The Evolution toward "Bureaucracy 2.0":
A Case Study on Intellipedia, Virtual Collaboration, and the Information Sharing Environment in the U.S. Intelligence Community

Ryan T. Willbrand
Department of Political Science, The George Washington University
Washington, DC 20052, U.S.A.

ABSTRACT

In the wake of the 9/11 terrorist attacks, the Intelligence Reform and Terrorism Prevention Act of 2004 mandated that an Information Sharing Environment (ISE) was to be established to act as an approach that facilitates the sharing of terrorist information. The ISE represents both a technological and cultural transition toward a more post-bureaucratic United States Intelligence Community (USIC) – an evolution toward "Bureaucracy 2.0." Through the introduction of new Information and Communications Technologies (ICT), such as the wiki "Intellipedia," and by integrating department-specific networks into an Enterprise Architecture Framework, the various agencies within the USIC can more effectively organize and share information through virtual collaboration.

Although there has been a myriad of literature examining the intelligence failure and agency adaptation failure that preceded 9/11, the ISE has largely gone overlooked since its implementation in 2006. While adaptation failure is self-evident, instances of adaptation are often less obvious. Accordingly, this paper explains post-bureaucratic adaptation with ICT projects in government agencies through an evolutionary model. It examines both the internal sources and external sources of technological and institutional change through a case study on the USIC, its reforms through the ISE, and use of Intellipedia for virtual collaboration.

Keywords: Post-bureaucratic, Evolutionary Model, Information Sharing, Intellipedia, Information Sharing Environment, Intelligence Community, Virtual Collaboration

DEFINING "BUREAUCRACY 2.0"

Bureaucracy 2.0 can best be defined as a post-bureaucratic model of organization through the use of ICTs, such as Web 2.0 technologies. The focus of this research has been primarily based in business management and the private sector. "So far, interest of studies on Information Systems (IS), management and change studies has been on organizations from the profit-seeking sector." [1] But, this discussion can shed light on changes in organization in the public sector, as well; after all, government is most associated with the oft-used pejorative connotation of "bureaucracy." Likewise, "Government organizations have been facing dramatic transitions, in part related to the increasing implementation of web-based Information Technology (IT) projects." [1] These "dramatic transitions" merit further elucidation.

As the name implies, Bureaucracy 2.0 is an update and advancement to traditional bureaucracy through technology. The literature on post-bureaucratic organization and e-government is vast and varies widely; thus, it is important to further elucidate what is implied by post-bureaucracy. What characterizes the post-bureaucratic type? Emmanuelle Vaast and Maria Christina Binz-Scharf expound upon the concept:

> Web-based IT projects are characterized by their openness and user-friendliness, which may seem to go against the tradition of hierarchical structuring and vertical decision making in government organizations. Moreover the trend towards free circulation of information and ideas may contrast with established organizing principles of government organizations…Taken together, these trends have been related to the emergence of so-called "digital government" and "post-bureaucratic" organizations. "Post-bureaucratic" organizations are usually meant as a contrast with the bureaucratic model of government organizations, especially as web-based IT applications are being implemented. [1]

Jamali, Khoury, and Sahyoun outline several characteristics of the post-bureaucratic type to include *effective communication*, whereby "[t]he ability to organize, create and disseminate information is a source of competitive advantage in the information age and has direct implications for the dynamics of teamwork and collaboration," and *increased flexibility*, which "entails agility and responsiveness, which are critical in an age of change and high velocity." [2] Heckscher defines the post-bureaucratic organization as an ideal type that is characterized by increased teamwork, lateral coordination and networks. The implications of a post-bureaucratic evolution suggest:

> The essential proposition here is that these mechanisms, which are currently growing up within bureaucracy, can be extrapolated to a full and distinct form of organization with greater capacity than bureaucracy itself…The development claim of this evolution would suggest that the post-bureaucratic type is "better" in that it incorporates the old bureaucracy into a new form of organization which is better able to adapt to a wider range of conditions, hence it is more advanced and evolved. [3]

Thus, the post-bureaucratic, as used here, refers to an advancement of traditional bureaucracy through increased lateral teamwork, coordination, networks, and horizontal information flows. This, in turn, creates more effective communication and increased flexibility. ICTs are conducive to these desirable characteristics and are heavily used and associated with this post-bureaucratic model. Bureaucratic models of government, "by contrast, with their still vertical information flows, rigid practices, and strict division of labor, are still organized according to the top-down models created for the industrial economy." [4] This post-bureaucratic transformation through the use of ICTs is an improvement over

inefficiencies associated with traditional bureaucracies – the rigidity of hierarchical structuring and processes, the stove piping of information flows, the over-segmentation of departments and individual responsibilities which can break down communications, bureaucratic politics and infighting, and an inability to maximize the use of collective intelligence and information needed for responsive, flexible and accurate decision-making. [3] William Eggers captures these pitfalls well, when he describes traditional government bureaucracies as that which "still operate as fractious collections of hierarchical, rule-laden, stove-piped bureaucracies, whose modus operandi is fanatical protection of their turf." [4]

While bureaucracy is not inherently "bad," post-bureaucracy represents innovation and an evolutionary advancement of the management, processes, and structuring of a bureaucratic organization. The post-bureaucratic type is, in effect, then, an ideal type, but post-bureaucratic reforms are very real. The evolution to Bureaucracy 2.0 is a transition that is based both as a response and representation of the changes in the broader society. Donald F. Kettl explains:

> Government is struggling to use twentieth-century tools to cope with twenty-first-century problems. We have pursued good management through authority and hierarchy for a century. When new challenges emerged, we responded by reorganizing and strengthening the bureaucracy. Today's problems, however, simply don't fit bureaucratic orthodoxy. [5]

Likewise, Eggers adds:

> In short, a bureaucracy built for the Industrial Age can't adapt to the Age of Information. Transformation requires uprooting our obsolete, century-old systems and replacing them with new models better suited to the twenty-first century. [4]

The evolution to Bureaucracy 2.0 is a transformative stage in government that coincides with the technological and institutional evolution of society. Post-bureaucratic reform and technological innovation through the use of ICTs are the means by which the government can more effectively tackle the problems of today.

AN EVOLUTIONARY MODEL OF AGENCY ADAPTATION

While it is often clear when government agencies fail to adapt (e.g. an intelligence failure leading up to a terrorist attack or a lack of regulatory oversight prior to an economic crisis), [6] it is less clear when they succeed to adapt. This is important because instances of agency adaptation, and instances of agency adaptation failure, may also have no indicators or be less obvious if a major failure has not yet occurred; that is, its shortcomings have not yet become evident. So, how can we differentiate a malign, stagnant agency to one that is efficient and adapts readily? While this is a difficult question, it is the ambitions here to elucidate a model for examining why agency adaptation failure may occur, under what circumstances agency adaptation is likely to take place, and the processes by which agency adaptation and policy innovation may take place.

Agency adaptation is not simply equated to any change. Change always takes place in a path-dependent manner in an organization, where normal trends in policy may be exploited. [1] Adaptation consists of the significant changes that an organization adopts in order to effectively adapt to its environment. Amy B. Zegart expands upon this concept:

> As sociologists have long pointed out, organizations are always changing. The key issue is whether those changes matter, or more precisely, whether the rate of change within an organization keeps pace (or lags behind) the rate of change in its external environment. Manifestation of this concept is more easily observed in the private sector, where responding to shifting market forces, consumer tastes, and competitive pressures can mean life or death for a firm. The concept may be less obvious, but no less important, for evaluating public sector organizations. The question is not: Are you doing anything differently today? But: Are you doing enough differently today to meet the challenges you face? Adaptation must be judged relative to external demands. [6]

Adaptation failure in the private sector might mean the bankruptcy and extinction of a firm, but in government extinction is a rare occurrence. In a study on "U.S. government agencies between 1923 and 1973, for example, Herbert Kaufman found that 85 percent of those in the 1923 sample were still in existence fifty years later." [6] Thus, if agencies exist for such long periods of time, it does not mean that each adapted accordingly but that it is the nature of U.S. government and government in general for existing bureaucratic structures to stay in place despite any shortcomings. Whereas the free hand of the market punishes firms which fail to adapt, agencies in the government do not go bankrupt. They linger. They persist. They survive despite their inefficiencies and failures to adapt to external demands.

Zegart points out three impediments to reform, which can contribute to adaptation failure: "1) the nature of organizations; 2) the rational self-interest of political officials; and 3) the fragmented structure of the U.S. federal government." [6] The *nature of organizations*, and more specifically the nature of government bureaucracy, is that they are resistant and slow to change. Government agencies are more constrained by the demands of external political actors, they are built to be held accountable and reliable rather than innovative and adaptive, and "organizations become more resistant to change as routines, norm, and relationships become firmly established." [6] *Rational self-interested officials* may not see it in their interest to undertake bureaucratic reforms. While Presidents may have an incentive to do so, "[t]hey have little time, limited political capital, few formal powers, and packed political agendas. Presidents therefore almost always prefer to focus their efforts on policy issues that directly concern and benefit voters, rather than on the arcane details of organizational design and operation." [6] Similarly, legislators are more concerned about electoral interests, as well, and may even seek to impede reform to maintain congressional sway over bureaucratic entities. Just as important, bureaucrats have little interest to undermine their own authority or influence, and may view reform as ceding their own power in a zero-sum game. [6] In the words of Charles E. Lindblom, "Almost every interest has its watchdog."[7] Lastly, *the fragmented structure of the U.S. federal government* exacerbates attempts at reform through the difficulties represented by decentralized democracy.

Some of the cherished features of American democracy impede effective agency design and raise obstacles to reform. Separation of powers, the congressional committee system, and majority rule have created a system that invites compromise and makes legislation hard to pass. [6]

If there are such significant obstacles to reform, the question then becomes as to when and under what conditions is policy innovation likely to occur? When can these obstacles be overcome? While there is varied literature on the origins of policies and the policymaking process, the multiple streams framework presented by Nikolaos Zahariadis presents an intriguing lens to understand the preconditions necessary for agenda setting decision making. [8] In brief, Zahariadis contends that there must be a mix of three streams (or factors) present – problems, policies, and politics. These streams are described:

> A problem stream consists of various conditions that policy makers and citizens want addressed. Examples are government budget deficits, environmental disasters, rising medical costs, and so on. Policy makers find out about these conditions through indicators, focusing events, and feedback…. The policy stream includes a "soup" of ideas that compete to win acceptance in policy networks. Ideas are generated by specialists in policy communities (networks that include bureaucrats, congressional staff members, academics, and researchers in think tanks who share a common concern in a single policy area such as health or environmental policy) and are considered in various forums and forms, such as hearings, papers, and conversations…The politics stream consists of three elements: the national mood, pressure-group campaigns, and administrative or legislative turnover. [8]

When there is a coupling of any of these streams, a policy window emerges in which policy entrepreneurs can push a policy agenda and policy alternatives can be explored. Thus, this policy window is an opportunity for policy change and the use of innovation, from which trends toward Bureaucracy 2.0

might emerge. Notable here is that a policy window for adaptation is often preceded by a problem; unfortunately, the problem may, in fact, have been brought to light by a previous failure to adapt. It is exceedingly difficult to determine how to adapt without significant indicators of adaptation failure.

Agency adaptation is derived from three different sources according to Zegart: 1) internal reforms made by the agency; 2) executive branch action such as presidential directives; and 3) through statutory reforms involving both Congress and the executive branch. [6] An agency can adapt independently, the President can issue an executive order, or Congress may pass a legislative action to reform an agency.

These three sources represent two different mechanisms of policy diffusion. The first mechanism is *learning* and is an internal source of change, whereas the external source of change allows for the mechanism of *coercion*. [9] Learning is the mechanism or process by which a federal bureaucracy may explore policies implemented by other external organizations or in society itself, such as state level governments or private sector firms and adapts the policy in order to improve their functional performance; this occurs through management or change agents. Coercion is policy reform that is forced upon the bureaucracy from institutional pressures through mandates from Congress or the President.

Once the policy innovation occurs, the relevant agency adopts it and adapts to its external environment. These policy adaptations may include introducing new routines and processes through ICTs, which may also lead to organizational restructuring – the creation of new IT offices and a structure of virtual collaboration. This, in turn, is accompanied by a transformation or altering in the relationships, politics, and overall culture within the organization. This theoretical discussion can be developed into an evolutionary model of agency/policy adaptation. Figure 1 demonstrates the utility of understanding the process of policy adaptation by government agencies through an evolutionary model. [1] (See Figure 1 below.) This evolutionary framework will be utilized for the case study on the ISE, Intellipedia, and virtual collaboration in the U.S. Intelligence Community.
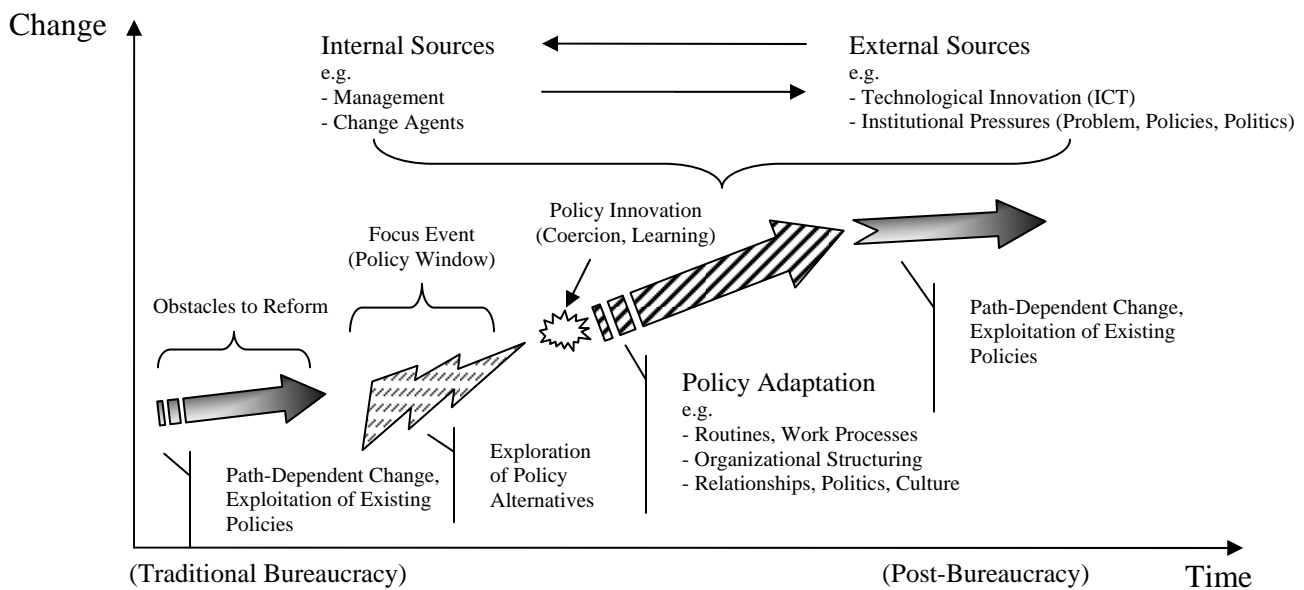

Figure 1: An Evolutionary Model of Agency Adaptation

POST-9/11 AGENCY ADAPTATION
IN THE U.S. INTELLIGENCE COMMUNITY

This section will address a brief case study consisting of two separate but related events of agency adaptation, whereby the U.S. Intelligence Community (USIC) adopted policy innovations under both the Information Sharing Environment and Intellipedia, and will outline how these two innovations represent an evolution toward a post-bureaucratic type of government organization through the use of ICTs and virtual collaboration.

The USIC is a bureaucratic structure consisting of multiple agencies and departments. It has long used technology in its daily operations, and the USIC has undergone typical path-dependent changes throughout its history and has utilized ICTs to accomplish its mission. From 1994 to 2005, the USIC developed a system of intranet networks with different levels of security clearance – JWICS, SIPRnet, and NIPRnet. [15] In and of itself, technology is not the sought-after ends, however, and the mere existence of an intranet environment does not ensure that it is effectively and optimally utilized for information sharing. There were numerous failed attempts at reform prior to September 11, 2001, including reforms aimed at improving information sharing.

> Of 340 recommendations for changes in the intelligence community, only 35 were successfully implemented, and 268 – or 79 percent of the total – resulted in no action at all. Closer examination reveals surprising agreement on four major problems: the intelligence community's lack of coherence or "corporateness"; insufficient human intelligence; personnel systems that failed to align intelligence needs with personnel skills or encouraged information sharing; and weakness in setting intelligence priorities. [6]

The 9/11 attacks, however, acted as a focusing event, a policy window whereby institutional pressures arose for agency adaptation. The focusing event was a catastrophic terrorist attack and, thus, a very visible problem presented itself: intelligence failure and a threat to homeland security. This was coupled with political pressure from public opinion and the national mood. This provided the impetus needed for reform, thereby generating the momentum necessary to overcome the obstacles to agency adaptation and to implement policy innovation in order to improve the performance of the USIC.

During the policy window, policy alternatives and recommendations were made in the form of papers and hearings, including most notably: The Joint Inquiry of House and Senate Intelligence Committees into the Terrorist Attacks of September 11, 2001 (report issued in December of 2002); The Congressional Advisory Panel to Assess Domestic Response Capabilities for Terrorism Involving Weapons of Mass Destruction (issued annual reports from 1998 to 2003); and The National Commission on Terrorist Attacks Upon the United States (issued the 9/11 Commission Report in July 2004). In the time period following 9/11, several policy ideas gained traction and were manifested in the form of policy innovations from both internal and external sources. In June of 2002, the Homeland Security Act of 2002 was signed into law by President Bush after having passed both Houses of Congress, thereby establishing the Department of Homeland Security, which Customs, Border Patrol, the Coast Guard, and

Immigration and Naturalization Service would all fall under. [10] On May 1, 2003, President George W. Bush created the Terrorist Threat Integration Center, which acted as a fusion center integrating representatives from various intelligence agencies. [10] The Federal Bureau of Investigation made several adjustments on its own, including the creation of 66 Joint Terrorism Task Forces throughout U.S. cities. [10] It is clear that there was a policy window, whereby many policy alternatives were explored, some rejected and some adopted.

The 9/11 Commission recommended that the position be created for the Director of National Intelligence (DNI) and that a National Counterterrorism Center (NCTC) be established. President Bush, by his use of executive order, took up these recommendations and established both the DNI and NCTC on August 24, 2004. With this as a backdrop, Congress passed the Intelligence Reform and Terrorism Prevention Act of 2004 (IRTPA), which further solidified the establishment of the Office of the DNI (ODNI), where the NCTC would be located. The 9/11 Commission also concluded that a breakdown in communications and information sharing had occurred, contributing as a key factor to the intelligence failure preceding the terrorist attacks. Thus, following these recommendations, the IRTPA included a provision under Section 1016 which stated that an Information Sharing Environment must be established and defined it as "an approach that facilitates the sharing of terrorism information." [11] The law also required the Presidential appointment of an ISE Program Manager and establishment of an Information Sharing Council, which would "advise the President and the Program Manager on the development of ISE policies, procedures, guidelines, and standards, and to ensure proper coordination among federal departments and agencies participating in the ISE." [11] On November 16, 2006, the ISE was born when the DNI submitted the ISE Implementation Plan. The ISE, is a department within the ODNI and is a post-bureaucratic reform (a policy innovation) that largely includes the use of ICT to improve information sharing among 16 federal intelligence agencies, [12] thus inducing several structural, procedural, and cultural changes. From the ISE website, there is a clear outline of what its purpose is and what it seeks to achieve:

> The ISE aligns and leverages existing information sharing policies, business processes, technologies, systems, and promotes a culture of information sharing through increased collaboration.

> **ISE Goals**
> **Goal 1:** Create a Culture of Sharing Establish employee behaviors including awareness of information sharing policies, responsibility to perform information sharing activities, and accountability and incentives for carrying out those responsibilities.

> **Goal 2:** Reduce Barriers to Sharing Use of Policy, Business Process and Practices, and Technology to remove obstacles and enable information sharing.

> **Goal 3:** Improve sharing practices with federal, state, local, tribal and foreign partners Enhance information sharing by standardizing practices, improving interagency coordination, and developing guidance and enabling infrastructure to support the information sharing mission.

Goal 4: Institutionalize Sharing Make information sharing routine through championing, leading, using and sustaining efforts to standardize policies, resources, business practices, and technologies. [11]

The post-bureaucratic characteristics mentioned earlier in this paper are clearly evident; increased lateral teamwork, coordination, networks, and horizontal information flows are all present in these goals, as well as the use of ICTs. The ISE created an ISE Enterprise Architecture Framework (EAF) to integrate the preexisting information systems used by the different agencies within the USIC and has now even introduced the ISE EAF Version 2.0 as an updated and improved version to its predecessor. [13] The EAF model acts as an information sharing network between agencies:

> A smoothly functioning ISE requires IT systems and infrastructures that support the development, integration, and sustained operation of standardized information sharing systems by all participants. The ISE Architecture program meets this goal by aligning and connecting the diverse myriad of IT systems and infrastructures used by ISE participants— which are often isolated by their very different and sometimes conflicting policies, business practices, and cultures— into a more uniform, seamless, well-defined set of interconnected systems…the ISE architecture program fits into the Federal Enterprise Architecture (FEA), serving as a bridge between individual component architectures. [14]

Through the use of the EAF, the ISE alters the structure of the USIC by decreasing horizontal segmentation and increasing lateral communication flows and coordinating technological and systems-wide guidance across the ISE community. [14] To complement this, the ISE also seeks to reduce barriers to information sharing and institutionalize new information sharing routines, practices, and standards. The ISE Program Manager creates and revises sharing standards as part of the Common Terrorism Information Sharing Standards Program (CTISS). [14]

Likewise, in an effort to internalize a culture of information sharing and to foster teamwork between the USIC agencies, the ISE has taken additional steps, which were also part of the mandated reforms included in the IRTPA and 2005 Presidential Information Sharing Guidelines and Requirements. [14] The ISE has done the following to accomplish these aims:

• The Office of Personnel Management (OPM) and the PMI-ISE partnered to produce policy guidance that directed agencies to make information sharing a factor in Federal employees' performance appraisals. This issuance guides agencies in how to develop competency elements regarding the proper sharing of information for use in employee appraisals.

• The PM-ISE released an ISE Core Awareness Training Module to help move Federal agencies from the traditional "need to know" culture to one based on a "responsibility to provide."[14] The Module provides Federal agencies with a common tool for developing an understanding of the ISE as well as an overview of the Federal Government's counterterrorism and homeland security organizations, systems, and challenges.

• Three-quarters of Federal ISE agencies have now incorporated information sharing into their awards programs. For example, the Department of Defense Chief Information Officer established annual awards that include "information sharing and data management" among criteria for consideration. [14]

These reform efforts are significant and should not be overlooked. Overhauling and synchronizing the structures, routines, and cultures of the diverse aggregation of USIC agencies into a single integrated information sharing environment is no small feat and .

Concurrently with the development of the ISE, another policy innovation was separately emerging over at the Central Intelligence Agency (CIA). In 2005, a pilot project emerged for collaborative data sharing; the ICT program was a wiki dubbed "Intellipedia." Given the same background and policy window, its origins are from a CIA essay competition dubbed the "Galileo Awards", which sought to spur innovation by welcoming ideas submitted from any employee at the intelligence agency. [15] The essay that came in first place was "The Wiki and the Blog: Toward a Complex Adaptive Intelligence Community," written by D. Calvin Andrus, Ph.D., the Chief Technology Officer in the CIA's Center for Mission Innovation. [15, 16, 17] Andrus had learned from external technological innovation in society at large that wikis had vast potential as an ICT in the USIC. "Andrus' essay argued that the real power of the Internet had come from the boom in self-publishing, and noted how the open-door policy of Wikipedia allowed it to cover new subjects quickly."[18] The powers that be had agreed.

The ODNI took the idea and adopted it as a policy and technology innovation of its own, and it is managed by its Intelligence Community Enterprise Services, which also manages the ISE EAF. The impact of Intellipedia appears substantial. "Founded in 2006 and now with 90,000 users in the global intelligence community, Intellipedia operates on three networks, including an unclassified network, Intelink-U. [19] Reportedly, its biggest contributor is a 69-year-old analyst, and there are "on average more than 50,000 contributions to Intellipedia daily." [20] The latest 2009 estimates show that Intellipedia hosts 900,000 pages, had 100,000 users, and takes on 5,000 page edits daily. [21]

Like the ISE, and as part of the integrated ICT, in the USIC's Intellipedia has the same post-bureaucratic effects of horizontal integration, lateral information flows, creating a network for virtual collaboration, and an overall improved coordination of information resources. Intellipedia has taken a strong foothold in the culture of the USIC and has promoted information sharing into the routines and practices of intelligence analysts and workers. ODNI has stated that "the project will change the culture of the U.S. intelligence community, widely blamed for failing to 'connect the dots' before the attacks of September 11, 2001." [22] This virtual collaboration negates physical structures and geographic distance that act as impediments to horizontal integration efforts, thus overcoming traditional bureaucratic segmentation and allowing for a more efficient use of collective intelligence, knowledge, and information.

The ISE and Intellipedia, taken together, demonstrate that technology is an enabler for bureaucratic performance. By reducing the barriers between agencies and institutionalizing

information sharing, the ISE and Intellipedia could have profound effects on the bureaucratic politics that have plagued the USIC. Although there are, and always will be, defenders of the status quo and interested parties resistant to change, government agencies will continue to innovate through ICTs and internalize a post-bureaucratic culture. John C. Gannon speculates:

> In the years ahead, reformist managers will find their strongest supporters among the new technology-savvy generation of analysts who come to their jobs with advanced information technology skills, intimate familiarity with the web, a sophisticated appreciation for the value of internal and external collaboration – and no corrupting experience in the IC's information-hoarding stove-pipes." [23]

Likewise, the newly created ODNI that accompanied these policy innovations is working at great lengths "to emphasize integration and collaboration in intelligence analysis and to provide central direction aimed at rising above the bureaucratic fiefdoms that can prevent the sharing of sources and analytic perspectives." [24] While it is still relatively newborn, these post-bureaucratic transformations of the USIC through the use of ICTs and corresponding institutional changes mark the beginnings of an evolution toward Bureaucracy 2.0.

The future of virtual collaboration in the USIC holds vast potential and many possibilities as there continue to be new developments for the use of new ICTs and Web 2.0 technologies in the USIC. In September 2008, the ODNI introduced A-Space, which is "a highly restricted Facebook-style website that's designed to encourage the sharing of ideas and information among members of the FBI, the CIA, the NSA and the U.S.'s 13 other intelligence services." [25] A more formal definition:

> …a common collaborative workspace for all analysts from the [intelligence community]. That is accessible from common workstations and provides unprecedented access to interagency databases, a capability to search classified and unclassified sources simultaneously, web-based messaging, and collaboration tools. [26]

The current development of A-Space is yet another excellent example of the promise that virtual collaboration has as a means for the USIC, and government at large, to keep up with and adapt to today's increased external demands of information processing.

The use of ICTs is becoming more prevalent as the USIC adapts to its surrounding external environment and the institutional and technological changes in society. At the same time, there has been a complementary shift in IC policy from a "need to know" to a "responsibility to share" intelligence information on terrorist activities. Collectively, these reforms have contributed to an ongoing technological and cultural evolution toward Bureaucracy 2.0 in the USIC.

CONCLUSION

In discussing the impact of Bureaucracy 2.0, this paper has demonstrated that innovations in ICT can have profound implications for the bureaucratic process, structure, and politics of information sharing in the USIC and that these changes are evident of post-bureaucratic adaptation. In doing so, this inter-disciplinary paper is an effort to bridge the political science and ICT communities by elucidating under what conditions government agencies adopt policies of technological innovation and, in turn, the effects of ICT on the bureaucratic process.

The evolutionary model of agency adaptation presented here has incorporated relevant literature and perspectives from political science and policy studies. While it may be critiqued as an overdetermined "kitchen sink theory," the argument here is that this is a comprehensive model which can help us to better understand the historical process and underscore the various factors which influence policy innovation and agency adaptation. It provides a useful tool for examining change in politics and public policy and understanding when the adoption of ICTs is most likely to occur. Consequently, this model would be useful for examining other case studies at the federal, state, and local government levels. Admittedly, the preliminary empirical evidence is lacking to a degree, but given the sensitive nature of intelligence activities in the USIC, this is to be expected. This line of research would benefit greatly with the fruitful addition of data and information. Similarly, there are likely many hypotheses that can be drawn from the inferences made here and tested elsewhere.

As the recent intelligence failure and thwarted terrorist attack on December 25, 2009 has highlighted, the evolution to Bureaucracy 2.0 is not complete. Challenges will persist in effectively implementing ICTs in the USIC, and, in a world of imperfect information, intelligence failures are inevitable. The daunting task is for the USIC to avoid and minimize these failures and to continually adapt to the rate of external changes and threats; ICTs not only facilitate this endeavor but embody it. Adaptation must be continuous and requires vigilance. Moreover, Bureaucracy 2.0 may always be an ideal-type, but what it represents is the post-bureaucratic transformation of government through the use of ICTs. Throughout modern history, bureaucracy has steadily evolved and adapted to the external institutional and technological changes in society. This trend will undoubtedly continue into the future at an accelerated pace as government agencies must constantly strive to evolve and adapt to the high velocity of the Digital Age.

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