here, Hughes's technological management and Bijker's social construction of technology come to the fore as both theories come together to explain and underscore Joyce's success.<sup>68</sup>

### **Diffusion of Innovation**



Knowledge of computers and computer technology did not diffuse easily in the Nixon White House. Haldeman and his staff had previously employed computers to great effect but they were unwilling to make light of their knowledge as they had quasi-legal intentions towards the new White House computer. As we will see, the NSC secretariat was filled with technological laggards-the last people to adopt a new technology. However, by automating existing paper-based systems with computers and choosing a user friendly system, Joyce was able to smoothly educate these users and convert them into adopters. He was able to demonstrate that there was clear value in the new system and persuade the NSC secretariat to adopt the new computers.<sup>69</sup>

Joyce's role as the primary technological evangelist is quite clear. Additionally, Joyce enjoyed the full support of both Kissinger and Haldeman in his efforts and was well respected by his peers. He, in effect had carte blanche to implement systems and it was no secret within the White House that he enjoyed such strong support. It was therefore unsurprising that his decision against RAND raised so little alarm even as RAND tried to press its case. Joyce's request to Kissinger to send RAND a letter declining their services was a strong indicator of the strength of Joyce's position and his voice.<sup>70</sup>

### **White House Administration**

This case is a highly successful example of presidential administration, absent President Nixon. Nixon almost never emerges as a figure in the documentary record of information automation. Despite its importance, Kissinger, Haldeman and Joyce are the three figures who wield authority. Kissinger and Haldeman have direct power through Nixon and invest it in Joyce who makes good use of it in moving along a difficult program early and under budget.<sup>71</sup>

Nixon's only appearance in the record is to temporarily halt construction for fear that the press will take it as evidence of extravagance during a recession. This demonstrates the reactivity of the White House administration to public relations efforts and clearly shows that negative potentialities are a consideration, even during the Nixon administration.<sup>72</sup>

This case also demonstrates best practices with clear planning and research conducted prior to implementation.<sup>73</sup> Joyce successfully employs vertical coordination with other White House agencies such as OMB and WHCA as well as horizontal coordination with the DoD. He also makes a credible commitment to the idea of information automation and follows through on it even in the face of alternatives such as the RAND plan.

### **Surveillance Studies**

Surveillance studies are not directly relevant to this case.

### **Dramatic Personae**

#### Henry Kissinger

Henry Kissinger served as President Richard Nixon's National Security Advisor. He received a PhD from Harvard University in 1954. He also worked with RAND as a consultant. Kissinger was one of the most influential and powerful members of the Nixon White House and is responsible for many of the diplomatic initiatives of the Nixon administration and the reorganization and expansion of the National Security Council.



Charles Joyce

While Henry Kissinger was the prime motivating force for the Information Management project, its implementation was placed in the capable hands of Charles Joyce. Joyce was a graduate of MIT and a MITRE Corporation veteran assigned to a project to design and implement a command and control infrastructure for the Joint Chiefs of Staff. In 1967, he was hired as one of three people for the command and control section of the Office of the Assistant Secretary for Systems Analysis in the Office of the Secretary of Defense. Within months Joyce would be assigned to lead the group that reviewed the Department of Defense's (DoD) \$6 billion annual budget for command and control infrastructure. In this position he and his team reviewed military command and control systems around the world including those linking the President to US strategic nuclear forces.

The process of technology adoption in the White House was quite chaotic with multiple individual stakeholders clamoring for systems that would make their jobs easier. Arriving at the White House in 1969, Joyce had to contend with significant resource constraints as well as persuade the existing NSC staff to adopt new technologies. Joyce, one of Robert McNamara's whiz kids at the DoD, was well versed in administrative tactics and was able to operate independently and with little oversight. Such strengths were crucial to Joyce as he sought to obtain resources and implement systems in the NSC. Joyce carefully negotiated the information automation project through a variety of institutional constraints, including:

- **Financial:** The White House staff and the NSC had small budgets in spite of their growing importance. The Nixon administration was also implementing austerity measures in the face of an economic downturn.
- **Contractual:** The competitive bid structure for federal contracting was time-consuming and laborious, resources in short supply to the NSC.
- **Technological:** Mainframe computers were new to the White House but existed in varying degrees in other executive departments. These systems were largely specialized for specific uses. IBM, the primary producer maintained a tightly controlled production schedule that stretched over years from time of order to time of delivery. Software design was also a time consuming specialized task.
- **Institutional:** NSC policy and administrative staff members were skeptical of computers' potential to assist them with their jobs. Interviews with staff members clearly show that they saw computers as complex computational machines rather than information management machines. Their adoption of the new technology was crucial as they enabled the senior NSC members to make policy decisions by providing them with relevant information culled from the thousands of documents seen every month.
- **Political:** Concerns about the potential for interference from Nixon's political advisors turned out to be unfounded. Archival records demonstrate that Nixon's campaign team was well versed in the utility of computers as information management and analytical tools, having compiled computerized voting records for a number of key states prior to the 1972 elections. They were very interested in having access to a computer within the White House. Nixon's political team was interested in having access to a computer in the White House and was inclined to support Joyce's efforts rather than undermine them.



Friction only occurred towards the end of the initial adoption period as the political team began seeking applications for the Executive office of the President.

- **External:** Prior to Joyce's arrival, the White House commissioned the RAND Corporation to evaluate the NSC's information processing capabilities and develop an information automation plan. RAND's solution envisioned the White House as the central node of government information systems and by establishing standards within the White House; other agencies would necessarily need to conform to its standards. RAND's plan was viewed with skepticism by the NSC which suspected that RAND would be unable to deliver on its technological promises and instead encounter unwelcome cost and time overruns during the tight economic times facing the Nixon administration.

The choice of which information management plan to implement was ultimately made by Joyce with Kissinger's authority. Joyce obtained the necessary funding from the Defense Communications Agency budget by asserting that the NSC computer system was supporting the President in his role as commander-in-chief. Joyce also maneuvered the Office of Management and Budget (OMB) to sign off on an expedited no-bid contract for the computers by co-opting the OMB's own need for computing power. He then transplanted off-the-shelf DoD information management software into well-proven IBM computers diverted from the DoD's acquisition stream. The administrative staff in the NSC Secretariat viewed the computers as information management tools. They used them during and after Joyce and his group implemented them. The policy staff, unlike the administrative staff did not work directly with the new system but did recognize their impact through the greater effectiveness and efficiency of the administrative staff

in providing them with information. Joyce and the information automation project were mostly given a free hand by Nixon's political team, which was enthusiastic about the prospect of having a computer in the White House. He chose the computer systems after making well reasoned recommendations. Finally, he made the NSC secretariat partners in the adoption process, overcoming their fears and concerns and demonstrating how the new systems would enhance their productivity. Ultimately, while he consulted the White House, RAND, the NSC and the DoD, Joyce directed the end-to-end implementation of the NSC information management project. Joyce was able to accomplish this owing to the singular authority and responsibility appointed him by Kissinger.

#### The RAND Corporation

RAND's involvement in this endeavor was an outgrowth of its already close relationship with the national security establishment. In the 1960's, RAND was the primary developer in the new field of systems analysis that then Secretary of Defense Robert McNamara applied to the Department of Defense's planning and strategy challenges. RAND was also involved in the analysis and strategy of the Vietnam War which preoccupied Nixon's NSC.<sup>74</sup> The NSC's choice of RAND to examine information automation and management systems was unsurprising.

#### The National Security Council (NSC)

The National Security Council (NSC) was an organization within the Executive Office of the President (EOP) which offered advice to presidents on foreign policy and national security affairs. Initiated by President Truman, its functions have changed over time. During the Nixon Administration and under the leadership of Henry Kissinger, the NSC not only offered advice



but began to plan and execute policy through other executive agencies such as the Departments of Defense and State. Included within the NSC was the *NSC secretariat* led by Jeanne Davis. The secretariat was very unusual in the White House as it was one of the very few places within the White House whose personnel were stable from administration to administration and therefore retained some limited capacity for institutional memory. Other positions within the White House were filled by the president with appointees, but the secretariat needed to function as its critical role was to manage and circulate national security information.

#### The Defense Communications Agency (DCA)

The Defense Communications Agency was an agency within the Department of Defense that managed all its communications systems and technologies. It was also charged with maintaining the communications for the chain of command. To that end, the DCA also operated the *White House Communications Agency (WHCA)* within the White House to insure that the President as Commander-in-Chief always had access his commanders in the field including control over the government's nuclear weapons.

#### H.R. Haldeman

H.R. Haldeman was President Richard Nixon's chief of staff and one of the most powerful members of his White House. Haldeman had previously managed Nixon's presidential campaigns and his leading political strategist. He would later be implicated in the Watergate scandal.

#### **Source Material**

This case is based upon materials available in the Nixon Presidential materials collection.

Surprisingly considering the sensitivity of the some of the documents, all of the referenced records are unclassified or declassified. Many of the records cited come from the records of the NSC secretariat or subordinates of Kissinger and Haldeman. In addition, I was fortunate to have the opportunity to collect an oral history from Charles Joyce in 2008.

### **Information and Communications Technologies (ICT) Beachhead: Computerizing the National Security Counsel**

In early February 1969, Kissinger wrote a memo to President Nixon about the state of technology in the White House:

“Technical Facilities available in the White House are inadequate for proper information control. To gain control of the vast amounts of reports, memoranda, cables, etc., in the national security area and keep pace with technological changes presently available or planned for the future, we need to move now to make necessary improvements.”<sup>75</sup>

As noted at the beginning of this case, the Nixon White House’s introduction to information and communications technologies came at the behest of Henry Kissinger who recognized their crucial importance to national security. His belief in their importance, however, was not widely shared among senior White House staff. Memos between staffers demonstrate high levels of skepticism surrounding the adoption and deployment of ICTs. Staffer skepticism crystallized as



RAND presented proposals for National Security Council (NSC) ICT implementation. Staffers' private critiques of RAND's initial information automation proposal echo the conventional wisdom of the early 1970's which questioned the utility of computers and harbored suspicion of being coerced by technologists.

### **Early Project Development**

In February 1969, one month after Richard Nixon's inauguration, Secretary of State Henry Kissinger began the process of moving the White House into the information age. Kissinger lobbied Nixon to computerize the document and information handling of the National Security Council and to redesign the White House Situation Room. Computerizing NSC records would enable improved tracking and indexing, enabling the NSC to sift through information and make informed decisions in less time. The renovation of the White House Situation Room and the White House Communications center were also priorities. The situation room was little more than a secure conference room. The existing communications center had been built in an old underground bomb shelter and was difficult to access, improve, or expand. The redesign of these two areas would also co-locate them, improving the connectivity of the White House to the rest of the world. .<sup>76</sup>

Kissinger's modernization program began almost from the day Nixon took office. A team of Kissinger's staffers including Arthur McCafferty, Larry Lynn, Mort Halperin, and Richard Moose, with input from Roger Levien of RAND, began to examine how the NSC could automate its operations in late January 1969. They produced a four-phase proposal outlining a series of studies analyzing:

- The existing logging and document control system;
- How computers could be used to accomplish these tasks;
- How to utilize the computers of other government agencies to accelerate telegraphic communication; and
- How to create a Situation Room that could take advantage of these functionalities. These studies would together form the ICT implementation roadmap the White House followed in the coming years.

There was good reason for Kissinger's team to be concerned about managing the NSC's information flow. The problem of information management proved embarrassing to Kissinger when the NSC found itself out-organized by the State Department.

"Our experience with Secretary (of State) Rogers' list of 62 items demonstrates the urgent need to improve our logging and follow-up procedures. Although the list was highly misleading it still took us three or four days to sort it out. We need a system which makes it impossible for such a list to sneak up on us."<sup>77</sup>

At the time, the NSC staff received or created over 1,000 documents per month. Furthermore, staffers might make as many as one hundred changes to a single document which needed to be tracked. All these documents also needed to be conveyed to their destination. The NSC's potential inability to manage information threatened its efficiency and effectiveness, undermining its authority. The NSC was drowning in paperwork<sup>78</sup>



**Phase I**

Phase I of the plan envisioned by Moose and his team focused on improving the existing manual document system and preparing documents for export into a computerized logging system.

RAND would conduct the study portion of phase I over two weeks. Afterwards, the study recommendations would be implemented by the NSC within thirty days. Funding for phase I was limited as neither White House nor the NSC were identified as funding sources. The plan identified other sources including left over funds from an existing research grant from the Rockefeller Foundation, the Department of Defense's (DoD) Advanced Research Projects Agency (ARPA), and the Office of International Security Affairs (ISA).<sup>79</sup>

**Phase II**

Phase II of the project, determining how computers could be used for document control and logging, would also be conducted by RAND and directed by information systems expert Charles Joyce. Phase II consisted of two components: document control, and document filing and retrieval. Moose's team envisioned the document control component to include: a document receipt record, a location record, searchability with respect to subject origin or recipient, and the capability for a monitoring officer to track action items as milestones approached. The document control component would rely upon a file and retrieval system that would provide an underlying structure to enable these functions. The planned document filing and retrieval system would included a data base with full texts of important materials, abstracts of lengthier documents, and indexes for occasional references that would be searchable with plain text queries. The search results were to be retrievable by the operator on screen or by print out. This phase was projected to cost in excess of \$10,000 and take 3 to 4 months. Rented equipment for implementation was

estimated to cost \$7,000 to \$10,000 per month. The NSC and the White House Communications Agency (WHCA) funded Phase II.<sup>80</sup>

### **Phase III**

Phase III was envisioned to follow phases I and II and was focused on linking other governmental computers into the White House system and making the White House computer into a "switch" that would:

- Utilize the data base at other agencies to expand our capabilities without having to duplicate work they have done;
- Modernize our communications facility to speed up receipt and dissemination of telegrams.

The plan did not identify what organization would be responsible for the work but did note that the Defense Communications Agency (DCA) had already budgeted for this work as it was responsible for maintaining command and control infrastructure to the President. The plan does not identify a budget or time frame for completion.<sup>81</sup>

Phase IV called for the creation of what would become the White House Situation Room with all of the attendant communications, command, and control technologies envisioned to be required of such a facility. The plan also notes that if the White House were to take a strategic lead in information handling technologies, other agencies would be compelled to develop compatible systems. The plan specifically notes that the White House would work closely with the State



Department, DoD, and the intelligence community. Moose, McCafferty, Lynn, and Halperin felt that this kind of stimulus was particularly important as many agencies were falling behind technologically. While Moose and his team's plan for Phase IV included no estimate of the time or expenditure that would be required for implementation, the plan's authors indicated that the results would be worth the government's investment.<sup>82</sup>

### **Project Approval**

On April 11, 1969, Kissinger advised Nixon to approve the Moose proposals and Nixon approved them April 23, 1969. The action memorandum, based upon Kissinger's advisors' plan recommended five specific actions improve the information support to the President. The memo first called for the construction of a conference room to support the situation room with modern communications and display capabilities that would be funded by the DCA. Secondly, Kissinger suggested an automated information system. Noting that such messages were typically routed via Teletype and handled by many intermediaries before arriving at their destination, Kissinger suggested that the envisioned system would index, rout, and display or print out sufficient copies for all receiving parties. The new information handling system would cost \$500,000 initially and \$300,000 annually which would be borne by the WHCA and would take two years to acquire and install. Third, Kissinger recommended that the communications room, situation room and conference room all be collocated. This would require significant underground construction to expand the existing situation room and relocate the communications center. This improvement would improve the efficiency of the situation room and the communications center. The WHCA would take responsibility for the estimated \$1.5 M cost of the project which would take a year to complete. Fourth, Kissinger recommended that the WHCA conduct a review of existing

communications systems to insure that the president could effectively communicate with federal agencies. Finally, Kissinger recommended that the RAND Corporation assist the White House with a study to evaluate an information handling requirements of the White House to effectively utilize the new facilities and improvements described in the proposal. RAND's work would be underwritten by ARPA.<sup>83</sup>

Even as Nixon approved the information-handling project, the Domestic Council and H.R. Haldeman were interested in the new facilities. Ken Cole, a senior domestic policy advisor, noted to Haldeman that the new NSC computer system would have spare capacity to "other White House operations as well" with minimal cost and effort.<sup>84</sup>

A month after Nixon's approval, Joyce had taken charge of the project and was moving it forward after being reassigned from his previous job at the Department of Defense. In a May 24 memo he informs Kissinger that the information handling and display project is coming along well. Joyce relates that he has recruited a design team from the DCA. He had also retained architects through the GSA and begun soil testing for the underground expansion of the situation room. Within the next month, he expected ARPA and RAND to reach agreement over a statement of work as well as receiving designs, sketches and construction plans for the new construction projected to commence in July.<sup>85</sup>

### **Early Interaction with the Intelligence Community**

On May 26, 1969 Lee DuBridge, Nixon's Science advisor and a former member of the

President's Foreign Intelligence Advisory Board (PFIAB) wrote to Kissinger to offer his help.



DuBridge noted that a previous report had looked some of the same issues confronting the White House but related them to the intelligence community. He volunteered that there were a number of experts from the Computer Sciences Board of the National Academy of Science available to assist the information-handling project. 1969<sup>86</sup>

On September 8, General Maxwell Taylor, chairman of the President's Foreign Intelligence Advisory Board (PFIAB) issued a letter to Kissinger wherein he expressed the PFIAB's concern over the historically poor information flow between the intelligence community and the president due to the absence of new information handling technologies. The PFIAB wanted the CIA to be responsible for acquiring these new intelligence handling and distribution capabilities.<sup>87</sup>

Joyce, as information handling project manager subsequently commented on this letter to Kissinger in October. Joyce noted that an information handling system was being coordinated by PFIAB but that it required consensus to accomplish anything and that consensus among the members of PFIAB was difficult to achieve. He further noted that PFIAB's information handling panel received advice from the Office of Science and Technology and the National Academy of Science, which raised their estimation of the capabilities of information handling technology, but did little to detail how the technologies might actually be implemented and used. Joyce noted that any consideration of the value of information handling technology needed to be understood with a few caveats: that computers by themselves will not solve information access problems; that computers are not essential to solving information handling issues; that computers may be a poor solution to a misunderstood problem; and that little is known about the information consumption requirements of top policy officials. Joyce counter proposed offering to

coordinate a seminar with the PFIAB's information handling experts and senior officials from the intelligence community. Additionally he suggested that specific studies be planned to examine information handling with respect to the President and the Secretaries of Defense and State under the supervision of the NSC or the Director of Central Intelligence (DCI). Kissinger approved this plan in November.<sup>88</sup>

In early December, Joyce and Kissinger received feedback from Richard Helms Director of Central Intelligence regarding the PFIAB's recommendations. Helms told Kissinger that quicker adoption and implementation would be more expensive and that in any case, adequate progress was being made on information handling issues.<sup>89</sup> Kissinger was also aware that the PFIAB had been made a similar recommendation in 1967 with which the intelligence community had vehemently disagreed. Kissinger recommended to Nixon that the president not take any action and await the results of the information seminar being coordinated by Joyce and scheduled to occur in January 1970. The seminar would be attended by the heads of the NSA, CIA, DIA as well as a representative from the Departments of State and Defense and representatives from the Bureau of the Budget.<sup>90</sup> The documentary record does not reveal any outcomes from this meeting but does show that Joyce continues the development and deployment of the information handling systems within the White House without consulting the intelligence community.

### **The System Decision**

The installation and adoption of the NSC computer was, in Charles Joyce's words "one of the most enjoyable governmental experiences" he ever had.<sup>91</sup> The NSC computer was installed



early, under budget and with minimal administrative obstacles. This assessment begs the question of why forces aligned behind the White House computer project.

### **A Computer System for the White House**

The initial work done by RAND for the information automation project did not impress Joyce. RAND researchers Roger Levien and Bruce Goeller proposed to use a custom computer system from Informatics Corporation for the NSC. Levien and Goeller preferred this hardware because they were familiar with it from its deployment at RAND. However, the NSC balked at the initial equipment cost of \$45,000, as the NSC did not have that kind of funding within its own budget. Further disinclining the White House from Levien and Goeller's equipment recommendation, Joyce discovered that the CIA already had an existing computer capacity which the NSC could use for free. After some additional haggling between Levien, Goeller, and Informatics representatives, the cost of the RAND recommended computer was reduced to \$12,000. Still Joyce did not see the point of paying \$12,000 for a computer system that duplicated an existing, free capability that already existed within the government.<sup>92</sup>

### **The White House Communications Center**

With the initial organizational systems finalized in accordance with the 1970 RAND information study, the NSC staff began implementing the data system on the CIA computer. The White House staff believed this to be an interim measure prior to the construction and completion of the White House Communications Center (WHCC) as envisioned in Kissinger's initial information handling memo to Nixon plan. While the WHCC was initially planned to be located under the southwest lawn of the White House, Nixon decided in July of 1970 to veto that location without

explanation.<sup>93</sup> Following Nixon's edict, discussion focused on whether to locate the WHCC in a new building, in the existing Executive Office Building, or in a different White House location. At this point in the discussion, a variety of non-NSC stakeholders began to make their interests known.

Following the RAND proposal Charles Joyce began to design and deploy a - computer system to meet the needs of the White House. Joyce's first task was to investigate the needs of users. While the information handling system was originally desired by Kissinger and the NSC, the Office of Management and Budget and the Domestic Council were also interested in using the new White House computer facilities for their own work. Haldeman held a meeting on June 25 and attended by Kissinger, George Schultz, head of the OMB, John Ehrlichman Assistant to the president for domestic affairs and General James Hughes of the WHCA to discuss the creation of a task force to examine White House computer needs. By the end of August 1970, a task force comprised of the White House Staff (WHS), NSC, DC, OMB, and WHCA had examined the information handling and computing needs of the White House. They had drawn upon the analysis and expertise of the OMB and DCA. The task force came to a consensus regarding a wide range of issues surrounding the systems proposal, notwithstanding the ongoing RAND research into the needs of the White House.

In the "Recommendations for a White House Computer System," the task force identified nine service requirements and five system requirements for the WHCS.<sup>94</sup> To meet these requirements, the report examined the cost effectiveness of buying one, two or three systems to meet these needs. Due to reliability requirements for messaging, the single system solution actually required



two computers. The dual system option linked two message handling computers to a single general purpose computer. The three system solution consisted of a message handling system, a computer serving the White House, NSC and Domestic Council and a third system for the OMB.

Table 1: White House Computer Requirements August 1970

Service Requirements	Systems Characteristics
Automate the message handling functions of the White House Communications Center, assuring maximum reliability and accuracy in operation.	The system must provide suitable privacy and security protection for classified and other sensitive information.
Provide for monitoring at a remote console and selective printing of incoming messages for the White House Situation Room and the NSC staff.	The system must be capable of providing on-line time-shared remote access to information files for different user groups in the White House and the EOB.
Provide two separate on-line indexes of documents, one for the NSC and one for the Domestic Council. Provide for on-line input of information to these indexes.	Message processing must be highly reliable. Other functions can be supported initially at the level of reliability available from a single, good commercial quality central processing unit. The capability to increase reliability by the addition of backup equipment should be planned for implementation in the shortest possible time if the reliability of a single processor proves inadequate.
Provide an on-line action status file for the NSC, integrated with the NSC document index.	Proven computer software should be used to the greatest extent possible. Low-risk approaches should be pursued in the development and acquisition of new software.



Service Requirements	Systems Characteristics
Provide a suitable interface with micro image storage and remote video display systems serving the NSC and Domestic Council, so that the output of the index search can be used to locate and display documents in the microimage file.	The system as initially installed should be capable of expansion to meet both anticipated growth in existing applications and the addition of new applications of a different character by evolutionary changes in hardware and software. Expansion of capabilities should be possible by the addition of terminals, users, and files without extensive revisions of existing data files and applications programs.
Provide an electrical interface capability between the message handling functions and information storage and retrieval functions to permit updating information files from incoming messages	
Provide a suitable data processing and remote access environment to support a full text storage and retrieval capability and a legislation tracking capability to support multiple users in the White House and Executive Office of the President	
Meet the data processing needs of the Office of Management and Budget in which the requirements for privacy, responsiveness, and efficiency are primary. Some requirements, for non-sensitive tasks in which quick response is not a factor, might continue to be met by utilization of other agency facilities as is presently done.	
Provide automated administrative support for the White House staff as requirements in this are developed.	

In evaluating the merits of the three proposed solutions, the task force was concerned about cost and space as well as efficiency in terms of system utilization. The report found that the single system option, upon further research had to be further subdivided as the two potential system vendors lacked the requisite technical expertise for both message handling and data processing



systems. Message handling was required to process the information coming into the NSC from other parts of the government while information handling was required to print, display, process, and distribute the information within the NSC. The plan agreed on by Kissinger and Joyce required both. The first vendor could provide a strong data processing system but would need to develop a message handling system at great cost of initially \$2.16M and an additional \$1.25M thereafter. The second vendor could offer a reliable message handling system but minimal data processing hardware and software, at an initial cost of \$.985M and an additional \$.95M thereafter, which would hamper the White House's ability to expand their systems in the future. Evaluators from the DCA and OMB also dismissed the three-system solution which suffered from high cost (initially \$1.33M with an additional \$1.27M thereafter) and inefficiency as two computers were not necessary to comfortably handle OMB and White House functions.

The report, citing lower cost in time, space, and money, recommended the two-system approach. Under this plan RCA vendors would provide the message handling system and IBM would supply the data processing systems with an initial cost of \$.995M and an additional \$1.06M thereafter. The report recommended that the Defense Communications Agency (DCA) should be placed in charge of the systems acquisition with the White House Communications Agency shouldering responsibility for operating the systems. The report chose the DCA because of its record of acquiring systems in a shorter span of time than either the General Services Administration (GSA) or the OMB. The report identified the WHCA as the best operator of the system owing to its rapid response time since it was a 24 hour operation and the report's authors believed that the WHCA could also provide a higher degree of security for both classified and politically sensitive information. The DCA, upon authorization from Secretary of Defense

Melvin Laird estimated that it would take 18 months to complete installation pending the availability of space within the White House. (The messaging system was to be installed in the East Wing of the White House.) Laird's sign-off on the project was mostly a formality as the DCA operated under his authority. The new data processing computer system required a shielded space and an upgraded power supply in the Executive Office Building (EOB) at a cost of \$536K.<sup>95</sup>

In September 1970, Haldeman informed, Schultz, Kissinger, Hughes, Ehrlichman and Joyce that he had approved the recommendations of the task force including its conclusion to make Haldeman senior coordinator for all facilities and naming Joyce project manager for acquisition of the computer system. Following acquisition, OMB was to take over from Joyce.<sup>96</sup>

#### **The RAND NSC Information Study of 1970**

Kissinger simultaneously approved two studies evaluating information handling procedures in the White House and other implementations for information organization. Both studies would focus on how the NSC handled managed information about the Middle East which was a primary area of concern and representative of greater challenges in the NSC. A seven month RAND study and five month Institute for Defense Analysis (IDA) study were run concurrently and funded by the NSC. While the RAND study was to examine the applications that would be useful to information handling, the IDA was tasked with examining the special role and information handling patterns of the intelligence and military communities' watch centers and the White House Situation Room. The IDA study may also have been related to the PFIAB's interest in information coordination within the intelligence community<sup>97</sup>



RAND had sought the contingency planning study as well but was rebuffed by Charlie Joyce and Robert Behr, Joyce's deputy in April of 1970 because they and Kissinger agreed that it was concerned with military options. (The RAND proposal had included linking the State Department, CIA, National Military Command Center (NMCS) and the White House in contingency planning and evaluation.) Joyce assigned The Joint Chiefs of Staff, the Defense Communications Agency and the MITRE Corporation to complete the contingency planning study along with the IDA.<sup>98</sup>

In March 1970, a RAND study group led by Paul Hammond submitted a research proposal to Joyce who approved it. RAND proposal focused on five areas of information flow interest: the regional US diplomatic agenda, the US regional presence monitor, regional issues file, negotiating histories, and contingency plans. RAND understood that these categories of information were overlapping and that part of the project was to leverage such overlap into efficiency.<sup>99</sup>

The RAND study proposed to investigate these areas in three stages: assessing information availability, constructing data structures, and developing data outputs. RAND anticipated that the project would last five months and take 16 man months of work completed by small teams assigned to each stage. The first area being looked at, the regional US diplomatic agenda, would help diplomats interweave actions, deadlines, and calendars of political, economic, religious, and social events in the region and enable diplomats and the State Department to track and leverage their diplomatic activities more effectively. The US regional presence monitor data structure would provide an in depth accounting of US diplomatic and military assets deployed to a region

including a detailed accounting of individual costs for programs, personnel and bases. The regional issues file would compile events and issues not easily represented in the diplomatic agenda such as issues related US economic, political and social goals. The fourth area, negotiating histories consisted of documents organized by issue and country surrounding the wide range of negotiations the US was involved in. In particular, this area was also to include comprehensive and authoritative pronouncements and interpretations regarding previous agreements and negotiations to maximize continuity. Finally, the contingency planning area focused on examining the potential of electronic data handling to assist in evaluating contingency plans. These studies constituted a comprehensive cataloging of the NSC's current information handling practices so that they might be automated faithfully and articulated accurately in the software.<sup>100</sup>

Initially, RAND sought to characterize the nature of data flows within the NSC prior to the design of suitable applications and software. RAND inserted researchers led by Roger Levien and Bruce Goeller into the White House to examine the flow of documents and devised a complex coding scheme to encode documents for automatic search and sorting and they submitted a proposal and report on April 20 1970. They had devised a system whereby each document was classified by a variety of codes representing topic, author, recipients, and handling instructions. This information was then inputted into the electronic database that would form the basis for NSC queries. The action and information monitoring system (AIMS) was a software package designed to query, contain and maintain the database.



Levien and Goeller divided the project into two overarching, complementary systems: a paper flow system and a computer-based recordkeeping and reporting system. The paper flow system concentrated on devising procedures for handling and collecting documents. The computer system was flexible and accommodated incomplete non-standard entries while retaining the capability to reflect rapid changes to documentary records. The computer system was designed to function through Informatics System IV computer. As noted previously, despite RAND's claims that this was a common computer system, Joyce and others balked at the price of the proposed system especially as they had made arrangements to use processing time on the CIA's computer. Levien concluded this interim report to Jean Davis of the NSC by noting that once steps were taken to implement the system, it could be operational in little over a month. In spite of their confidence, Joyce shelved the AIMS software and the computer proposal for reasons of cost.<sup>101</sup>

### **The RAND Information System Application Report of 1970**

In November 1970, the RAND research team of Paul Hammond, Bruce Goeller, John Koehler and William Quandt issued its final report and recommendations on the information handling software for the NSC. RAND had spent the previous year interviewing NSC personnel and analyzing workflow to discern computer applications that would assist the NSC. Their report was comprehensive and ambitious, but would not be well received.

The report identified three user groups within the NSC: area specialists, functional specialists, and supervisory and support staff. RAND discovered that these groups operated in different ways and thus had different information requirements. Area specialists were focused on a particular global region, functional specialists were focused on a broad area such as foreign trade, and the

support staff provided assistance to these groups as well as senior policy makers in the White House.

For area specialists, five applications were recommended: daily briefing recap, event chronology, regional presence monitor, regional program monitor, and computer-assisted cable handling.

These applications were designed to help area specialists focus on information specific to their region of specialization and make it easy to have information at their fingertips about US activities, military presence, and significant regional events.

RAND suggested four applications to assist functional specialists: country data files, a directory and index of government data holdings, quantitative analysis tools, and text analysis tools. These applications were designed to assist functional specialists to easily access key data such as GDP and unemployment and produce comparative analyses. These applications also provided analysts with a repository of data analysis tools including an application to search text for keywords and phrases.

For the advisory and support staff RAND recommended two key applications: an action and information monitoring system and a calendar. These tools were designed specifically to keep their primaries aware of time and project management schedules.

The report concluded with two principal recommendations. The first urged the adoption and implementation of hardware and software to support the aforementioned applications in three phases, with adoption of the most important applications first. Secondly, RAND recommended



that it continue its work, with the support of the White House, to deploy the recommended system and begin work on designing new systems to address additional needs of the NSC. RAND added that their recommendation of an information system for the NSC was based in their belief that such a system would be to the NSC's advantage. More specifically it was important that the NSC had control over the system as the queries submitted by analysts could be as revealing as the answers, revealing NSC internal policy and strategy. As the report indicated, RAND had little confidence in traditional computer companies.<sup>102</sup>

It is therefore essential that the design process involve a group of people who understand computers, are familiar with NSC operations, and can identify and deal with your staff's substantive problems in *their* terms. We have no confidence that any hardware or software vendor, however competent, can meet these requirements. We are confident that we can.<sup>103</sup>

In a personal letter to Kissinger, Hammond went further, noting that the applications report was based upon three key observations of the RAND team. First, that the NSC as an institution cannot be strengthened through expansion. Second, the NSC's main problem is identifying relevant information in a timely fashion out of the large volume in the NSC's possession. Third and crucially, "That other agencies in the national security domain are currently developing information systems to meet their own needs. An early start on an NSC information system will help insist that those developing systems meet the president's needs as well."<sup>104</sup>

Hammond therefore advocated that the NSC acquire the flexible and upgradable system recommended by RAND and provide ongoing administrative support to the system to expand and advance it.<sup>105</sup>

### **NSC Reaction**

The NSC harbored significant doubts regarding RAND's far reaching proposals and self-assuredness. Joyce, Jeanne Davis, NSC secretary and head of the NSC Secretariat, as well as administrative staff and policy analysts were all skeptical of the report. RAND's memo detailing its \$120,000 cost estimate for the coming year in anticipation of the implementation of the proposed system added weight to the NSC's suspicion.<sup>106</sup> To better evaluate RAND's report, Jeanne Davis of the NSC solicited comments from representatives of the three groups RAND identified in their report. Their comments were highly critical of RAND's proposal.

The NSC staffers believed that the RAND proposal was too ambitious, failed to address the "real" needs of the NSC, and significantly underestimated the total cost of implementation. Analytical services were singled out especially. Staffers believed that numerical analysis packages could be easily acquired from other governmental agencies or that the NSC could simply obtain pre-processed information. Textual analysis was similarly singled out as staffers voiced their opinion that their existing methods for sorting information were effective and sufficient. They also aired doubts about the effectiveness of automated text analysis. Finally, staffers harbored concerns about the ability of RAND to deliver on the required applications.



NSC staffers believed RAND was going far beyond what they needed in terms of the breadth of recommended applications. In this respect, they were correct. Hammond had already discussed the importance of the NSC setting standards for computers across the government so that the White House would assert its central role in computerization. Time and again, NSC staffers pointed out that their greatest concern was locating and accessing important information. They were not concerned with the establishment of standards which might lead to better long-term information flow and organization. In this regard, NSC staffers sought directly useful applications and found many of RAND's recommendations to be duplicative or of little practical value.

NSC staffers overwhelmingly suspected that the costs of the RAND applications would be far higher than RAND suggested. Manpower for coding the thousands of documents coming through the NSC would be extensive and would also cost time and money. With the NSC's capabilities already taxed by the volume of information flowing into it, staffers did not recognize a significant time savings from data automation. In many cases staffers specifically noted that existing paper systems, such as the purchase of reference volumes from the United Nations, were highly cost effective. Analysts noted that significant amounts of information would be used infrequently and that it was far more efficient to simply purchase reference books.

The most insightful memo came from NSC staffers Harold Saunders, Samuel Hoskinson, and Rosemary Nasher who saw through the RAND report to the crux of the issue facing Kissinger and the NSC. Their primary issue with the RAND applications report was that it did not deal

with the key issue: Should the NSC lead the government in technology adoption or should it focus on processing information from key agencies? The staffers wrote:

“The basic issue we face here is not addressed in the RAND study. It [the study] affirms that such information [schedules, policy documents etc.] could be helpfully computerized. RAND’s staff has been around the government and knows a lot more than its report says about what the rest of the government is doing and can contribute in this field. But they have not come to the point in this report that should be of greatest concern to us: How can the NSC bring the resources of the whole government to its fingertips by constructing a government-wide system.”<sup>107</sup>

While these staffers thought, like Hammond that making the NSC and the White House a leader in government computerization was an important goal, the scope of the RAND report only dealt with the workings of the NSC. RAND, they believed supported such as strategy, but its research essentially answered a different question. Moreover, the staffers recognized that even within the NSC, there was disagreement on this issue. They believed that further internal discussion and decisions be made about the NSC’s computer policy course needed to be made before such sweeping action was taken.

Saunders took a more concrete position in a subsequent memo to General Alexander Haig, deputy assistant for national security affairs by proposing that the NSC take a leadership role in developing a government-wide computer system for coordinating information on the rest of the world. Saunders recognized the increasing complexity of information inflows and that policy



decisions would be based on an ever widening foundation of data. The system he called for would provide a broader base for global decision. Saunders concluded: "the main task is for the NSC to provide government-wide leadership in the development of a broad computer system that will stimulate a wider view of our relationships with other countries."<sup>108</sup> Saunders also noted that some of RAND's proposed applications, such as the calendaring system, might have limited utility, but most of their proposals would not be helpful to the NSC.<sup>109</sup>

### **Understanding the Discussion**

To fully comprehend the RAND proposals and the NSC's reaction to them, it is critical to understand the computing environment in 1970. RAND as a government research boutique was interested in finding and solving problems. With respect to the NSC, they were focused on developing a system to better manage information and allow the NSC to function more efficiently and effectively. RAND chose an Informatics computer rather than an IBM which was not widely used and used their own custom software to solve the NSC's unusual information handling requirements. This solution would take money and time which were resources that the NSC did not have.

The NSC was skeptical of these proposals for good reason. Contemporary computer industry trends argued against the solution being proposed by RAND. Cost, manpower, and time were all valuable commodities and the NSC was dubious about RAND's proposed return on investment and the promised minimal disruption that technology implementation would cause. The NSC voiced its desire to RAND through meetings and memos for a more modest solution focusing on its most pressing problems which would in their minds minimize their cost and risk. The NSC

took a further step to minimize its risk by eventually settling on the adoption of an IBM computer, thereby gaining the benefit of an existing pool of software and software authors.

### **RAND Reaction**

After meeting with General Haig on February 5, 1971, Hammond issued an alternate plan with a more limited scope. In the plan, Hammond acknowledged the challenges of implementation, but noted that while taking account of existing structures, technology can affect change, writing:

System design must take careful account of the status quo and doubtless could be used to reinforce the status quo. Yet it can also effect substantial change. Once people start using information system services, in however trivial a manner, the change process is under way: the user learns as he uses and the computer services can be adapted and further developed to reflect the accumulating experiences with the user.<sup>110</sup>

Hammond concluded by arguing that hardware was not a major factor in application development and implementation, reflecting RAND's knowledge of the NSC's reservations about its earlier hardware proposal.<sup>111</sup>

RAND's alternative NSC information system proposal offered three separate alternatives and a fourth option of implementing some combination of the first three choices. The first option was the implementation of a crisis handling system. The crisis handling system was designed for the president as a situation room where he could oversee political and military situations globally and would be linked with the DoD, CIA and the State Department (DoS). The crisis handling system would specifically support the Washington Special Action Group and the president's



nuclear responsibilities. The computer supported situation room would also have the effect of forcing the supporting agencies of configuring their systems in accordance with the situation room and the President.<sup>112</sup>

The second alternative was an intelligence-centered information system that would focus more on analysis than action and would link the various intelligence agencies together to advise the president and provide him with early warning of important events. Hammond envisioned that this interlinking would also provide a fruitful competitive environment among intelligence agencies. Because of its focus on analysis, this system would, unlike the crisis handling system draw upon more capabilities of the intelligence community since it focused on long range plans and strategies, while still placing the president at the center of its focus.<sup>113</sup>

The third option was an implementation monitoring system. This application also focused on the president but was strictly concerned with tracking the implementation and progress of presidential policies. This system had a broader scope than the first two systems as the President and his staff were free to track whichever policies they deemed important.

Having made these alternate proposals, Hammond noted that any information system had to include other considerations such as user base, implementation strategy, labor utilization, and future expandability.<sup>114</sup>

Hammond, as a clearly secondary option also suggested that it might be possible to adapt existing governmental computing systems to the NSC's requirements. Hammond strongly

emphasized that this was a far weaker option because the resulting system would be an incomplete patchwork of systems and applications rather than the cohesive system envisioned by RAND. This conclusion was based upon RAND's experience with other government computer systems. RAND was aware that a wide variety of computer systems were employed by different government agencies and that these systems were idiosyncratically linked to match the needs of the individual organization.<sup>115</sup>

Table 2: RAND Survey of Computer Applications at US Agencies March 1971

Organization	System
Office of Management and Budget	Budget tracking
Department of the Treasury	Treasury disbursement tracking
Office of Emergency Preparedness	Unknown, though significant computing and storage capacity
Department of State	SADI: Subject word indexing Trade Policy Modeling Tariff Surveillance Economic reporting Public policy statement file system Country data file system Law of the Sea Munitions license information system Cultural exchange information retrieval system Berlin crisis file Automated cable distribution
AID	PAIS: Program Activities information system
CIA	Biographical files Specialized information files Other decentralized limited applications
Intelligence Community	COINS: Computer linking interface
NSA	High capacity keyword search software
DIA	Computer indexed microfiche index



Organization	System
DoD	Logistics and operations management systems
US Air Force	Community information system

Hammond's efforts to insure RAND's continued involvement in the NSC's computerization were in vain, however. Joyce advised Kissinger that RAND had been studying the situation for years and had come up with few practical applications new to the NSC staff. He also cited the significant resistance of the NSC staff to many of RAND's proposals. In April 1971, Kissinger approved Joyce's recommendation for four applications: an index of NSC documents and reports; an automated chronology of significant events; an automated meeting and contact list for the president with respect to dignitaries; and a series of applications for the Program Analysis Staff to assist them in their work with Vietnamization (these would include information from the DoD and the DoS). The analysis of Vietnamization was a major complex objective as it sought to aggregate and analyze data from the wars of Southeast Asia, country programming studies, economic models, and force cost analyses. Joyce chose these applications based upon RAND's work and the responding comments of the NSC staff. Joyce was particularly interested in avoiding duplication of information and sought to simplify the aggregation of this information for use by the Program Analysis Staff. Much of this information was related to force strengths, supply situation, and infiltration rates and was consequently classified.<sup>116</sup> Cost as noted previously was a major concern for the White House and this problem was elegantly overcome by saddling the DCA with \$5.7 million of the estimated \$6.5 million cost between 1971 and 1973. This was accomplished by Joyce who from his past work at the DCA understood that it had a substantial budget for the purpose of insuring the command and control infrastructure of

the US military including the President in his role as commander-in -chief. RAND's work ended with a polite thank you letter from Kissinger which also marked the beginning of the implementation of computers in the NSC.

RAND's attempt to bring the White House into the Information Age in 1971 was doomed from the beginning. RAND's proposals fell onto an unreceptive audience of NSC staffers who were comfortable with existing paper-based research systems and only desired a supplemental way to help them navigate the ever increasing volume of information flowing into the NSC. At the top, Kissinger wanted information channeled into sound policy. Charles Joyce, project coordinator negotiated between all these constituencies to support an incremental approach using existing governmental capabilities that were embedded in the military and intelligence organizations with whom the NSC already worked closely. This decision set the initial computing standards for the White House and cast information and its analysis in the dim light of the Cold War.

## **Conclusions**

Joyce and his team received input from RAND and other agencies regarding the White House computer hardware configuration. Later, he received advice from RAND and users within the NSC regarding computer users. In the end, the internal voices of users won the debate. The internal stakeholders experience with documentary records and suspicion of computers led to an incremental adoption plan that focused on creating a functional inexpensive computer system for the White House that was designed for national security purposes. RAND's vision for a unified computer system based in the White House and to which information from all government



agencies would flow had insufficient support from NSC users who simply wanted to manage their ever increasing flow of information.

### **Computer Applications for the President**

Following the lead of the NSC to adopt a computer system, Haldeman approached Joyce seeking to employ the new White House computer for the use of the Domestic Council and the President. Haldeman was interested in a variety of applications organized into four broad categories: contact lists, administration of the White House, index applications, and presidential correspondence.

Within the contact list category Haldeman wanted four specific applications: KARDEX information, appointments information, entertainment information, and an outgoing presidential correspondence log. The KARDEX system would be a searchable address file containing the president's circle of friends whom he addressed on a first name and nick name basis and would include additional fields describing these individuals' relationships with Nixon. The appointments file would contain similar information fields as the KARDEX system but also include those people who had spoken with the president in face-to-face conversations, by telephone, or while he was travelling. The entertainment file would consist of KARDEX information for people who had attended White House or presidential social occasions. The outgoing presidential correspondence log was to be a data file that held information on all letters and telegrams sent with the president's signature.

The application dealing with the administration of the White House would be the White House and Special Projects Payroll. At the time, this piece of software Haldeman wanted on the White House computer was a tested package that tracked employee information related to their employment including leave accrual and payroll.

The index applications would consist of a Central Files/Domestic Council Index and a Public Information Index. The Central Files/Domestic Council Index, would be compatible with the NSC system and contain titles and summaries of documents held within the White House's Central Files. The Public Information Index would serve as a catalog of press releases and public announcements made by the White House.

The presidential correspondence application would, unsurprisingly, be a letter preparation application which the White House staff envisioned would be implemented in three stages. The initial goal would be to allow a remote computer to reproduce form letters onto typewriters. Once this was achieved, the White House staff then wanted the system to have a composing capability to create form letters out of standard paragraphs. In the final iteration, the staff hoped that the computer would be programmed with sufficient vocabulary and linguistic capability to compose complete, high-quality letters.

### **Computers, Power, and Politics**

Though expanding the pool of computer users beyond the NSC to include White House Staff appeared to be an afterthought during the summer of 1970, it was actually a carefully thought out plan by Joyce. In August 1970 H.R. Haldeman took over the post of White House Coordinator which gave him the authority to manage and steer the course of the computer project. In practice,



Haldeman left such matters to Joyce. Joyce was an effective project manager who had the trust of Kissinger and NSC principals such as Jeanne Davis. The NSC viewed the computer as its own and wanted to ensure that its interests were protected. With Joyce as project manager, the NSC was confident in a successful outcome.<sup>117</sup>

Joyce was asked to develop and deploy software for the EOP through numerous meetings and memos from Bruce Kehrli, an assistant to Haldeman who Haldeman delegated to manage the computer project. Funding for these software projects were provided by the DCA with Joyce vouching for their use for national security affairs. The initial discussions of White House computer use included its use for the EOP along with the NSC and the OMB. After Joyce completed acquisition of the computer system and had made decisions about the applications for the NSC, Haldeman through Kehrli had him turn his attention toward the needs of the EOP. Joyce notes in a memo that:

Since April 1971, there has been a new emphasis on the use of computers to support preparations for the 1972 elections.<sup>118</sup> The software needs of the EOP had expanded beyond what they had initially been described as during the initial hardware negotiations of 1970. Joyce sought guidance from Haldeman and his staff in terms of prioritizing the acquisition and deployment of new software applications.

Haldeman, Gordon Strachan Haldeman's liaison to the Committee for the Re-election of the President (CRP)<sup>2</sup>, Robert Morgan, Deputy Assistant to the President for Domestic Affairs, and Jeb Magruder, Deputy Director of Communications were interested in the benefits afforded to the administration by a computer. The analysis and proposal for a White House computer included provisions for a "data processing and remote access environment to support a full text storage and retrieval capability and a legislative tracking capability to support multiple users in the White House and Executive Office of the President" and "administrative support for the White House Staff."

Jeb Magruder was especially interested in automating presidential letter writing which he hoped<sup>119</sup> to put in the service of President Nixon's re-election bid.

The White House political staff's interest in computer applications for both administrative and political functions became more evident in June 1971. While Joyce's team was busy installing the White House computer in the East Wing and Executive Office building, the Committee for the Re-election of the President (CRP) and Strachan were concurrently compiling a list of potential computer applications listing them "in order of increasing partisan characteristics." CRP and Strachan were sensitive to the fact that use of the White House computer for partisan political purposes would appear improper to the public, especially with the Nixon Administration's contentious relationship with the press.<sup>120</sup>

**Table 3: Potential EOP Computer Applications June 1971**

All public statements by the President
Outcome of Administration proposals sent to Congress

<sup>2</sup> Many readers will identify the CRP or "CREEP" as popularized by the media of the day as the force behind Watergate and other Nixonian dirty tricks. In official documents the organization is abbreviated as CRP and I have maintained this convention.



Summary of all Federal programs since 1/1/69
Grants and public works projects initiated under this Administration
Economic data by Congressional district
Voting record of all Congressmen
Congressional legislation introduced since 1/1/69
Federal patronage by Congressional district
Published public opinion polls 1/1/69
Voting data for the past several elections y Congressional district
Demographic data by lowest census unit capable of being compiled for congressional districts and states
Voter registration information by precinct
Software for simulated mapping of demographic data
Major statements by opposition contenders
Major editorial comment since 1/1/69 on this Administration
Listing of all office holders-Federal, state, and local
Key members of local, state, and national Republican Party
Program to generate address labels and compile and sort lists of names

One of the first applications developed for the president's office was the KARDEX system for tracking contacts. KARDEX was a searchable data file that replaced an existing index card system that the President's secretaries already used. The new system included name, address, and keywords reflecting the individual's relationship to the president. KARDEX's advantage over the card system was its ability to be searched based on a variety of criteria including zip code, state, and keyword.<sup>121</sup> The KARDEX system was completed and operational by November 1971. Test KARDEX index print outs of President Nixon's contacts were printed in six directories with the same content but organized in different ways e.g. alphabetically, by state. These directories were kept by the President's secretarial staff: Noble Melencamp, Ray Price, Mike Smith, Alexander Butterfield, and Rosemary Woods. The staff recognized that these directories were reference tools and that the KARDEX system was the ultimate authority. To that end, the staff also used the directories to correct the inevitable data entry errors that were part of any similar

project.<sup>122</sup>

In the run up to the 1972 elections, the Committee for the Re-election of the President collected 31 million names and related demographic information such as income, address and make of car at a cost of \$1 million and built a computer database.<sup>123</sup> CRP used this information as the foundation for its direct mail and get-out-the vote program. President Nixon also sent out nine million telegrams.<sup>124</sup> The White House computer was part of CRP's strategy for the 1972 election to organize and process mailings to Nixon's supporters and potentially provide processing power to analyze and utilize the voter databases that the Nixon campaign had collected. In May 1971, Jon Huntsman expresses to Joyce his concern that crucial applications will not be ready for "the critical months of 1972."<sup>125</sup>

CRP's database was comprised of registered voters and could produce customizable computerized lists of voters, record voter responses from canvassing, and filter results for ethnicity, age, income, and census tract information. First voter registration information was collected by vendors from selected states and formatted into a specific format designed by CRP. CRP added to this data set information about people already involved in the Nixon campaign such as contributors and volunteers. The standardized voter information was sent on to University Computing Company which integrated it with demographic information culled from other public sources such as census data and saved the whole database on magnetic tape.<sup>126</sup>

CRP viewed the database as a revolutionary new political campaign tool. While initially used for direct mail organization, CRP envisioned it as a multipurpose tool to conduct targeted



fundraising, campaign organizing, and volunteer recruitment. CRP believed that the database provided a 5%-10% advantage for a candidate using it. They also understood that the database was not a static artifact and estimated that up to 20% of the database would become obsolete annually, necessitating ongoing maintenance, updating and augmentation costing \$806,000 through the 1976 presidential election cycle.<sup>127</sup>

The Nixon staff was also interested in using databases of supporter information throughout the presidency to build stronger relationships between Nixon and his supporters. Nixon's New American Majority (NAM) provided a ready pool of likely candidates. In Nixon's presidential campaign, he had worked to draw white working-class white voters to him by supporting a range of domestic policies. This NAM had only just been defined and Nixon and his advisors were invested in its continuation and therefore sought to include representatives from the NAM to reach out and encourage the participation of these voters in Republican politics. The political staff was keenly interested in using the White House computer to enable this kind of relationship building by inviting key donors and supporters to White House social events and to arrange for meetings between such supporters and Nixon when the President was travelling the country.

"We continue to work in the creation of a system of Contact Books, one for each constituency group that will contain biographical information, contributions during the campaign, and will document those social and other activities to which each person has been invited. This will allow us to continuously prepare invitation lists of those most worthy of being invited to upcoming events."<sup>128</sup>



Nixon's staff arranged for key supporters to attend social events, including state dinners and guest seating in the president's box at the Kennedy Center. Haldeman emphasized the importance of coordinating and managing this information in Nixon's second term and assigning Rose Woods responsibility for coordinating invitations.<sup>129</sup> This was due in part to Woods's work with the KARDEX system that had been one of the first applications developed for the White House. The NAM information was mostly input into the computer by January 1973 and the White House was already steering such perks to NAM people. The political staff went further as the system became available to appoint NAM people to full time administration jobs, commissions, and boards.<sup>130</sup>

By June 1972, Nixon's political staff was envisioning a transition in the adoption process from building applications to address administrative issues, to building applications to support political objectives. Contact lists, file indices, payroll and accounting, and correspondence applications had largely been completed. As the end was in sight for designing applications to deal with routine challenges, Nixon's political staff began considering the design of other applications including opinion polls and public attitude analysis tools with a clearly partisan political bent. These applications were the same applications that Joyce had expressed concerns over months earlier. The staff also gave consideration to hiring its own project manager whose qualifications would include loyalty to the administration because of the potentially politically sensitive nature of future analysis applications.<sup>131</sup>

## **Conclusions**

The above case provides insights into White House technology policy and national security affairs with respect to four key questions: how well did the U.S. government develop coherent



strategies that effectively integrated its national security resources; could U.S. agencies cooperate to implement these strategies; which variables best explain the strengths and weaknesses of the U.S. government response; and what diplomatic, financial, and other achievements and costs resulted from these successes and failures?

Prior to Kissinger's order to automate information handling, information handling was conducted manually with long standing document and mail protocols providing organization. This system had emerged over time, shaped by users. Prior to the information automation project, there was no system for making systematic changes to information handling procedures. Initially policy was going to be solely the domain of the NSC led by Charles Joyce. Once people in the White House discovered that the NSC's information automation actually meant that the NSC was in the process of acquiring computers, the acquisition and deployment plan became an interagency project within the White House. Project leadership was shifted so that Chief of Staff Haldeman oversaw the whole project with Joyce making decisions regarding acquisition and deployment. The priorities for computer applications still reflected the overriding needs of the NSC, with the OMB, DC, and EOP receiving attention afterwards.

While each of these organizations expressed their information processing needs to Joyce, they were not equally forthcoming to Joyce regarding their expertise and knowledge base. NSC secretariat and analysts were technological laggards who had not interacted with computers except to read about them. They expressed significant doubts about the effectiveness of an information automation system. The OMB needed the computer to process the federal budget and communicated this to Joyce. OMB's cooperation with Joyce was essential to make the

acquisition non-competitive and speeding the installation of the computer. The DC was also an organization of technological laggards and did not think that computer applications would be an aid to their work. This would begin to change during the subsequent Ford Administration. The EOP, however was a technological innovator. Their use of computers to analyze voting and create voter databases was far in advance of either political party. They also envisioned advanced applications that would allow them to capitalize upon their technological advantage. It is clear from the record that they did not communicate their level of technological sophistication to Joyce and on a number of occasions asked for applications such as a mailing system that could be used by Nixon's social secretary to dispatch invitations to a special event or by CRP to contact likely voters prior to the 1972 election. Joyce was aware of the political sensitivity of such applications; he did not realize that the EOP's vision of potential computer uses exceeded his own. With Haldeman in charge, the EOP effectively oversaw all of Joyce's activities and progress.

In the absence of any established procedure, Joyce was free to create his decision mechanisms with the approval of Kissinger and later Haldeman. Kissinger and Haldeman both gave virtually unlimited authority upon Joyce. Joyce consented to interagency reports rarely and in all cases to establish and map existing systems and user needs. Joyce's experience with technology adoption acquired during his work at the DoD led him to value the opinions and needs of users as they articulated them. While relying upon reports to describe general needs, Joyce relied upon his conversations with users within the NSC and EOP to select and develop applications.

This approach conflicts with that employed by RAND. The RAND Corporation's initial involvement was in response to the NSC's lack of time and money to accomplish a major task.



The RAND's reports reflected their experience in dealing with clients in the DoD where resources and acquisition timelines were large and required high degrees of testing and troubleshooting. While proposing a specific information automation system for the White House, RAND was invested in the idea of making the White House the hub of national security information in the US government. This idea, while supported by some in the NSC was not within the project scope envisioned by either Kissinger or Haldeman. Kissinger simply wanted to improve information organization to cope with the growing torrent of documents flowing into the NSC. Haldeman also wanted to meet the NSC's needs, but he also wanted this accomplished quickly so that Joyce could move on to work on the applications for the EOP.

Joyce, having been involved in DoD acquisition understood RAND's perspective. However, he was also aware of the very significant constraints weighing upon the White House. At a time when Nixon was seeking to cut the federal bureaucracy and reduce costs, Joyce was charged to spend millions on new technology and complete the project as quickly as possible. RAND's proposal was suitable for the DoD but not to the White House. Joyce marshaled monetary resources from the DCA to underwrite the new computer system. To accelerate adoption, he negotiated with the OMB to receive permission to acquire the White House IBM computers non-competitively. Applications were adapted from existing software already supporting DoD command and control. Joyce also brought over additional personnel from the DCA to write and customize applications and otherwise assist with the information automation project. These essential tasks were accomplished by Joyce directly or at his direction by Kissinger or Haldeman writing to Secretary of Defense Laird. The record indicates that Laird and the DoD acquiesced to every request made by Kissinger and Haldeman. It is likely that the minimal manpower and

budgetary requirements of the White House did not constitute a significant expenditure to them while appeasing demands from the White House.

The information automation project endured little oversight outside of the White House. In 1970, the White House Communications office prepared a document responding to press questions about a computer in the White House and in 1971 Congress asked the General Accounting Office to inquire about the legitimacy of the no-bid contract for the computer. In both cases, these inquiries did not inhibit the adoption and deployment of the computer system. And found no wrong doing.

One problem that this case illuminates is that the White House was not a bureaucratic organization with an organizational memory. Everything that an administration wanted to accomplish within the White House had to occur within its term of office. For Joyce, the time pressure was immense and as previously noted led him away from RAND's proposals. The absence of organizational memory would not significantly hinder the Ford Administration when it took office owing to the significant overlap between administrations, but would have serious consequences when Jimmy Carter succeeded President Ford in 1976, causing disruption within the White House's computer infrastructure.

By the end of the Nixon Administration, the NSC had an operational information automation system. Members of the NSC secretariat were writing programs for the computer to generate queries for the analysts. The EOP and the OMB also made use of the computer and were developing applications. During the Ford Administration, the DC began to use the previously



developed applications on the White House computer and the Carter Administration went further by creating the Office of Administration which among other things, coordinated White House computing resources.

Many ideas from the Nixon period persist in the White House to the present day. The automation of the President's Daily Brief is found in the list of initial NSC applications. RAND's idea to make the White House the central hub of national security information persists to the present day. The Total Information Awareness (TIA) program and Directorate of National Intelligence can trace their lineage back to RAND's information automation report. The multi-media conference room and situation room with modern communications systems to command the power of the United States in time of crisis both trace their origins to an embarrassed Henry Kissinger.

In many ways, the success of Kissinger's information automation project can be attributed to Charles Joyce's success as project manager. His leadership moved the project forward in the face of scarce resources and dubious adopters. His bureaucratic knowledge and experience in the DoD coupled with the strong authority granted him by Kissinger and Haldeman brought the project to a successful outcome. In an environment that was devoid of experience with computers and which was without formal processes for technology adoption, Joyce successfully launched the first White House computer system.

The information automation project had a major effect on the NSC. Information processing and organizational tasks were standardized and streamlined. Kissinger's fears were allayed as the

NSC was able to print out lists of projects and progress reports with supporting briefs. Beyond the day-to-day activities of the NSC, the information automation project had a broader impact on US national security policy as can be seen through the lens of US technology policy. The NSC's early computational view of computers transitioned into a data management view of computers. As this occurred, a similar shift took place in US national security technology policy. The NSC viewed computers as a secondary computational technology with respect to nuclear and rocketry programs. By the end of the Nixon Administration, the NSC saw computers as a primary information management technology that could be applied the economic spectrum and needed to be controlled to limit the economic strength of communist nations.

Kissinger's information automation project had far-reaching ramifications. It introduced computers into the White House for the first time and with it, standardized information management within the NSC. Following their introduction, user attitudes towards computers changed and that influenced their receptivity to seeing computers in a new policy light.

### **Chapter III: Soviet Eavesdropping and its Effect on US Information Policy 1974-1977**

#### **Introduction**

In June 1975, the Rockefeller Commission released its final report on Central Intelligence Agency (CIA) activities within the United States. Established by President Gerald Ford in January 1975, The Commission's report investigated and exposed a variety of illegal surveillance activities perpetrated by the CIA within the United States and in violation of its charter. Tucked into a small section discussing foreign intelligence threats the United States was



a passage addressing the vulnerability of domestic telephone conversations to foreign intelligence services. The report stated:

“While making large-scale use of human intelligence sources, the communist countries also appear to have developed electronic collection of intelligence to an extraordinary degree of technology and sophistication for use in the United States and elsewhere throughout the world, and we believe that these countries monitor and record thousands of private telephone conversations. Americans have a right to be uneasy if not seriously disturbed at the real possibility that their personal and business activities which they discuss freely over the telephone could be recorded and analyzed by agents of foreign powers.

This raises the real specter that selected American users of telephones are potentially subject to blackmail that can seriously affect their actions, or even lead in some cases to recruitment as espionage agents.<sup>132</sup>

The Rockefeller Commission had significantly weakened this section from an earlier draft at the behest of the intelligence community and the White House. Initially, the Commission had detailed a far more serious and technologically advanced threat posed by Soviet espionage:

“While making large-scale use of human intelligence sources, the communist countries also appear to have developed electronic collection of intelligence to an extraordinary degree of sophistication. Recent defectors report that these countries regularly monitor and record most of the telephone communications in major population centers of the United States. Hundreds of thousands of conversations

are thus being intercepted, with particular numbers sorted out by the use of computers. Radio microwave transmissions, which carry most of the communications in the United States, can be and are being monitored and transcribed on a regular basis, night and day. American users of telephones who have anything to hide are therefore potentially subject to blackmail that can seriously affect their actions, or even lead in some cases to recruitment as espionage agents.

These foreign invasions of the privacy and security rights of Americans therefore demand our most serious concern. They do not in any sense justify unlawful activities of the CIA which impinge on the privacy and rights of American citizens. But they do argue strongly for strengthening the counterintelligence activities of the FBI within the United States, and for maintaining, if not increasing, the CIA's capacity for collecting foreign intelligence.<sup>133</sup>

The Ford Administration was fully aware of the scope and gravity of this threat. President Ford began securing US telecommunications systems immediately after taking office in August 1974 by issuing National Security Decision Memorandum (NSDM) 266 "Improved Security of Telecommunications". Ford was well versed with information policy, having previously led then President Nixon's Domestic Council Committee on the Right of Privacy (DCCRP). As chairman of the DCCRP, Ford led a far ranging examination of the impact of computer and telecommunications technologies on US society. The DCCRP observed that these two



technologies were converging due to rapid innovation and potentially posed a threat to individual privacy.

During the three years of his presidency, Ford issued four NSDMs on the security of US telecommunications, more than any other President. The Ford Administration studied, proposed, and implemented a range of privacy measures designed to protect the vast amount of information collected and held by the US government about its citizens.<sup>134</sup> In the course of this process, the Ford Administration developed the concept of "Information Policy" for the first time. The actions of the Ford Administration are a watershed in US information policy. Both Ford and then his Vice President Nelson Rockefeller would lead the DCCRP and learn about the potential of information and communication technology. Ford and Rockefeller were also deeply involved in the crafting of US national security policy with respect to telecommunications security. This cross pollinating work shaped the technological vision of the Ford White House by connecting telecommunications and computers. When Ford learned of Soviet eavesdropping on US telecommunications from the National Security Council (NSC), he understood the significant threat to US national security it posed. Such a capability would allow the USSR access to valuable information collected by the US government on US citizens, businesses and organizations. The Ford Administration developed the first US information and privacy policies in response to the Cold War surveillance threat posed by the Soviet Union. Privacy was a Cold War defense of information.

The Ford Administration approached the problem of telecommunications security and information policy in a considered manner, mobilizing the NSC, National Security Agency

(NSA), Office of Telecommunications Policy (OTP), and DCCRP. It addressed both of open and secret policy and specifically chose to exclude organizations such as the Federal Communications Commission (FCC) which had authority over public telecommunications policy to maintain secrecy. The NSC, NSA, and OTP functioned well to develop and deploy telecommunications security strategy. The DCCRP was unaware with the exception of those members that sat in multiple organizations of the parallel policy discussions that were taking place in secure conference rooms. In the end, these parallel tracks arrived at similar solutions to manage information policy, secret and public.

The successful response of these organizations to the telecommunications security and information policy challenges before them is attributable to the urgency and importance that the Ford Administration attached to them. Ford issued four NSDMs over a three year span on the topic of telecommunications security, a singular event in the history of the presidency. The White House perceived the threat to be real and significant. They applied all of their resources to address the problem. The centralized decision making process led to limited scrutiny and opposition to the plan. Telecommunications providers had little choice than to cooperate with the US government, their largest client. Legally, the NSC was operating in an area in which the law had little to say. Having established the president's authority in this area, the policy making occurred without any legal constraints. The greatest problem facing the whole process stems from the decision to exclude Congress and the FCC from the policy-making process. The security measures discussed and implemented by the NSC clearly had repercussions on the public telecommunications marketplace but Ford decided that this information could not be



disclosed to the public as public trust in government had already been damaged by the Watergate scandal.

The work of the Ford Administration had profound implications for US information policy. The subsequent Carter administration was left with a telecommunication security program which they continued to develop leading to the creation of the National Security Telecommunications Advisory Committee (NSTAC) during the Reagan Administration. The work of the Ford Administration also instrumentally shaped the Federal Intelligence Surveillance Act (FISA), passed during the Carter Administration and a contentious legal hurdle during the second Bush Administration to the present day.

### **History of Computing**

Computer technology during the mid 1970's was rapidly changing as mini-computers and generalized software became available. Mini-computers with their lower acquisition and operating costs enabled smaller organizations without the resources to acquire mainframe computers to still gain the benefits of computerization. Mini-computers were less capable than mainframe computers but that was acceptable to smaller organizations.<sup>135</sup> Computer software for these smaller, more generalized machines had similar characteristics, making the computers useful to a wide-range of less technical consumers.<sup>136</sup>

Networking technology was largely an exercise in the physical transversal of punch cards or magnetic tapes and the world wide web was still almost twenty years away. The Internet was still in its early deployment with limited accessibility and was pretty much unknown outside of the research community.<sup>137</sup> In some areas this was changing. The telecommunications company

AT&T was offering data services on its network, with the federal government as its largest client. Networking was used to transfer data or share processing resources between computers that could communicate. Unlike the Internet as used today, computers did not automatically have the capability to communicate with one another. Computer systems, especially mainframe computers were frequently idiosyncratic. Modem technology and the networking technology that would become the infrastructure of the Internet would address those issues.<sup>138</sup>

The federal government, as the largest client of IBM, relied upon a homogenous base of computers within the various departments of the executive branch.<sup>139</sup> The federal government was also the largest organization collecting and processing information about US citizens including such agencies as the Internal Revenue Service (IRS), the Department of Justice, and the Census Bureau. The US government was also beginning to use computers to manage its human resources and budget. So in addition to the information of private citizens collected through normal reporting, the federal government was managing the records of its employees, civilian and military.

So, in cities such as Washington DC which housed many government buildings information homogeneous government could exchange information over telecommunications networks. During the Ford Administration, new telecommunications companies like MCI using new transmission technologies were building facilities in to be able to bid for lucrative government contracts. As I will explore in the surveillance studies section, encryption of these signals or wireline telecommunications was limited to specialized secure, and mostly military and diplomatic networks.



**Science and Technology Studies**

The urgency and directness of the Ford administration's efforts to protect US telecommunications was premised on a number of factors. Ford and Rockefeller had both learned about privacy and the vast amount of information stewarded by the federal government in the course of their work on the Nixon initiated privacy commission. The NSC had come to see computers as information tools through their adoption of computers during the Nixon administration. NSC members that were linked to the intelligence community further understood and accepted that computers could telecommunications in this way because the US intelligence establishment was already doing it. Finally, all of the actors were still dealing with the Watergate scandal and attendant public mistrust.

Despite the novelty of the threat, the key actors in this case approached the problem of telecommunications security with knowledge and experience already in hand. They understood in varying degrees the severity and scope of the threat and wielded the governmental forces within their control to shape and protect US policy. These actors sought to expand the reach of a known existing technology to address a new problem, framing it with their own experience and knowledge. This is in effect the social construction of technology policy at the highest level.<sup>140</sup>

This case also again highlights the limits of Edwards and the power of Cold War rhetoric.<sup>141</sup> As we will see, the option of having the federal government compel telecommunications companies to adhere to new telecommunications policy is clearly discussed and the Cold War threat is clear. Equally clear is the potential backlash in industry and among the public, which the President and