

# **The Transformation of IT Governance: A Neo-Institutional Interpretation**

**Cameron Lawrence**

**Department of Information Systems  
London School of Economics**

**2005**

**Dissertation submitted in partial fulfillment of the  
requirements for the award of the degree of  
Doctor of Philosophy by the  
University of London**

UMI Number: U213616

All rights reserved

INFORMATION TO ALL USERS

The quality of this reproduction is dependent upon the quality of the copy submitted.

In the unlikely event that the author did not send a complete manuscript and there are missing pages, these will be noted. Also, if material had to be removed, a note will indicate the deletion.



UMI U213616

Published by ProQuest LLC 2014. Copyright in the Dissertation held by the Author.  
Microform Edition © ProQuest LLC.

All rights reserved. This work is protected against  
unauthorized copying under Title 17, United States Code.



ProQuest LLC  
789 East Eisenhower Parkway  
P.O. Box 1346  
Ann Arbor, MI 48106-1346



THESES

F

8468

1063104

## **Dedication**

*This is dedicated to my beautiful wife Kristi. My best friend in life and in play.*

## Abstract

This thesis examines how deeply institutionalized IT governance arrangements change over time. The research captured in this work focuses on the transformation journey of the IT organization and its governance mechanisms within one state government in America. Our case study analyzes the breakdown of a historically dominant IT governance arrangement and the process that gave rise to a fundamentally different regime. This process was captured through a longitudinal case study lasting one and one-half years.

This aim of this thesis is to provide an alternative perspective to the planned change models that dominate the literature related to the transformation of the IT function and its governance mechanisms. This is accomplished by drawing on neo-institutional theory and conceptualizing the IT governance regime as an *institution*. This perspective suggests that IT governance arrangements within some organizations possess a deeply ingrained status that is resistant to change. The process of institutional change captured in our case study is analyzed and explained by coupling two innovative analytic frameworks found within the larger neo-institutional literature. The first framework provides insight into the deinstitutionalization process; the second framework focuses on the process of institutional construction. The neo-institutional approach employed in this work enables us to provide an insightful and nuanced interpretation of the IT governance transformation process, which has important implications for theory, practice, and pedagogy.

## **Acknowledgments**

First, and foremost, I would like to thank Professor Chrisanthi Avgerou for her support, encouragement, insight, and patience throughout my Ph.D. studies. There is no question her pushing and prodding made this a much better work than it would have been otherwise. Her dedication to research and the pursuit of ideas is inspiring to all those who are lucky enough to cross paths with her. I am proud to call her my friend.

I would also like to thank the late Professor Claudio Ciborra for his encouragement and interest in this project. Claudio's insistence on original thinking and his wide and deep intellectual range was both intimidating and inspiring. I would also like to thank Provost Robert Galliers of Bentley College for his early interest and encouragement. Prior to accepting the Provost position at Bentley he was in charge of the Ph.D. research program at the LSE and was extraordinarily influential in shaping my cohort's view of the field of IS research. Although Bob is a highly esteemed member of the international IS academic community, he always made time for Ph.D. students who were stuck and needed help, which, at one time or another included all of us.

Much of the theoretical basis for this work comes from the writings of Hans Hasselbladh and Jannis Kallinikos. While their intellectual contributions are reflected throughout this work, I would like to thank them both for their generous personal contributions to this research project. I greatly appreciate their taking time to clarify important issues related to their ideas and the encouragement provided to me along the way. Of equal importance, I am indebted to Brian Wolf for granting me complete access to ITSD and the

support and insight he provided along the way. In addition, I appreciate the generosity extended to me by the members of ITSD as well as the various governmental departments that participated in this project.

I would also like to thank Dean Larry Gianchetta and Professor Belva Jones of The University of Montana for their generous financial support and encouragement while writing my dissertation. They have been extraordinarily accommodating throughout this project and have gone out of their way to insure that I had the time, space, and resources required. For this I will always be grateful.

The LSE is a wonderful place to study and I will always have fond memories of the institution. However, it is the people I met while studying there that will be in my heart. I owe a special thanks to Ashe Khanna for allowing me to stay with him on my many trips to London and the great friendship we developed. My friend, wherever I am in this world, there will always be an open door and a pint of Guinness waiting for you.

I also owe a special thanks to Danielle Pica, Ruth Halperin, Sarah Thatcher, Farooq Haq, Maha Shaikh, Federico Iannacci, Antonio Herrera-Vargas, and Hazel Gilliard for their friendship and help through the Ph.D. I cherish the laughs, pints, and conversations we shared together. I am also indebted to many of the faculty members at the LSE including Susan Scott, Tony Cornford, Antonio Cordella, Jim Backhouse, and Edgar Whitley for patiently helping me work through my research ideas. In the future it is my hope to be as helpful to students as you were to me.

Dr. David Firth was particularly helpful to me for reading several drafts of the major portions of this work. Simply put, his insight and comments were of tremendous value. Of greater importance his friendship, encouragement, and sense of humor saved the day on the few occasions when I was about to pull my

hair out. I would also like to thank Dr. Frederic Wamala for his valuable insight on some key portions of this dissertation. Cassie Hemphill did a wonderful job editing this work. It was an absolute treat to work with a first-rate writer and editor. I would also like to thank my in-laws, Pat and Judy McDonald, who not only provided me with a beautiful place to write when we were at their home, but for their unfailing support and friendship to Kristi and me.

Throughout this process I received tremendous encouragement from many of my colleagues at The University of Montana. In particular I would like to thank the G9 (Dr. Bruce Costa, Dr. Bambi Douma, Dr. David Firth, Dr. Josh Herbold, Dr. Keith Jakob, Dr. Jeff Shay, Dr. Ronn Smith, and Dr. Klaus Uhlenbruck) for their friendship and support (which on some days could be construed as harassment). They each are accomplished academics and teachers, which makes them wonderful colleagues. However, my personal affection for them is not based upon being skilled researchers and teachers. Instead, I consider them friends as I like and admire the kind of people they are. I look forward to many years of our monthly lunches as well as our evening “research seminars” that feature perfectly mixed margaritas and sad country/western songs in the form of stories about Jeff Shay’s love life.

Finally, I would like to thank my wife Kristi to whom this work is dedicated. Your character, compassion, and kindness serve as the bricks and mortar of the greatest *institution* in my life – our marriage. You are loved.



## CONTENTS

<b>Dedication.....</b>	<b>2</b>
<b>Abstract .....</b>	<b>3</b>
<b>Acknowledgments.....</b>	<b>4</b>
<b>List of acronyms and abbreviations .....</b>	<b>14</b>
<b>List of Tables .....</b>	<b>15</b>
<b>Chapter 1: Introduction.....</b>	<b>17</b>
1.1    Aims and motivations of research .....	18
1.2    Structure of the thesis .....	21
<b>Chapter 2: Literature Review.....</b>	<b>23</b>
2.1    Introduction .....	23
2.1    Traditional models for organizing and governing the IT function	
25	
2.1.1    Introduction .....	25
2.1.2    Centralized Model for the organization and governance	
of the IT function .....	26
2.1.3    Decentralized Model for organizing and governing the	
IT function .....	27
2.1.4    Federal model for organizing and governing the IT	
function 27	
2.2    Progressive models for organizing and governing the IT	
function .....	29

2.2.1	Introduction .....	29
2.2.2	The platform organization .....	29
2.2.3	The matrix organization .....	31
2.2.4	Outsourcing.....	32
2.2.5	Conclusion on models for organizing and governing the IT function .....	33
2.3	Transforming the IT function and its governance mechanisms	34
2.3.1	Introduction .....	34
2.3.2	Framework for analyzing models for the transformation of the IT function .....	34
2.3.3	Models for the transformation of the IT function and its governance mechanisms .....	37
2.3.4	Anticipatory, Concurrent, and Dynamic Models .....	37
2.3.5	Stages of Growth .....	38
2.3.6	Punctuated Equilibrium .....	39
2.3.7	Assumptions contained within the transformation models	41
2.3.8	Conclusion on models for transforming the IT function and its governance mechanisms.....	44
2.4	Conclusion on literature review .....	47
<b>Chapter 3: Theoretical Framework.....</b>		<b>49</b>
3.1	Introduction .....	49
3.1.1	Neo-institutional theory .....	49

3.1.2	Theoretical origins of neo-institutional theory.....	51
3.1.3	The old institutionalism and the new institutionalism.....	53
3.1.4	Major themes in neo-institutional theory .....	55
3.1.5	Criticism of neo-institutional theory .....	60
3.1.6	Neo-institutional theory and change.....	62
3.1.7	Institutional theory in information systems research .....	64
3.1.8	Organizing logic of the IT function as an institution.....	69
3.2	A framework for the transformation of the IT function .....	71
3.2.1	Introduction .....	71
3.2.2	Analytic framework.....	71
3.3	Conclusion on theoretical framework .....	76

## **Chapter 4: Methodology and Case Selection ..... 78**

4.1	Introduction .....	78
4.2	Philosophical Approaches.....	79
4.2.1	Introduction .....	79
4.2.2	Positivist Philosophy.....	80
4.2.3	Interpretive Philosophy .....	81
4.2.4	Critical Philosophy .....	82
4.2.5	Conclusion on philosophical approaches.....	83
4.3	Toward a pluralist academic discipline.....	84
4.3.1	Introduction .....	84
4.4	Our philosophical approach and research strategy .....	86
4.4.1	Introduction .....	86

4.4.2	Interpretive approach .....	87
4.4.3	Case study strategy .....	88
4.4.4	Conclusion on philosophical approach and research strategy	89
4.5	Case selection.....	89
4.5.1	Introduction .....	89
4.5.2	Data collection and analysis.....	91
4.6	Conclusion on Methodology and Case Selection.....	92
<b>Chapter 5: Empirical Material .....</b>		<b>94</b>
5.1	Introduction – Technology in Government .....	94
5.1.1	The emergence of eGovernment .....	94
5.2	Context of Case Study .....	97
5.2.1	Overview of Montana .....	97
5.2.2	Overview of Political Environment in Montana.....	99
5.2.3	Overview of technology within Montana.....	101
5.2.4	Conclusion on context.....	104
5.3	Case Study .....	104
5.3.1	Introduction .....	104
5.3.2	The structure of IT governance – The “good old days” ..	105
5.3.3	Rumblings: The Calm before the Storm.....	109
5.3.4	Different levels of sophistication across agencies.....	115
5.3.5	One Throat to Choke .....	117
5.3.6	A Recalcitrant Bureaucracy.....	121

5.3.7	The Breakdown – POINTS.....	124
5.3.8	Organizational Response to Breakdown.....	126
5.3.9	Change as social process: Do you speak my language?130	
5.3.10	Change as a technological process: Active Directory ....	135
5.4	Conclusion .....	138
<b>Chapter 6: Analysis and Discussion.....</b>		<b>141</b>
6.1	Introduction .....	141
6.2	IT governance and profound institutional change.....	143
6.2.1	IT Governance as institution .....	143
6.2.2	Profound institutional change.....	144
6.2.3	Conclusion on profound institutional change .....	147
6.3	A neo-institutional analysis.....	148
6.3.1	Introduction .....	148
6.4	A neo-institutional analysis of the transformation of IT governance .....	150
6.4.1	Introduction .....	150
6.5	Period 1: Analysis of events leading to the POINTS failure ..	151
6.5.1	Deinstitutionalization .....	151
6.5.2	Functional pressures.....	152
6.5.3	Political Pressures .....	153
6.5.4	Social Pressures .....	154
6.6	Analysis of the change process.....	155
6.6.1	Introduction .....	155

6.6.2	Ideals .....	155
6.6.3	Discourse.....	158
6.6.4	eGovernment policy.....	159
6.6.5	Senate Bill 131.....	160
6.6.6	The emergence of the CIO role.....	161
6.6.7	Techniques of control.....	162
6.6.8	Conclusion of first period of analysis.....	163
6.7	Period 2: The Breakdown of POINTS .....	166
6.7.1	Introduction .....	166
6.7.2	Deinstitutionalization introduction.....	166
6.7.3	Functional Pressures .....	167
6.7.4	Political Pressures .....	167
6.7.5	Social Pressures .....	168
6.8	Analysis of change process .....	169
6.8.1	Ideals .....	169
6.8.2	Discourses .....	171
6.8.3	Techniques of control.....	173
6.8.4	Conclusion of second period of analysis.....	176
6.9	Research Discussion and Findings.....	181
6.9.1	Introduction .....	181
6.9.2	Major findings.....	181
6.9.3	IT governance arrangements as institution .....	182

6.9.4	IT governance and its social and technical institutional context	183
6.9.5	IT governance and the loss of institutional legitimacy ....	184
6.9.6	IT governance as a social construction .....	186
6.9.7	Institutionalizing IT governance: the social and the technical	187
6.9.8	Conclusion on major findings .....	188
6.10	Chapter Conclusion.....	189
<b>Chapter 7: Conclusion .....</b>		<b>192</b>
7.1	Introduction .....	192
7.2	Overview of the research .....	192
7.3	Contributions .....	195
7.3.1	Introduction .....	195
7.3.2	To inform theory .....	195
7.3.3	To inform practice .....	196
7.3.4	To inform pedagogy .....	197
7.3.5	Conclusion on contributions .....	198
7.4	Limitations of research and future research .....	198
7.4.1	The strengths and weaknesses of a single case study ..	199
7.4.2	The coupling of two different frameworks .....	201
7.4.3	Future research.....	202
<b>References.....</b>		<b>204</b>

## **List of acronyms and abbreviations**

AD – Active Directory  
ASP - Applications Services Provisioning  
BPR – Business Process Reengineering  
CIO – Chief Information Officer  
CRM – Customer Relationship Management  
ERP – Enterprise Resource Planning  
HHR – Health and Human Services  
ICT – Information Communications Technology  
ISD - Information Services Division  
ITA - Information Technology Act  
ITSD – Information Technology Services Division  
MCSE – Microsoft Certified Systems Engineer  
NDS – Novell Directory Services  
NPM – New Public Management  
POINTS - Process Oriented Tax System  
SB131 - Senate Bill 131  
STI - Strategic Technology Initiative



## List of Tables

Table 2-1. Attributes associated with each of Orlikowski's four categories of change (adopted from Orlikowski 1996). .....	36
Table 2-2. Summary of the models found within the literature for the transformation of the IT function. Category of change from Orlikowski (1996).....	40
Table 2-3. Models for the transformation of the IT function. ....	46
Table 3-1. Differences between the old and new institutionalism (adopted from DiMaggio and Powell 1991). ....	55
Table 3-2. Summary of Oliver's three pressures that lead to deinstitutionalization (adopted from Oliver [1992]). ....	73
Table 3-3. Hasselbladh and Kallinikos's analytic device for capturing the transformation process (adopted from Hasselbladh and Kallinikos [2000]). ....	75
Table 5-1. Montana's rank by several economic indicators. Source: (U.S. Census Bureau 2004) .....	98
Table 6-1. The nine criteria that must be met for profound institutional change (adopted from (Scott, Ruef et al. 2000).....	145
Table 6-2. Period 1 ideals.....	157

Table 6-2a. (*Period 1 ideals continued from previous page*) ..... 158

Table 6-3. Findings of Period 1 analysis..... 165

Table 6-4. Ideals demonstrating resistance to change from Period 1 and  
Period 2 analysis..... 170

Table 6-5. Universal principles for Montana’s IT governance (*source:*  
(Information Technology Services Division 2002). ..... 172

Table 6-6. Summary of second round of analysis. .... 178

Table 6-7. Summary of first and second periods of analysis. .... 179

## **Chapter 1: Introduction**

In 1927, during the holiday season, a fierce blizzard slammed into London and deposited upwards of two feet of snow on the city's streets. On New Year's Eve the snow began to give way to warmer weather which brought welcome relief to Londoners. However, as the snow began to recede, London was hit with another storm that drenched the city with four inches of rain over the course of several days. The combination of melting snow and heavy rains brought flooding to much of the area. As the city was dealing with this nuisance, a major gale swept in from the North Sea and whipped up the "Thames to its highest tide of fifty years" (Withington 2003) compounding the problem. What began as a nuisance rapidly turned into a catastrophe as the effects of these three events collided. Somewhere around Vauxhall Bridge the retaining wall, which had protected this part of the city for years, ruptured, wiping out a working class neighborhood. This tragedy left many dead and hundreds homeless.

This destructive event emerged as three separate forces converged to wipe away a portion of the city. The combination of the holiday snow, followed by heavy rain and the North Sea gale erased a neighborhood that had shaped the common experience of those from this part of London for hundreds of years. Over time Londoners rebuilt the area into something new, something a world away from the working class neighborhood it had once been.

This thesis shares a similar theme. However, instead of events combining to wash away the homes and infrastructure of a neighborhood, this work describes how pressures internal and external to an organization emerge to wash away deeply ingrained ideas related to governing an enterprise's IT activities and the

process that leads to the emergence of a new set of ideas for carrying out this important organizational activity.

## 1.1 Aims and motivations of research

In recent years the topic of IT governance has enjoyed a revival of interest among academics and practitioners alike. This newfound interest in IT governance has in large part been motivated by the passage in the United States of the Sarbanes-Oxley act, which mandates more demanding reporting requirements for corporations (Meyer 2004). The effect of the passage of this act has been that organizations, and the boards that govern them, have been forced to revisit issues related to all matters of corporate governance including IT governance (Brown and Grant 2005). The governance of an organization's IT assets and processes is of particular interest to contemporary managers since IT is so tightly integrated into all aspects of global organizations. In addition, expenditures on IT activities approached almost 50% of total corporate costs at the end of the 1990s and currently, global firms spend \$2 trillion (calculated in US dollars) on IT-related expenses per year (Carr 2003).

This thesis is concerned with IT governance; thus, it is appropriate to provide a definition of the term early in this work, especially since it is frequently misused (Rau 2004). In this work we adopt Peterson's definition of IT governance, which he defines as:

“IT governance describes the distribution of IT decision-making rights and responsibilities among different stakeholders in the enterprise, and defines the procedures and mechanisms for making and monitoring strategic IT decisions” (Peterson 2004).

From Peterson's definition we see that IT governance is not concerned with the day-to-day administrative actions within the IT function, but instead represents a set of more expansive ideas that address “who” makes important strategic

decisions concerning IT within organizations, and “how” IT activities are monitored and controlled.

An important aspect of this research project is the conceptualization of an organization’s IT governance regime as an *institution*. By drawing on the notion of institution we depart from the mainstream of IT governance research by recognizing that, at least within some organizations, IT governance arrangements represent deeply ingrained and taken-for-granted ideas for the governance of IT activities that cannot simply be cast aside in favor of new logics and mechanisms. A central part of this work is the use of neo-institutional theory to establish a more rigorous conceptualization of IT governance regimes and to explain how these arrangements change.

There is a considerable body of knowledge related to IT governance within the IS literature. This knowledge includes the structuring of the IT function (i.e., centralized, decentralized, federated), the establishment of lines of authority and decision-making responsibilities for IT activities, and determining “which option is best for which organization” (Brown and Grant 2005). However, this thesis examines an area within the IT governance domain in which little research has been conducted. Specifically, this work is concerned with how IT governance regimes change over time.

Later in this work we show that most of the literature related to IT governance and its transformation takes a one sided approach that favors a rational actor perspective. In this view, IT governance regimes are solely constituted by rational actors assessing the situation and determining the ‘one best way’ to structure an enterprise’s IT activities. According to proponents of this perspective, once the ideal form is identified managers actively reengineer and implement the organization’s governance mechanisms to meet the desired form. The notion that skilled managers are the drivers of change is a popular

perspective found in much of the academic and practitioner literature. Later in this thesis we will explore alternative perspectives to this view.

This research is shaped by a different perspective that sees IT governance regimes in many contemporary organizations as deeply and firmly embedded in an organization's environment, culture, and processes, which makes these regimes resistant to change. In part, this is due to the maturation of the IT function within many organizations. During the last 25 years, the IT function and its governance mechanisms have evolved beyond an organizational function in its infancy and become institutions in their own right (Avgerou 2002). Within this thesis we examine the institutional nature of IT governance from multiple perspectives, including the resilience of these regimes and the conditions that undermine and erode these types of arrangements.

Not only is there a growing interest in issues related to IT governance but also a recognition of a disturbing problem that is emerging around this topic. The problem is that many firms are finding existing governance mechanisms inadequate for guiding the IT activities of contemporary organizations (Robbins 2004) and are working to affect the transition to other IT governance arrangements. Within this work we contribute insight into this contemporary challenge by asking:

***How do deeply institutionalized IT governance arrangements change over time?***

Accordingly, this thesis is a prescient examination of the complexity large organizations face when attempting to change the manner in which IT governance is carried out. Through this work we contribute a more nuanced understanding of how the transformation process takes place as well as a valuable conceptual perspective to view the temporal aspects of IT governance regimes in organizations.

## 1.2 Structure of the thesis

In our pursuit of an answer to our research question, we have organized this thesis into seven chapters. In Chapter 2 we survey and critically examine the literature related to the structuring of the IT function and its governance mechanisms as well as the literature related to the transformation of the same. Our review examines the conventional models found within the literature as well as the more progressive works such as Ciborra's "Platform organization" (Ciborra 1996). We also take a critical look at the literature that addresses the transformation of IT governance regimes and reveal the underlying assumptions contained within each model.

Chapter 3 presents the theoretical perspective employed in this thesis. We provide an overview of the major themes and ideas contained within neo-institutional theory including the origins of this body of knowledge. Neo-institutional theory has found adherents from different social science disciplines including economics, sociology, and political science. Important distinctions exist between these disciplines that should be recognized. This thesis is informed by the view of neo-institutional theory as it is understood in the field of sociology. While this theory has its roots in sociology, colleagues in IS are increasingly drawn to neo-institutional theory and have made significant contributions to our understanding of IS phenomena. This chapter examines many of these contributions. In this chapter we also identify the theoretical framework used to analyze the empirical material presented later, in Chapter 5. The framework is derived from coupling two important works from the larger neo-institutional literature.

In Chapter 4 we discuss the methodological approach employed in this thesis. This chapter establishes the general philosophical approach and research strategy utilized in collecting and analyzing the rich empirical material captured in Chapter 5. Within this chapter we also provide a review of the dominant methodological and philosophical positions found within IS scholarship. We

conclude this chapter by discussing our interpretive philosophical position and reasoning for selecting the case study research strategy.

We present the empirical data that serves as the foundation for this thesis in Chapter 5. The longitudinal case study described in this chapter chronicles the transformation of the organizing logic guiding the IT organization of a state government within America. This chapter begins by illuminating the unique context of the research environment by discussing the social, political, economic, and technical attributes of the state of Montana and its government. We also elaborate on the larger societal context in which the state is embedded. Once the context is established, we present our rich empirical data, which captures the breakdown of a deeply institutionalized IT governance regime and the process that led to the establishment of a new set of governance mechanisms.

We present, in Chapter 6, our analysis and discussion of the transformation phenomenon captured in our case study. This chapter interprets our empirical data by using the theoretical framework we established in Chapter 3. Since this is a longitudinal case study, our analysis includes important contextual elements that enable us to analyze and reflect on our empirical data while remaining as true as possible to our case study's unique context. A major portion of our analysis is focused on interpreting the process that led to the breakdown of a deeply embedded IT governance regime and the construction of a new set of IT governance mechanisms.

In Chapter 7, our final chapter, we begin by providing a summary of this thesis. Following the summary of this work, we identify the contributions this research project makes to theory, practice, and pedagogy. We also identify the limitations of our work. Finally, we conclude this chapter by discussing future research possibilities that are a byproduct of this work.



## Chapter 2: Literature Review

### 2.1 Introduction

The aim of this literature review is twofold. First we will provide a review of the literature relating to how the IT function is organized and governed. Second we will examine critically the literature that relates directly to the transformation of the IT function.

In Chapter 1 we articulated the research question this thesis aspires to answer, which is:

*How do deeply institutionalized IT governance arrangements change over time?*

In defining the research question we adopt Zmud's definition of the IT function as the organizational entity responsible for "those tasks associated with acquiring, deploying, and managing information technologies (Zmud 1984)." Furthermore, we understand that IT governance "describes the distribution of IT decision-making rights and responsibilities among different stakeholders in the enterprise, and defines the procedures and mechanisms for making and monitoring strategic IT decisions" (Peterson 2004) and that IT governance should promote "desirable behavior in the use of IT" within organizations (Weill and Ross 2004).

According to Webster and Watson, the literature review is concept centric and should be organized as such (Webster and Watson 2002). Following their

advice, this literature review is organized into three distinct sections. Section 2.2 discusses the models and concepts found within the IS literature related to the organization and governance of an enterprise's IT activities. Section 2.3 examines a different set of models found within the literature, those that explicitly address the transformation of an organization's IT function and governance mechanisms. We endeavor to reveal the organizational assumptions embedded within these models and how these assumptions are often incongruent with organizational reality. Finally, in Section 2.4, we conclude with a discussion of the gaps and limitations within the current body of knowledge related to the transformation of the IT function and its governance. We also identify and highlight our contribution to information systems research.

The recognition that IS affects all functional areas of the organization is well established in the academic literature (Banker and Kaufman 2004). Because of this reality, the organization and governance of an enterprise's IT activities is a topic that has received continual attention from the IS research community from the field's inception to the present time (Brown and Grant 2005). The importance of good IT governance in contemporary organizations is captured by Weill (2004) when he writes:

“Effective IT governance encourages and leverages the ingenuity of all enterprise personnel in using IT, while ensuring compliance with the enterprises overall vision and principles. As a result, good IT governance can achieve a management paradox: simultaneously empowering and controlling.” (Weill 2004)

Some of the research within our field has focused on how an organization's IT resources are aligned with the business processes for the purpose of obtaining competitive advantage (Weill and Broadbent 1998; Galliers 2004). Other scholars have attempted to understand the internal and external contingencies, such as the corporate governance form that influence the appropriate organizational design for the IT function within a given enterprise (Brown and

Magill 1994; Brown and Magill 1998). Still others have examined new organizational architectures that allow firms to compete in the information age (Mendelson 2000), or studied how firms with sophisticated IT infrastructures were able to redesign their business processes in relatively short periods of time (Broadbent, Weill et al. 1999). The research community has invested considerable energy in and made progress toward understanding the different ways to organize and govern an enterprise's IT activities. However, very little research has been directed at the dynamics of the IT function transformation process (Sabherwal, Hirschheim et al. 2001). As a research community we have directed considerable effort toward determining optimal IT governance structures and mechanisms, but we have often neglected to illuminate the *process* of IT governance transformation. The few research efforts that examined the process overwhelmingly placed a singular focus on managerial agency at the expense of other logics and mechanisms of change (Weick and Sutcliffe 2001).

## **2.1 Traditional models for organizing and governing the IT function**

### **2.1.1 Introduction**

It has long been recognized that certain faddish ideas and practices enter our managerial lexicon and toolkit only to be replaced by more fashionable schemes (Abrahamson 1991; Keiser 1997). As with other areas in management thought, the organizational models related to the governance of the IT function change as different fashionable models come and go. Much of the literature within the IS field concerning the organization and governance of an enterprise's IT activities follows mainstream organizational theory. Accordingly, the predominant IT governance forms found within our literature include centralized, decentralized, and federal arrangements (Sambamurthy and Zmud 1999). The literature surrounding these traditional IT governance forms focuses on the timeless

debate between the centralization and decentralization of IT assets. The debate over centralizations versus decentralization is an issue both public sector organizations (Ramanathan 2004) as well as global corporations (Masada 2005) continually struggle.

Traditional models for IT governance are often criticized as being outdated because they are seen as appropriate for organizing large, old-fashioned bureaucratic organizations instead of nimble, modern enterprises. We first focus our attention on the traditional models to create a context for understanding before examining, in Section 2.3, progressive models that take a more organic and sophisticated view of organizational reality and arrangements.

### **2.1.2 Centralized Model for the organization and governance of the IT function**

The centralized model for managing the IT function has its roots in classical organizational theory, which emphasizes hierarchical structures and the centralization of equipment and labor (Shafritz and Ott 2001). The contemporary incarnation of this model typically places the organization's CIO at the top of the hierarchical structure. In this model, the central IS organization coordinates and controls IT activities throughout the enterprise under the guidance of the CIO. This centralized logic follows Weber's notion of bureaucracy where an organizational bureaucracy is seen as one that is ordered by formal routines and procedures, has a hierarchical system based on subordination, and comprises impersonal relationships (Weber 1946). The benefits include the sharing of expertise throughout the firm, clear career paths for IT workers, and the consistent deployment of standards that can be used across the entire organization (Luftman, Bullen et al. 2003). In addition, a centralized model can save costs because technological and human resource redundancies should be minimized (von Simson 1990; Carr 2003) and sharing data across database-driven information systems is easier to accomplish (Goodhue, Quillard et al. 1988). However, the centralized form has been

criticized for what users often describe as “inflexible systems, overly formal arrangements, the very long time required for processing changes and new requests, and the apparent inability of departments to satisfy user needs” (Somogyi and Galliers 2003).

### **2.1.3 Decentralized Model for organizing and governing the IT function**

Decentralized organizational arrangements have played a prominent role in the organization of large, complex endeavors during the modern era (Chandler 1962). The core characteristic of the decentralized IT model is that the enterprises' individual operating units are responsible for “acquiring, deploying, and managing information technologies,” which results in multiple units of IS personnel dispersed throughout the firm. The purpose of decentralized arrangements is to overcome one of the significant shortcomings of the centralized IT function; that is, the lack of responsiveness and expertise in the business's individual areas. In decentralized organizational arrangements, “Communications and information technologies are seen to provide local operators with global data that will permit them to make local decisions consistent with overall coverage” (Fulk and De Sanctis 1999). Although decentralized arrangements allow for more responsive and innovative IT organizations, this organizational logic introduces significant economic inefficiencies in the form of redundant technological systems and IT staff. In addition, decentralized arrangements can compound the silo effect in which innovative practices emerge in various operating units but fail to propagate throughout the organization.

### **2.1.4 Federal model for organizing and governing the IT function**

“Federalism implies a variety of individual groups allied together under a common flag with some shared identity (Handy 1990).” Federal arrangements are the most common form of decentralized IT organizational structures

(Sambamurthy and Zmud 2000). “As information technologies mature and organizational boundaries become ambiguous, organizations engage in more federated interorganizational systems” (Garfield, Kamis et al. 2004). The federal model aims to co-opt the strengths of the centralized and decentralized forms while minimizing the weaknesses inherent in these organizational arrangements. In federal arrangements, enterprise-wide standards concerning protocols and architectures can be established and enforced while individual departments are able to innovate and make timely decisions based on their functional expertise.

Examples of research projects within the IS literature that focus on federal arrangements are plentiful. If we reduce the three seminal case studies published in MISQ on the transformation of an enterprise’s IT function (Clark, Cavanaugh et al. 1997; Cross, Earl et al. 1997; El Sawy, Malhorta et al. 1999), we find all three of these important works focus on differing degrees of federal models. Cross and colleagues documented how British Petroleum, faced with a “severe economic environment and poor internal perception of IT performance” transformed over a six-year period into a matrix organization with multiple vendor partnerships that worked with a central IT group (Cross, Earl et al. 1997). Another important case study in this area focused on the transformation of Bell Atlantic, a regional telephone company within the United States (Clark, Cavanaugh et al. 1997). The authors chronicle Bell Atlantic’s transformation into Centers of Excellence where the organization’s systems developers are contained within a central organization but assigned to different IS projects in the organization’s periphery. When the project is complete, the specialists are pulled back into the central organization for reassignment to a new project.

El Sawy and colleagues (1997) took a different approach by highlighting the importance of establishing strategic partnerships between high-level IT executives and senior leadership (El Sawy, Malhorta et al. 1999). The emphasis in this case study was on fostering innovation by allocating human capital and organizational resources to IS projects that have *strategic value*. This was

accomplished by having a small, central group manage infrastructure concerns such as standards and compatibility, while IT executives and senior management collaborated on improving strategic business processes.

## **2.2 Progressive models for organizing and governing the IT function**

### **2.2.1 Introduction**

The mechanistic models we outlined above are often criticized by scholars because they tend to place primary importance on consistency and efficiency through the use of standards and formal routines, which is done at the expense of organizational agility and innovation (Schilling 2004). Because the traditional models are often considered to be inconsistent with innovation, organic arrangements have emerged that recognize the dynamic and improvisational nature of contemporary organizational life (Moorman and Miner 1998; Ciborra 1999). In these more sophisticated organic models, innovation with respect to the application of IS to business problems emerges through tinkering, or bricolage, as opposed to formally planned strategies that are implemented by organizational actors (Ciborra 2000). The new models are designed to allow for a dynamic, integrated relationship between the IT organization and other functional areas within the enterprise. In addition to fostering innovation within organizations, the newer models also have the aim of bringing the IT function out of the organizational backwaters and into the mainstream of organizational life.

### **2.2.2 The platform organization**

In an attempt to address the growing need for more collaboration between the IT function and the enterprise, some scholars have proposed the use of the “platform metaphor” (Sambamurthy and Zmud 2000). The authors draw upon Ciborra’s (1996) notion of the platform organization to serve as the guiding

organization and character of an enterprise's IT function. Ciborra argues that in dynamic, competitive environments, such as the high-tech industry, the traditional arrangements for the organization of the IT function (i.e., centralized, decentralized, and federal arrangements) fail to allow for a progressive recombination of technical and human resources (Ciborra 1996). Ciborra argues that the ability for an enterprise to operate effectively in an environment characterized by uncertainty and surprise is to maintain a "shapeless organization" that can "efficiently generate new combinations of resources, routines and structures" (Ciborra 1996).

Building on the work of Sambamurthy and Zmud (2000) and Ciborra (1996), Agarwal and Sambamurthy (2002) suggest that we move beyond thinking merely about the organizational structure of the IT function and, instead, reposition the IT function as a "strategic differentiator" and ally in innovation (Agarwal and Sambamurthy 2002). The authors suggest two original guiding principles toward this end: the Partner Model and the Scalable Model.

The Partner Model "aims to ensure that the IT function is an active and direct partner in collaborating with business executives to make business innovation through IT a reality" (Sambamurthy and Zmud 2000). This attribute, coupled with Ciborra's platform organization, suggests that the IT organization slip its functional boundary and become a partner in facilitating strategic applications of technology.

The Scalable Model aims for "maximum flexibility in its people and resources, so that the IT function can expand and contract in concert with business cycles" (Sambamurthy and Zmud 2000). This model shares the logic found within the contributions of Cross, Earl et al. (1997) in their work on the transformation of the IT function within British Petroleum. Effectively, the Scalable Model suggests that organizations remain flexible through the use of creative relationships with internal IS assets (human and technical) and external



partnerships (Sambamurthy and Zmud 2000). This is consistent with the organic nature of the progressive agenda because it conceives the IT function to be expanding and contracting based on the needs of the enterprise.

### **2.2.3 The matrix organization**

The impetus behind the matrix organization is to join the benefits of centralization and decentralization without the inherent shortcomings associated with each. A matrix organization is preferred when the following conditions exist (adopted from (Daft 2001)):

1. Pressure exists to share scarce resources across product lines
2. Environmental pressure exists for two or more critical outputs, such as for in-depth technical knowledge and frequent new products
3. The environmental domain of the organization is both complex and uncertain.

At the center of the matrix organization are teams made up from across the organization. The strength of the teams is that they are composed of experts from the various functional areas of the enterprise and, with the collective expertise of the group, are able to capitalize on opportunities and solve problems with a multidisciplinary perspective. The collaborative emphasis inherent within the matrix perspective has caused some to argue that the matrix organization is not a structure but, instead a frame of mind (Bartlett and Ghoshal 1990). A criticism of this arrangement is that employees often have complicated reporting lines because they are required to report to a project leader who directs the team as well as to the head of the functional area from which the team member hails (Luftman, Bullen et al. 2003).

#### 2.2.4 Outsourcing

The outsourcing of an organization's IT activities provides decision makers with another design alternative for a firm's IT function. The outsourcing of some, or all, IS-related activities is becoming a widely accepted practice within contemporary organizations and serves as a viable tool for today's executives, but it is unlikely to replace the organizational IT function (Smith 2004). Recently there has been a large body of scholarship examining the many dimensions of outsourcing as well as increased interest within the popular business press on the topic. From the body of scholarship it is clear that outsourcing certain IT activities can have tremendous benefits for organizations, but it is also laden with risk.

The increased risk occurs in part when decisions to outsource IT activities are made under faulty assumptions.

“Senior executives often make decisions based on false assumptions about the nature and contribution of IS fueled by the legitimacy offered by the *sound* [emphasis in the original] core competency rationale” (Lacity and Hirschheim 1999).

In part, the false assumptions referred to are a byproduct associated with the difficulty of identifying the intangible value generated by systems within organizations. The risk associated with outsourcing is further compounded when elements that are high in organizational intellectual content are outsourced. This is because the outsourcing of these types of high-level human capital activities, whether in the public or private sector, typically corresponds with the erosion of core organizational capabilities and skills (Gibson 2003; Murthy 2004).

Finally, when a firm elects to outsource the complexity associated with its IT activities, the organization may be trading away one type of complexity and set of problems for another. This is because organizations that enter into major outsourcing arrangements must develop the intellectual capital and capabilities

to handle the complex and sophisticated legal contractual process that is invariably apart of these type of arrangements (Currie and Willcocks 1998).

### **2.2.5 Conclusion on models for organizing and governing the IT function**

In this section we have endeavored to review the models found within the IS literature related to the critical task of organizing and governing the IT function. IT governance is increasingly important because it minimizes individual organizational leaders making critical decisions regarding the IT infrastructure that might contradict the larger organizational interest (Weill and Ross 2005). Since our field's inception, scholars have been concerned with determining the one best way to organize and manage the ubiquitous information technology that has poured into modern organizations as well as the larger organizational infrastructures that have emerged around the IT resource (Lacity, Feeny et al. 2003).

Initially, academics and practitioners alike drew upon traditional organizational theory for guidance in this effort. This introduced to the field what we refer to as the traditional models for organizing the IT function: the centralized, decentralized, and federal arrangements described above. Some researchers, who found the traditional arrangements too rigid in their structuring of this important organizational resource, suggested more dynamic and organic arrangements to better foster innovation within the enterprise. Researchers in this vein have argued that the IT function should be more flexible and responsive to organizational opportunities. In addition, they argue the IT function should be considered a close and trusted partner within the enterprise. It is worth noting that although there has been considerable attention given to progressive forms of structuring organizational activities such as IT governance, displacement of hierarchical bureaucratic arrangements in favor of progressive forms of organizing has not been supported in the academic literature (Schwarz 2002; Kallinikos 2004).

Although a considerable body of knowledge focuses on determining the most appropriate model for organizing the IT function, this research stream often neglects the important issue of how organizations might move the IT function from one model to another. The next section discusses the limited body of research that attempts to examine the important question of transition.

## **2.3 Transforming the IT function and its governance mechanisms**

### **2.3.1 Introduction**

Sections 2.2 and 2.3 examined the different architectures found within the literature that address the structuring and organization of the IT function; this section explores the transformation of IT governance in organizations. Essentially, the body of knowledge related to the transformation of the IT function provides insight into how organizations can transition from one type of IT governance arrangement to another form that might be more consistent with organizational strategy. Organizational leaders in contemporary organizations have considerable interest in transforming back-office organizational activities, such as IT infrastructure. “Brave CEOs are not satisfied with incremental improvements to a few processes. They want organizational reformation and cultural revolution in back office functions” (Lacity, Feeny et al. 2003).

### **2.3.2 Framework for analyzing models for the transformation of the IT function**

Orlikowski’s (1996) work on technology-based organizational change provides IS researchers with a valuable taxonomy for categorizing the stream of IS research that directly addresses the transformation of the IT function. We will first discuss the characteristics of the four categories of change found within her work and then organize it into a detailed framework. We will then use the framework to organize and unearth the embedded assumptions contained within

the stream of research that specifically addresses the transformation of the IT function found within the literature.

Orlikowski identified three general categories of technology-based change found within the IS literature: planned change, the technological imperative, and punctuated equilibrium. In addition, she articulated a more sophisticated perspective she calls situated change (Orlikowski 1996).

“Planned change models presume that managers are the primary source of organizational change, and that these actors deliberately initiate and implement changes in response to perceived opportunities to improve organizational performance or ‘fit’ with the environment” (Orlikowski 1996). Unlike planned change models, the technological imperative is a perspective that “affords little discretion to managers or any other organizational actors” (Orlikowski 1996). Orlikowski argues that this view of technology-based change is informed by a “technological deterministic” lens which suggests the deployment of technology will yield consistent and predictable organizational responses (Orlikowski 1996). According to Orlikowski, the punctuated equilibrium models found within the IS literature suggest organizations are stable over time, but major events either inside or outside the organization force the enterprise to reconsider its organizational practices and structures (Orlikowski 1996). The major contribution of Orlikowski’s work on IT and change was the articulation of the situated change perspective, which challenged the view “that organizational change must be planned, that technology is the primary cause of technology-based organizational transformation, and that radical change always occurs rapidly and discontinuously” (Orlikowski 1996). Instead she posits that change is “grounded in the ongoing practices of organizational actors, and emerges out of their (tacit and not so tacit) accommodations to and experiments with the everyday contingencies, breakdowns, exceptions, opportunities, and unintended consequences.” The framework below organizes Orlikowski’s work and lists the attributes associated with each category of change.

**Table 2-1.** Attributes associated with each of Orlikowski's four categories of change (adopted from Orlikowski 1996).

	<b>Planned Change</b>	<b>Technological Imperative</b>	<b>Punctuated Equilibrium</b>	<b>Situated Change</b>
<b>Driver of change</b>	Management	Technology	Major change in environment or within org	On going actions from org actors in conjunction with improvisation
<b>Assumptions about organizations</b>	Orgs are stable and rational	Orgs are rational and predictable technology acts upon org	Orgs are stable for long periods	Orgs are in a constant state of change
<b>Change is triggered by internal or external sources</b>	Planned action by rational managers	Technology is seen as external force that acts upon organization	Major events either internal or external to org	Change is on going as actors cope, experiment and improvise with technology overtime
<b>Assumptions about change process</b>	Deliberate and discrete event separate from other organizational activities	Deliberate event with predictable outcomes	change occurs quickly and is radical in nature it is also outside of actors control	Change is emergent

In the next section we identify the models associated with the transformation of the IT function and the logic embedded within each. This is accomplished by using Orlikowski's framework to reveal important assumptions regarding organizational actors and the underlying properties of the IT function contained within each model.

### **2.3.3 Models for the transformation of the IT function and its governance mechanisms**

Transformation of the IT function is a topic of considerable importance to practitioners and academics alike (Agarwal and Sambamurthy 2002). However, the academic research related to this topic appears to be disconnected from the reality encountered by practitioners (Sambamurthy and Zmud 2000). This disparity between theory and practice is particularly troubling because the importance of IT (Porter and Millar 1985), and IT specialists (Markus and Benjamin 2003), in the larger discourse of organizational change is well established within our field (Pare and Jutras 2004). Although the importance of determining the most appropriate form for an enterprise's IT function has been clearly established, a paucity of research has examined the dynamic process related to the transformation of IT governance (Sabherwal, Hirschheim et al. 2001). Below we review the limited research related to the process of IT function transformation and then frame our findings using the taxonomy we established previously based on Orlikowski's work.

### **2.3.4 Anticipatory, Concurrent, and Dynamic Models**

Brown and Sambamurthy (1999) identify three basic models of IT function transformation: Anticipatory Change, Concurrent Change, and Dynamic Balancing (Brown and Sambamurthy 1999). Anticipatory change means changing the structure and organizing principles of the IT function in anticipation of organizational change efforts. Concurrent change calls for pacing the change of the IT function with that of the larger organizational change

endeavor. Dynamic balancing suggests that an organization's IT function can, depending on the circumstances, vacillate between anticipatory and concurrent change tactics. In other words, at times the IT function change efforts would exceed the immediate technological requirements of the enterprise, while other instances of the evolution of the capabilities contained within the IT function would evolve in synchronicity with the larger organizational requirements.

The aforementioned authors' work is unique and important because it explicitly addresses the transformation of the IT function. However, the implied logic contained within their prescriptions is problematic. First, each model relies upon enlightened organizational actors who can determine the optimal structure of the IT function and then move the organization in the desired direction. Second, the authors assume that organizations are stable and that change is a destination instead of a journey. Brown and Sambamurthy's models effectively imply the capability of management is similar to that of a conductor of an orchestra. The maestro can seamlessly speed up the attentive musicians or slow them down for dramatic effect. As well-intentioned as today's managers might be, it is unlikely they enjoy such a capacity.

### **2.3.5 Stages of Growth**

Another perspective related to the transformation of IT governance is the work inspired by Nolan's Stages of Growth Model. (Nolan 1979) posits that a firm's data processing function transitions through six stages of growth, ranging from initiation to maturity (Nolan 1979). The contribution of this perspective is that it enables managers to determine where in the continuum their organization is with respect to its capabilities, and then to refine the organization's processes and governance mechanisms to encourage its evolution to the next level. This work has served as the inspiration for other scholars to develop frameworks based on varying interpretations of the stages of growth.



One of the most significant refinements to the stages-of-growth model was made by Galliers and Sutherland (1991), which provided detailed insight into how leaders in organizations can help move an organization to the next level. Based on a framework developed by McKinsey & Company, Galliers and Sutherland suggest a strategy whereby the growth of the technical infrastructure can be fostered along with the necessary organizational arrangements needed to capitalize on new competencies (Galliers and Sutherland 1991). This is an important distinction as it emphasizes building organizational capabilities and governance mechanisms in addition to the technical components of modern computing infrastructures. Building on this notion, Ross (2003) suggests that some organizations enjoy better utilization of IT because “they have developed a competency in creating and evolving an enterprise IT architecture” (Ross 2003). Consistent with Galliers and Sutherland, she suggests that it is critical to evolve the technical infrastructure along with native organizational capabilities.

### **2.3.6 Punctuated Equilibrium**

In contrast to the planned change perspectives found in the work of Brown and Sambamurthy, Sabherwal and colleagues (2001) suggest that a punctuated equilibrium model is a valuable theoretical perspective in explaining the IT function transformation process (Sabherwal, Hirschheim et al. 2001). The authors observed during three longitudinal case studies that the transformation process was characterized by “long periods of relative stability, or evolutionary change, interrupted by short periods of quick and extensive, or revolutionary change” (Sabherwal, Hirschheim et al. 2001). Perhaps the most important contribution of their work is the recognition of the “deep structure” contained within the IT function that “reflects the organization’s basic choice in terms of strategies and structural arrangements” (Sabherwal, Hirschheim et al. 2001). By making this explicit, they acknowledge that in some instances an enterprise’s IT organization possesses deep-rooted characteristics that make change through a managerial imperative alone a very difficult task. In addition, the recognition of

a deep structure and all that it entails reminds IS of the importance of capturing the informal organizational context in our analysis (Avgerou 2001; Chan 2002).

As is true of all models and normative prescriptions for organizational action, assumptions and managerial logics are embedded within each. By using the taxonomy we developed from Orlikowski's work we can better understand some of the assumptions contained within the four models found in the IS literature related to the transformation of the IT function. The first three models we outlined above (anticipatory transformation, concurrent transformation, and dynamic balancing) along with the stages-of-growth perspective all fall under what Orlikowski would call planned-change models. These three models also contain a hint of technological determinism because the models assume that technology deployed in organizations will yield similar results and have predictable outcomes. Finally, the work of Sabherwal and colleagues clearly falls in the punctuated equilibrium category. Table 2-2 lists the four models for the transformation of the IT function and how each model relates to the four categories of change as found in Orlikowski.

**Table 2-2.** Summary of the models found within the literature for the transformation of the IT function. Category of change from Orlikowski (1996).

	Planned Change	Technological Imperative	Punctuated Equilibrium	Situated Change
Anticipatory Change	X	X		
Concurrent Change	X	X		
Dynamic Balancing	X	X		
Stages of Growth	X	X		
Punctuated Equilibrium			X	

### **2.3.7 Assumptions contained within the transformation models**

Now that we have identified the models for the transformation of the IT function and organized them into a useful framework, we can reveal the general assumptions contained within each. The models, which fall into the planned change category, assume that enlightened managers are the architects and drivers of change. The explicit focus on rational actors identifying the “one best way” to organize the IT organization for competitive advantage and then moving a stable predictable organization toward that end is a gross oversimplification of the complexity of organizational life. This view places too much faith in the ability of rational actors at the expense of other perspectives such as experimentation and improvisation. It is not our intent to completely discount managers in organizations as it has been shown that “e-savvy” leaders can have a positive effect on deploying and utilizing technology in organizations (Weill and Vitale 2002). However, we do suggest that this perspective may place too much of an emphasis on the volition of managers.

These models also assume that organizations are rational and stable, which leaves little room for the role of the informal organization (Krackhardt and Hanson 1993; Chan 2002). Finally, these models view the change process as a discrete event that is initiated, managed, and then closed when the desired results have been achieved, rather than viewing change as an ongoing dynamic process.

The assumptions contained within the models based upon a planned change perspective (anticipatory change, concurrent change and dynamic balancing and the stages-of-growth model when viewed in their totality) reveal an important ontological assumption about the conceptualization of the IT organization and its governance mechanisms. These models assume that the IT function is malleable and transitory since organizational actors are deemed to possess the capacity to reshape an enterprise’s IT function to better align with organizational requirements. The effect of this assumption is that it naively

supports the notion that the IT organization resembles a blank slate that can be written on and then erased, only to be written on again. The reality encountered by practitioners attempting to change these environments, reveals organizations that possess cultural attributes and technological infrastructures that are a world away from the blank slate assumption found within the planned change perspective.

The punctuated equilibrium model for the transformation of the IT function put forth by Sabherwal and colleagues (2001) provides us with a more sophisticated view of the IT function transformation process. The punctuated equilibrium model is predicated on an entirely different set of organizational assumptions regarding the IT function than we find in the dominant discourse on IT function transformation. This perspective holds that change is driven by major events either inside or outside the organization. These events can be the emergence of a new technology or a structural industry-wide event, such as deregulation. Punctuated models also view organizations as structurally stable over long periods of time and assume that change occurs quickly and rapidly. This perspective also holds that following the punctuated event, the organization settles back into a stable set of arrangements and practices. Finally, the impetus for change is seen as largely outside the control of human actors and comes in the form of radical unforeseen events that act on the enterprise.

Punctuated equilibrium models provide us with valuable insight into the transformation process; of equal importance, however, this perspective reveals an important characteristic of the IT function. Punctuated models contradict the ontological assumptions contained within the planned-change models. Specifically, where the planned-change models assume the IT function to be malleable and transitory, the punctuated model views the same function as stable and entrenched in a contextual stew of existing organizational practices, information technologies, and routines. The punctuated change perspective holds that the entrenched nature of the IT function resists change initiated

through managerial imperative, and that meaningful change only occurs through major, albeit infrequent, shocks to the organization. The significance of this distinction is that it provides us with a more realistic and grounded view of the IT organization. Instead of the pliable IT function that can be molded by organizational actors and then frozen in place once the ideal form has been achieved, we can infer from the punctuated perspective that an enterprise's IT organization is a more complex entity that has a deeper structure, born and shaped in the messy world of organizational life. This deeper structure serves as an organizational anchor that often impedes the drag induced from planned-change models.

While the punctuated lens provides us with useful tools and assumptions when examining the transformation of an organization's IT function, it also leaves us with an inability to address important elements about the transformation process and the IT organization. First, when examining the transformation process, the punctuated perspective does not provide us with much insight into the actual process of change other than that we know change is outside the control of actors and is rapid and episodic in nature. Second, the punctuated perspective fails to articulate the process whereby the new logic is inscribed within the organization to become the new set of scripts, routines, and technologies that influence organizational action. Finally, this perspective leaves no room for agency in the change process. This pessimistic view is similar to that of the technological determinists in that organizational action is considered to be largely irrelevant in the larger organizational-change discourse.

These shortcomings are problematic, but the most troubling aspect of the planned change and punctuated perspectives is that these models lack a serious theoretical grounding when conceptualizing the IT organization. As we have shown, the managerial imperative is inherently simplistic for its naïve view that the IT organization is pliable, malleable, and shaped by the actions of rational actors. The punctuated perspective overcomes this shortcoming by viewing the

logic guiding the IT function as deeply imbedded and, therefore, resistant to change. While this is a valuable contribution in theorizing the transformation of the IT function, it fails to say much more about the IT organization other than it is wrapped firmly in its context and is subject to change only through unforeseen, major events that are largely outside anyone's control.

### **2.3.8 Conclusion on models for transforming the IT function and its governance mechanisms**

The research agenda related to the transformation of the IT function has made valuable contributions toward understanding how organizations transition from one form of IT governance arrangements to another. This is a topic of importance to organizations because the changing landscape in which the enterprise is embedded presents opportunities and threats that sometimes require a reconsideration of existing governance structures and practices. During these times, effective leaders "must recognize when architecture sensibly limits business application choice and when new business opportunities should lead to new architectures or changes in technology standards" (Weill and Ross 2004). The models we identified in this section are intended to provide insight into how organizations might go about this process.

In Section 2.3 we identified several categories of models found within the literature related to the transformation of the IT function: anticipatory change, concurrent change, dynamic balancing, stages-of-growth, and punctuated equilibrium. In addition to identifying the contributions of these models, we utilized a taxonomy adopted from Orlikowski's work to reveal the underlying organizational assumptions contained within each model. Using Orlikowski's framework, we determined that the dominant models within the literature regarding the transformation of IT governance have a strongly ingrained planned-change or punctuated-equilibrium perspective. The planned-change models, such as anticipatory change, concurrent change, dynamic balancing and stages-of-growth, are largely based on the ability of rational actors to identify

the existing capabilities of the organization and the correct course of action for IT activities, and then to drive the enterprise in the correct direction. The punctuated models view the organization as a stable entity that occasionally is subjected to major events that force it to adapt. As we demonstrated in the previous section, both models have enriched our field, but an alternative perspective based on a neo-institutional perspective might help to advance our understanding of this important topic.

Table 2-3 summarizes the models and embedded assumptions contained within each.

**Table 2-3. Models for the transformation of the IT function.**

	<b>Anticipatory Change</b>	<b>Concurrent Change</b>	<b>Dynamic Balancing</b>	<b>Stages of growth</b>	<b>Punctuated Equilibrium</b>
<b>Driver of change</b>	Management	Management	Management	Management	Major change in external environment or within org
<b>Organizational Assumptions</b>	Organizations are stable and rational	Organizations are stable and rational	Organizations are stable and rational	Organizations are stable and rational	Organizations are stable for long periods
<b>Change is triggered by internal or external sources</b>	Planned action by rational managers	Planned action by rational managers	Planned action by rational managers	Planned action by rational managers	Major events either internal or external to the organization
<b>Assumptions about change process</b>	Deliberate and discrete event separate from other organizational activities	Deliberate and discrete event separate from other organizational activities	Deliberate and discrete event separate from other organizational activities	Deliberate and discrete event separate from other organizational activities	Change occurs quickly and is radical in nature it is also outside the control of actors



## 2.4 Conclusion on literature review

If we reject the rational logic contained within the planned-change models and we find the punctuated perspective lacking in its conceptualization of the IT organization, we must conclude that the research agenda related to the transformation of an enterprise's IT function is lacking. The managed change models that address the transformation of the IT function tend to place primacy on action initiated by rational actors within the organization to the exclusion of macro-level influences. On the other hand, the proponents of punctuated equilibrium over-emphasize the macro-level forces acting on the organization to the exclusion of local actions and logics. Accordingly, we submit that a theoretically based model that allows us to include the importance of local actors and logics, macro-level logics and forces, and the logic and influence of technology, may allow us to theorize and articulate a clearer and more sophisticated view of the transformation of the IT function.

This research project is an attempt to provide an alternative model by taking a broader view of the properties and characteristics of the IT function; thus, allowing us to develop a more sophisticated and realistic view of the transformation process. Drawing on neo-institutional theory, our analytic framework enables us to overcome the shortcomings found within the existing literature. We submit that a neo-institutional perspective provides us with a well established body of knowledge that allows us to conceptualize the IT organization in a more meaningful way. This is accomplished by viewing the IT function within an organization as an *institution*, thereby explicitly recognizing the deep-rooted logics inscribed within the organization that, as we have seen, are resistant to change.

Neo-institutional theory also allows us to view the IT function as simultaneously tied both to its micro-level organizational context and the larger environment in

which it operates. In addition, neo-institutional theory does not view change as only coming from unforeseen events that act on the organization with the effect of instantly providing new governing logics and techniques. Instead, many scholars within the neo-institutional vein attempt to understand the complex processes that witness one institutionalized set of practices and routines eroding and losing legitimacy only to give rise to another deep-rooted set of practices, organizational arrangements, and routines.

Chapter 3 illuminates the intricacies of neo-institutional theory and establishes the theoretical framework that we then employ in Chapter 6 to explain the transformation of the IT governance structure and mechanisms in a large public sector organization in the United States.

## **Chapter 3: Theoretical Framework**

### **3.1 Introduction**

This chapter discusses the central themes related to neo-institutional theory and introduces the literature that theoretically grounds this work. The chapter begins with an overview of neo-institutional theory as it is found in the field of sociology. We then transition into a subset of the neo-institutional literature by examining the field of institutional change. Following the discussion on institutional change, we examine the advances made in IS research utilizing neo-institutional theory. After discussing how neo-institutional theory has been used in IS research, we examine the recognized shortcomings of this theoretical tradition. Finally, this chapter concludes with a discussion of the theoretical framework we developed in this research project.

#### **3.1.1 Neo-institutional theory**

Consistent with our aim of establishing a deeper theoretical conception of the IT function and providing a more detailed insight to the IT function transformation process, we have chosen to employ the rich literature associated with neo-institutional theory. As mentioned previously, we draw upon neo-institutional theory as it is understood in sociology. This is an important distinction as neo-institutional theory has developed into a highly regarded theoretical tradition that has found a home in three different social science research domains: economics, political science, and sociology. However, each discipline has developed the theory in unique and sometimes drastically different ways (Scott

2001). Accordingly, distinct differences exist in the ontological assumptions and methodological approaches employed by institutionalists within economics, political science and sociology. For example, neo-institutional theory in economics adheres to formal rationality and bounded rationality to explain and justify the existence of organizations, whereas neo-institutional theory in sociology emphasizes the role of cultural cognitive frameworks and seeks to understand the role the larger environment plays in shaping modern organizations. We submit that neo-institutional theory, as it is found in sociology, is well suited to the task of refining our understanding of the ontological nature of the IT function and providing insight into how IT governance regimes change over time. Later in the chapter we elaborate on the institutional nature of IT governance regimes within some organizations. We also identify a theoretical framework based in neo-institutional theory that allows us to reveal important elements in the transformation process.

Before we embark on a discussion of the literature related to neo-institutional theory, we believe that we should first articulate what is meant when an organizational practice or form is said to be an “institution.” “Institutions are social structures that have attained a high degree of resilience” and “institutions are composed of cultured-cognitive, normative, and regulative elements that, together, with associated activities and resources, provided stability and meaning to social life (Scott 2001). In addition, “institutionalization is the process through which a social order or pattern becomes accepted as a social fact” (Avgerou 2000) and “an institution holds social meaning beyond mere instrumentality” (Kling and Iacono 1989). Finally, “organizational forms, structural components, and rules, not specific organizations are institutionalized” (DiMaggio and Powell 1991). This is an important distinction because later in this work we examine the transformation of what we argue is a deeply institutionalized organizational form.

### 3.1.2 Theoretical origins of neo-institutional theory

In Scott's book, *Institutions and Organizations*, the author outlines early work in the field of sociology that contributed significantly to the foundation of neo-institutional theory. While a full discussion of the theoretical roots is outside the scope of this thesis, we do feel that it is important to highlight some of the central contributors who have played a critical role in establishing the basis of neo-institutional theory. When examining this theoretical tradition, we do not have to dig too deeply in the institutional literature to see how the writers we examine in this section, such as Max Weber and Philip Selznick, have painted some of the most elegant portions of the theoretical canvas we employ in this thesis.

Scott argues that Weber's contributions to neo-institutional theory are twofold. First Weber's thinking and writing endeavored to address the "... ways in which cultural rules, ranging in nature from customary mores to legally defined constitutions or rule systems, define social structures and govern social behavior, including economic structures and behavior" (Scott 2001). Weber's illumination of the effect of cultural forces and social belief as constraints on individual and organizational action plays a central role in institutional theory. The second contribution Scott identifies is Weber's argument that research in the social sciences domain differs in significant and material ways from that of the natural sciences. The primary distinction between the two domains is that in social science research "both the researcher and the object of study attach meaning to events" (Scott 2001). Accordingly, Weber maintained that we must attempt to understand the structures (cultural and social) that shape and mediate action. Later in this work, when we discuss the effect of organizational scripts and routines along with constraining structures found in both the macro- and micro-organizational environments, we recognize that we are standing on Weber's ideas.

Berger and Luckmann's contributions center on their recognition that our shared knowledge and belief systems are social constructions that are the byproduct of social interaction (Scott 2001). Their argument comes in the form of the classic treatise, *The Social Construction of Reality*, which presents a clear and cogent argument about the ontological nature and influence socially constructed institutions play in society (Berger and Luckmann 1967). This view essentially holds that institutions such as organizational forms are constructed and given meaning and legitimacy by human actors. The actors, who are embedded in a broader social context, continually interpret and recreate the more enduring elements of organizational life.

The social constructionist view is in stark contrast to the structuralist argument, which suggests that there is a fixed, objective reality independent of human actors. Theorists in the structuralist vein submit that with the correct methodological techniques the deep structures underlying society can be revealed and then strictly modeled with advanced mathematical techniques. The structuralist perspective is inspired and supported by those who subscribe to the natural science method of social science research, or "an approach sometimes waggishly referred to as 'physics envy'" (Bennis and O'Toole 2005).

DiMaggio and Powell (1991) note that Philip Selznick has also made important contributions to neo-institutional theory through his original work, which was reflected in the seminal article *TVA and the Grassroots* (Selznick 1949). In this work, Selznick studied how the Tennessee Valley Authority evolved over time and was influenced by powerful actors and interests in the macro environment. The realization that environment and culture play a significant role in the formation and evolution of organizations is contrary to the rational actor model of organizations (DiMaggio and Powell 1991), which holds that organizations are closed systems, populated with goal-seeking rational actors pursuing efficiencies and independent of the macro-environment.

Another motivation of scholars working within this theoretical paradigm is the desire to address the disconnect between theory and the organizational reality (DiMaggio and Powell 1991). Perhaps the most lucid articulation of this point comes from March and Olsen (1984) who state, “[W]hat we observe in the world is inconsistent with the ways in which contemporary theories ask us to talk” ((March and Olsen 1984)as cited in Dimaggio and Powell [1991]). In our view, the strong focus on empirical research is one of the great strengths of neo-institutional theory. Scholars in this research vein reject the black-and-white picture of organizational reality and, instead, strive to develop a theoretically rigorous and empirically based body of work that reflects a more nuanced and sophisticated view of organizational life.

Taken together, these scholars advanced important notions that are central to neo-institutional theory. Weber reminds us of the importance in understanding the social and cultural structures that exist in society and play such a profound role in shaping the social, economic and political environments we aspire to understand and theorize. Berger and Luckmann’s work provides us with a detailed and highly reasoned articulation of the notion of institution along with a sophisticated account of the cognitive basis of institutions. Selznick gave us a rich case study that chronicled the complex interaction of organizational actors attempting to make sense of their local environment, which was influenced the macro environment cast upon the enterprise.

### **3.1.3 The old institutionalism and the new institutionalism**

DiMaggio and Powell (1991) establish the commonalities between the old and the new institutionalism and, in illuminating the distinct differences between these two strands of institutional theory, allow us to understand how this body of knowledge has evolved. The authors establish the fact that both the old and the new (a) are dubious of the rational-actor models put forth in conventional organizational theory, (b) explicitly recognize the manner in which the

organization is influenced by the environment, and (c) “promise to reveal aspects of reality that are inconsistent with organizations’ formal accounts” (DiMaggio and Powell 1991).

While the two theories have considerable similarities, they also have considerable differences. First, the old institutionalism theory sees organizations as embedded in local communities and environments while the new theory situates the organization in the larger macro-environment, including the specific industries and professional societies that influence the embedded organization (DiMaggio and Powell 1991). The old and the new theories also differ in their assumptions of how actors make sense of their environments. The former places primacy on “values, norms and attitudes,” while the latter has a singular focus on organizational scripts and routines that guide organizational action (DiMaggio and Powell 1991). “Not norms and values but taken-for-granted scripts, rules, and classifications are the stuff of which institutions are made” (DiMaggio and Powell 1991). Finally, while both the old and the new theories are dubious of the rational-actor model of organizations they reach this conclusion from different bases. The old institutionalism views the constraining elements on rationality as originating from “political tradeoffs and alliances” while the new institutionalism subscribes to the view that the pursuit of legitimacy curbs the rational agendas of agents within organizations (DiMaggio and Powell 1991) (see Table 3-1).



**Table 3-1.** Differences between the old and new institutionalism (adopted from DiMaggio and Powell 1991).

<b>Attribute</b>	<b>Old</b>	<b>New</b>
<b>Organization is situated in:</b>	Local environment	Macro environment
<b>Sense making</b>	Values and norms	Organizational scripts and routines
<b>Rationality constraints</b>	Political tradeoff and opportunistic alliances	Organization's desire to pursue legitimacy in larger macro environment

### 3.1.4 Major themes in neo-institutional theory

This section overviews some of the central ideas related to neo-institutional theory. A central theme within the neo-institutional tradition is the analysis of similarities in form found across organizations within a given field. DiMaggio and Powell write, “We ask, instead, why there is such startling homogeneity of organizational forms and practices, and we seek to explain homogeneity, not variation” (DiMaggio and Powell 1983). Scholars within the neo-institutional paradigm aspire to understand why organizations can seem to closely resemble each other even when they are governed by different managerial logics and actors, are located in a diverse global environments, and have different interpretations of the competitive and operational landscape. As the aforementioned authors point out, the neo-institutional agenda differs significantly from most current constructs of organizational theory because “modern organizational theory posits a diverse and differentiated world of organizations and seeks to explain variation among organizations in structure and behavior.”

One of the important contributions of neo-institutional theory is that it has taken the environmental context seriously (King, Gurbaxani et al. 1994). Accordingly,

much of the empirical research associated with neo-institutional theory examines the loose coupling between the organization and the larger environment in which the organization resides. For example, a bedrock notion within this tradition holds that organizations adopt the general characteristics of the sector in which they are situated for the purpose of increasing their legitimacy and long-term survival prospects, even if the adoption of the characteristics do little to increase actual efficiency (Meyer and Rowan 1977). The explanation Meyer and Rowan offer for this phenomenon is that fields of practice, such as the management of complex IT infrastructures, develop what are termed myths that symbolize the correct and recognized best practices. As the myths perpetuate and diffuse through the larger population of actors and organizations that comprise a discrete societal sector, the myths then enjoy a certain taken-for-granted status that emerges as the legitimate organizational arrangement or practice for a given purpose.

Meyer and Rowan state that another component that accounts for the diffusion of myths across and through organizational fields is the ceremonious adoption of myths within a given firm. Firms are motivated to adopt institutional myths to signal legitimacy to competitors and the marketplace. The paradox is that the organization may later determine those myths to be at odds with the efficient management of the firm and its resources (Meyer and Rowan 1977). Furthermore, if an organization acts solely for the purpose of efficiency and fails to adopt the institutional myths, then the industry and the marketplace may view this neglect as weakening the organization's legitimacy. The implication of this line of reasoning is that optimal organizational arrangements are not determined by cold, hard calculations. Instead, organizational forms and practices are seen as the effect of a complex negotiation between the enterprise and its environment, where the enterprise aspires to be viewed as compliant with the best practices of governances and operations as established by the larger environment.

DiMaggio and Powell (1991) take the idea of homogeneity a step farther by illuminating the forces that interact with organizations with the effect of producing homogenous organizational arrangements. The author's seminal work is concerned with what they call isomorphism. DiMaggio and Powell use Hawley's definition of isomorphism: "a constraining process that forces one unit in a population to resemble other units that face the same set of environmental conditions" (Hawley 1968). DiMaggio and Powell advanced the debate initiated by Meyer and Rowan by providing a more sophisticated elaboration of institutional isomorphism. They articulate three distinct mechanisms by which institutional isomorphism is diffused in a given organizational field:

- *Coercive isomorphism*, stemming from political influence and the problem of legitimacy;
- *Mimetic isomorphism*, resulting from standard responses to uncertainty, and
- *Normative isomorphism*, associated with professionalism.

**Coercive isomorphism** is similar to the idea of an organization's pursuit of legitimacy as articulated by Meyer and Rowan (1977). That is to say, "[c]oercive isomorphism results from both formal and informal pressures exerted on organizations by other organizations upon which they are dependent and by cultural expectations in the society within which organizations function" (DiMaggio and Powell 1991). However, the significance of DiMaggio and Powell's work is the focus upon the mimetic and normative forms of isomorphism.

**Mimetic isomorphism** offers an explanation of organizational behavior in the midst of uncertainty. DiMaggio and Powell argue that in times of uncertainty organizations look to their environment for signals as to the appropriate models of behavior and course of action. An example of mimetic isomorphism might be

the manner in which strategic technology efforts of state governments within the United States so closely resemble one another even though the states operate in very different political, economic, and technological environments. Lawrence (2003) analyzed the Strategic Technology Initiatives in 37 of the 50 U.S. states and found striking similarities among the strategic plans (Lawrence 2003).

A Strategic Technology Initiative is essentially a two- to five-year plan for the development and management of technology at the state government level in the United States. Lawrence argued that public sector management of the IT function within the United States is currently operating in a time of uncertainty. Politicians continually talk about reinventing government to make government more efficient, flexible, and responsive to customer needs (Gore 1993). Lawrence suggested the apparent similarities in Strategic Technology Initiatives are due to state governments mimicking the few states that are widely regarded as leaders in the deployment and use of technology in the United States' public sector.

**Normative isomorphism** is a byproduct of the professionalization of organizational roles, such as human resource management (DiMaggio and Powell 1983). Within the IS field we see the increased professionalization of organizational roles in the form of the emergence of systems analysts (Avgerou and Cornford 1998) and database and network administrators. DiMaggio and Powell argue that two discrete areas contribute significantly to the institutional impact of the professions in organizations. As they observed, "One is the resting of formal education and of legitimation in a cognitive base produced by university specialists; the second is the growth and elaboration of professional networks that span organizations and across which new models diffuse rapidly" (DiMaggio and Powell 1983). Returning to the IS field, it is easy to see the professions and the academy as carriers of institutional norms. Organizations such as the British Computer Society, the network of Microsoft Certified Systems Engineers (MCSE), and other technical societies play an important role

in conveying best practices for IS-related activities. In addition, IS programs within universities have proven to be of great interest to students across the globe. Finally, Greenwood and colleagues suggest that professional associations are important “regulatory agents” and “can legitimate change by hosting a process of discourse through which change is debated and endorsed” (Greenwood, Suddaby et al. 2002).

While DiMaggio and Powell’s work focused on the carriers of institutional norms, two noted neo-institutional scholars, Scott and Meyer, ask us to step beyond the carriers of institutional norms and focus our attention on what they call the *societal sector* and its role on the institutional process. “A societal sector is defined to include all organizations within a society supplying a given type of product or service together with their associated organizational sets: suppliers, financiers, regulators, and so forth” (Scott and Meyer 1991). The inclusion of the societal sector in institutional analysis allows us to broaden our scope to include the complex interrelationship between organizations and the larger environment in which they operate.

This approach forces us to take a step back and redraw the delimited boundaries that earlier theorists employed. As we discussed earlier, the inclusion of the macro environment in our analysis differs substantially from early notions of institutional theory. This is not an insignificant distinction as the manner in which researchers choose to classify and delimit fields of study has significant implications (Bowker and Starr 1999).

Another important contribution to institutional analysis is Zucker’s work on cultural persistence. Earlier institutional analysis “focuses on the content, rather than the process, of institutionalization” (Zucker 1991). Zucker takes the unique perspective that institutionalization is a variable that influences cultural persistence. Her research approach is based in the positivist epistemological tradition as described by Lee (Lee 1999) and has at its core a rationalist

ontological stance. Accordingly, by using the language of quantitative analysis, Zucker argues that the degree of institutionalization (the independent variable) influences cultural persistence (the dependent variable) positively; that is, something that is highly institutionalized will possess strong cultural persistence. An example of this would be the basic elements of road rules in the United Kingdom. The rules of the road in the UK dictate that drivers drive on the left side of the road. This tradition has long been part of the UK's driving culture and serves as an undisputed fact with regard to the proper way to drives. Therefore, it can be said that this social fact possesses a strong degree of institutionalism, which then allows us to conclude that this social fact will demonstrate strong cultural persistence. When a practice has strong cultural persistence it is then more difficult to instigate change that will have the effect of eroding the social practice.

### **3.1.5 Criticism of neo-institutional theory**

Neo-institutional theory has enabled scholars to make important contributions toward understanding organizations by providing an alternative view to the technical/rational theories concerning organizational behavior; and has had a significant impact in organizational studies (Brint and Karabel 1991; Davis and Powell 1992; Dacin, Goodstein et al. 2002). However, the theory has been criticized on two fronts. First, the theory's predictive power has been questioned because in some empirical settings the outcomes were inconsistent with the predictions, and, second, some scholars find the theory's explanation of the change process to be lacking in sophistication because it is biased towards stability and inertia rather than change. We address both criticisms below.

In an often cited criticism of neo-institutional theory, Kraatz and Zajac find little support for the predictive power of neo-institutional theory. The authors conducted a longitudinal study of private liberal arts colleges over a 15-year period and concluded that the observed changes were inconsistent with

predictions made using the neo-institutional theory (Kraatz and Zajac 1996). Specifically, the authors were looking at the “strong institutional pressures for conformity” while simultaneously experiencing “global and local technical environmental demands” that were inconsistent with the institutional pressures for conformity (Kraatz and Zajac 1996). Their research showed that the predictions from neo-institutional theory for homogeneity was not supported as many of the liberal arts schools became less homogenous and did not mimic the elite schools within their ranks.

Another major criticism of neo-institutional theory is how it theorizes and explains institutional change. According to Yang, the neo-institutional theory’s “immaturity and ambiguity” prevents a serious theoretical conceptualization of institutional change and the processes that accompany it (Yang 2003). Critics of neo-institutional theory point to the simplified ways in which it accounts for an organization’s adoption of institutional norms and practices. Referring to the inability of neo-institutional theory to explain institutional change in other than “adaptivist” and “diffusionist” terms, Hasselbladh and Kallinikos write:

“...Perhaps the most crucial [criticism] is the way in which the pool of social ideas, instrumental orientations and schemes (i.e., the rationalized environment) is translated into the specific administrative patterns encountered in particular organizations or populations of organizations. The understanding of this relationship, in terms of diffusion, assumes a relatively unproblematic adoption of these patterns by specific organizations or in specific contexts” (Hasselbladh and Kallinikos 2000).

In short, critics find institutional theory delinquent in explaining the *process* in which certain organizational forms, along with practices and techniques, become deeply ingrained. This issue is of particular interest to this project because we are concerned with understanding how a deeply institutionalized IT governance arrangement changes over time. In the section that follows we directly address this concern by examining the literature related to institutional

change. Later in the chapter we suggest a framework that can help provide original insight into the IT-governance transformation process.

### 3.1.6 Neo-institutional theory and change

As highlighted in the previous section, one of the primary criticisms of neo-institutional theory is its treatment of the change process. Scott sums up the fundamental problem with institutional change when he writes:

“...change poses a problem for institutional theorists, most of whom view institutions as the source of stability and order. If the nature of actors and their modes of acting are constituted and constrained by institutions, how can these actors change the very institutions in which they are embedded” (Scott 2001)?

To respond to this shortcoming within neo-institutional theory, a growing body of scholarship has emerged examining the topic of institutional change. Feldman shows how organizational routines, which are perceived to be unchanging, are modified by organizational actors as the actors learn from and reflect on the various outcomes of the routines over time (Feldman 2000). Based on the learning process, the institutional routines are subject to slight modification and, ultimately, to change. In another work, Holm focuses on “the double nature of institutions, as both frames for action and products of action” where “institutional change may be triggered by external events, but the outcome will be shaped through internal processes structured by institutions themselves” (Holm 1995). Holm’s contribution is complemented by the work of Greenwood and Hinnings who see institutional change as a byproduct of the “interaction of organizational context and organizational action” (Greenwood and Hinnings 1996). In another important work, Greenwood and Hinnings (1993) argue that archetypes, which the authors define as intellectual constructs that establish the legitimate way to structure and organize activities, exist within the sector in



which an organization is embedded and that individual organizations seek to mimic these archetypes (Greenwood and Hinings 1993).

Most accounts of institutional change rely upon Giddens' notion of "structuration" to explain the transformational phenomena under consideration (Scott 2001). Structuration theory is intended to provide a solution to a problem presented by diametrically opposed views found within contemporary sociology. This reconciliation exists between the structural sociologists, who view human agency as constrained by social structures over which they have no control or true understanding, and those who maintain that society, and its requisite structures, is the byproduct of human agency (Giddens 1984). "Structuration theory is based on the premise that this dualism has to be reconceptualized as a duality—the duality of structure" (Giddens 1984). In effect, social structures (that is, institutions) and human agents are engrossed in a complex societal context and act upon and influence the other.

While structuration theory is held in good currency, it does not help researchers delve into and illuminate the rich dynamic found in the chaotic and messy organizational landscape that is the scene of the type of institutional change with which this thesis is concerned. However, the notions contained within Giddens' structuration theory provide a valuable sensitizing device to scholars concerned with studying institutions and institutional change. The meta-theory of structuration reminds us of the complex negotiation that exists between societal structures and the human agents that are caught in the constant drama that is the focus of organizational researchers.

As we have seen, structuration theory provides researchers with broad insight into the complex negotiation between societal structures and human agents that leads to the creation and maintenance of institutional arrangements. However, this larger focus on the construction and diffusion of institutions comes at the expense of a focus on the deinstitutionalization process (Scott 2001). In

addition, empirical studies capturing and analyzing the deinstitutionalization process are rare (Oliver 1992; Scott 2001).

This criticism of the structuration theory is not trivial. The lack of focus on deinstitutionalization, or “the process by which institutions weaken and disappear” (Scott 2001), has the detrimental effect of removing our analysis from an important portion of the larger transformation context. This is particularly surprising since a central claim of institutionalism is that it “takes the environment seriously” (King, Gurbaxani et al. 1994). Later in this chapter we introduce an analytic framework that overcomes this criticism by explicitly including the deinstitutionalization process in our analysis.

### **3.1.7 Institutional theory in information systems research**

This section is intended to provide an overview of some of the major works within IS literature that draw upon neo-institutional theory. The notion that organizations are not governed by the deterministic logic of strategic rationality has long had a home in IS research (Lawrence 2003). Accordingly, it is no surprise that IS researchers are increasingly choosing to draw on institutional theory to inform research in our field. Some of the most influential voices in the IS literature have explicitly singled out neo-institutional theory as a promising theoretical approach. In light of the increased interest in institutional theory in our field it is “relatively novel to IS research” (Swanson and Ramiller 2004).

Robey and Boudreau (1999) suggest that neo-institutional theory can be used to reveal what they term the logic of opposition, which “explains organizational change by identifying forces both promoting change and impeding change” (Robey and Boudreau 1999). They argue that the body of IS research concerned with the organizational consequences of IT can be enriched by an understanding and greater appreciation of the often-conflicting forces found within organizations and the role of those forces in organizational transformation.

Robey and Boudreau find a powerful explanatory tool in institutional theory's ability to reconcile macro-level influences (such as an organization's societal sector) with a firm's unique and rich contextual complexities.

In an important article published in MISQ, Orlikowski and Barley continue the call for the increased use of neo-institutional theory by arguing IS scholarship can be enriched through employing institutional analysis, while organization studies can be improved by including the material properties of information technology in its analysis (Orlikowski and Barley 2001). Moreover, the authors suggest that coupling the theoretical contributions of organizational studies with the contributions made from the IS research community can yield important insights into "the techno-social phenomena that increasingly pervade our lives" (Orlikowski and Barley 2001).

It is clear that neo-institutional theory has captured the interest of contemporary IS scholars, but a close examination of our literature reveals that interest in this theoretical tradition reaches back to our field's inception. Kling and Iacono note that the anticipated benefits of computerization are often slow to materialize and an organization's institutional characteristics maybe responsible for this (Kling and Iacono 1989). They state that "[a] history of complex social and technical commitments may structure the social organization of computing to make innovation relatively expensive and complex" (Kling and Iacono 1989). The authors found that a deeper understanding of an organization's institutionalized practices and arrangements, which they define as holding "social meaning beyond mere instrumentality," can help us understand the failure to implement information systems in organizations.

King and colleagues suggest that the new institutionalism can be useful in understanding how "government institutions and institutions more broadly" can develop and implement policy that fosters technical innovation within its borders (King, Gurbaxani et al. 1994). These authors were drawn to neo-

institutional theory because it takes the “environmental context seriously” and it views institutions as fluid and dynamic arrangements that are constantly influenced by the larger environment (King, Gurbaxani et al. 1994). Finally, the authors argue that a contemporary view of institutions is critical in understanding the innovation process because it is within the larger institutional context that individuals act and make decisions that lead to (and sometimes detract from) organizational innovation (King, Gurbaxani et al. 1994).

Swanson and Ramiller continue King and colleagues’ preoccupation with innovation and draw upon central themes from the neo-institutional literature. Swanson and Ramiller developed the notion of an organizing vision, which they define as “a focal community idea for the application of information technology in organizations” (Swanson and Ramiller 1997), which they further expound are “developed and promulgated in the wider interorganizational community” (Ramiller and Swanson 2003). The significance of the authors’ work is to situate the IS innovation process from its earliest stages in the larger institutional environment. The authors argue that it is the larger societal sector that creates organizing visions as a “sensemaking” (Weick 1993) tool for organizations in complex, dynamic environments that are further complicated by the rapid introduction of information technologies. Firth writes:

“It (organizing visions) espouses that the local choices of managers who are faced with options about an innovation make those choices not in isolation, but in the context of, and with reference to, processes taking place at the institutional level” (Firth 2001).

The concept of an organizing vision proves useful for organizations because it helps individual firms “interpret” complex technologies, provides “legitimacy” for the technology and “mobilizes the creative force,” which includes hardware and software vendors and service providers (Swanson and Ramiller 1997).

The organizing vision framework has provided the foundation for other scholars to investigate the diffusion of technological innovations. For example, Firth traces the diffusion of customer relationship management (CRM) applications by using the organizing vision framework. He convincingly shows that the emergence of CRM was supported by a robust discourse from the larger institutional environment including vendors and IT professionals. Another innovative use of the organizing vision perspective can be found in the work of Currie who examined the diffusion of applications services provisioning (ASP) to small and medium-size enterprises (Currie 2004). This work shows how the evolving organizing vision for ASP was not robust enough to be widely adopted in the larger institutional environment. Instead, she chronicles the innovation's reinvention and introduction as a new organizing vision called Web Services (Currie 2004).

Avgerou (2000) contributes to the larger innovation debate by suggesting that IT innovation and the IT function within the enterprise have assumed a distinct institutional identity that interacts with other institutional arrangements to give rise to organizational change (Avgerou 2000). Avgerou is careful to illuminate the IT function within the enterprise as comprising "a course of activities with its own taken-for-granted validity" and not merely a generic organizational function that is easily "subsumed" into the change agent's agenda (Avgerou 2000). In a later work, Avgerou provides more support for the institutional nature of information communication technology (ICT) innovation because of its taken-for-granted status in the larger discourse of economic development within developing countries (Avgerou 2002).

Another highly regarded work focusing on neo-institutional theory and the public sector is Fountain's *Building the Virtual State: Information technology and institutional change*, which focuses on the transformation of federal organizations in the United States (Fountain 2001). This work highlights the constraints on innovation imposed by the larger institutional environment. In

addition, she shows that meaningful change requires attention not only to information technology but also to social and cultural elements. She suggests that in most cases the deployment of technology in organizations reinforces existing organizational arrangements:

“Individuals often enact existing performance routines and network relationships in the way they design and use web-based information and communication systems. But the unintended consequences of these enactments occasionally lead to subtle modifications of structure to accommodate new technology. The accumulation of unintended, subtle modifications may lead to more dramatic shifts in structure and power, but actual outcomes are indeterminate in the enactment framework” (Fountain 2001).

Within Fountain’s work we can see traces of the more innovative ideas found within the IS literature. For example, her recognition of the important effect of organizational actors responding to breakdowns and the unattended innovations that sometimes spring from these events reminds us of the progressive work of Weick, Ciborra, and Orlikowski on improvisation and sense-making in organizations (Weick 1995; Orlikowski 1996; Ciborra 1999; Weick 2001).

Lamb and Kling (2003) draw on neo-institutional theory to study how ICT is used within organizations. Their work found neo-institutional theory to be an effective theoretical paradigm for situating the ICT user in a sophisticated and complex organizational landscape (Lamb and Kling 2003). This complex landscape, which the authors call the institutional environment, includes contextual elements such as social and organizational structures that influence ICT use and users and which are influenced and shaped by the ICT users themselves.

Silva and Backhouse (2003) examine the role power plays in the *institutionalization* of an information system. They state that “an information system is institutionalized when associated practices and procedures have

become routines that can be regarded as organizational habits” (Silva and Backhouse 2003). Their contribution to the IS literature stems from their argument that the application of power by organizational actors is required for an information system to become institutionalized, and once institutionalized, the information system becomes a source of power in itself (Silva and Backhouse 2003).

Finally, Gosain (2004) draws upon the explanatory and analytical power of neo-institutional theory to deconstruct the inscribed logics contained in enterprise information systems. Gosain maintains that the enterprise information system artifact is the manifestation of institutional forces and logics that set the rules for organizational rationality (Gosain 2004). These logics and rationalities, captured within sophisticated information systems, take the form of industry “best practices.” In fact, the best practices inscribed within enterprise information systems serve as “an important embodiment of institutional commitments and serve to preserve these rules by constraining the actions of human agents” (Gosain 2004). Because inscribed logics are contained within the technology, it is increasingly difficult for users to deviate from those contained within the application. Accordingly, Gosain maintains that the rigid structures and logics contained within ERP systems compel users to act in a predictable and structured manner that reinforces the larger institutional norms.

### **3.1.8 Organizing logic of the IT function as an institution**

As stated in Chapter 2, we submit that within the larger IS literature the ontological conceptualization of the IT function and its governance regimes is theoretically weak. The dominant perspectives within the IS literature fall under what Orlikowski describes as the planned change perspective, which contains several assumptions about the ontological nature of the IT function that are incongruent with organizational reality. These models assume the IT function, as a conceptual entity, is malleable and transitory. In addition these models hold

that management is largely responsible for assessing an organization's requirements, choosing a course of action, and then moving the enterprise in that direction. This one-sided perspective, which is based on a managerial imperative, is the byproduct of our field not elucidating a more theoretically rigorous view of the IT function within a complex enterprise. Accordingly, we submit that viewing the organizing logic guiding the IT function from an institutional perspective will serve as a small step in moving our discipline in this direction.

Since neo-institutional theory is concerned with how some ideas become the dominant and legitimate notions for structuring and carrying out organizational activities, it is a theory that is well suited for understanding IT governance in organizations. As we mentioned previously, "organizational forms, structural components, and rules, not specific organizations are institutionalized" (DiMaggio 1991). Returning to the definition of IT governance presented in Chapter 1:

"IT governance describes the distribution of IT decision-making rights and responsibilities among different stakeholders in the enterprise, and defines the procedures and mechanisms for making and monitoring strategic IT decisions" (Peterson 2004).

Consistent with DiMaggio and Powell's understanding, IT governance regimes, which influence the organization and structuring of organizational activities along with the establishment of rules related to decision making, clearly possess the attributes that can become institutionalized. In the following section, we establish an analytic framework drawn from the neo-institutional theory scholarship, which we later employ to analyze the transformation of a deeply institutionalized IT governance arrangement.



## **3.2 A framework for the transformation of the IT function**

### **3.2.1 Introduction**

One of the main contributions of this thesis is the articulation of a more robust and theoretically sound view of the IT function transformation process. As we pointed out in Chapter 2, most research associated with this effort has taken a decidedly managerial imperative perspective to explain the transformation phenomena. That is, organizational leaders assess the operational and competitive landscape, develop a plan for aligning the IT function with the larger organizational goals, and then implement that plan. It is our aim to introduce a new, more sophisticated theoretically based understanding of the transformation process by drawing on ideas found within the neo-institutional literature. The analytic framework we detail below is based on two progressive frameworks within the neo-institutional literature. By joining these two analytic frameworks, we are able to provide a more nuanced interpretation of the transformation process that examines the deinstitutionalization process and the process that gives rise to a new IT governance arrangement. By capturing the deinstitutionalization process along with the process of constructing a new IT governance regime, we are circumventing the theoretical shortcomings we identified in the previous section while illuminating the IT governance transformation process in a new and original light.

### **3.2.2 Analytic framework**

In the previous section we situated the IT function in the larger institutional landscape. We submit that the IT function in some enterprise environments has become an institution as that term is understood in the branch of neo-institutional theory from sociology. If we accept this proposition, then we must examine the transformation process from an institutional perspective. In pursuing this ambitious agenda, we are coupling two important works from the

neo-institutional literature for the purpose of establishing an original framework for analyzing the transformation process. First, we will draw upon Oliver's (1992) framework for illuminating the often neglected deinstitutionalization process in our analysis. Second, we will join Oliver's work with that of Hasselbladh and Kallinikos (2000) for examining the larger transformation process.

By beginning our analysis with Oliver's model, it is our aim to draw a more complete and inclusive picture of organizational change by including the deinstitutionalization process. This will help us capture the larger context under which the transformation drama takes place. Oliver's framework identifies three sources of deinstitutionalizing pressures that can erode institutionalized elements of contemporary organizations: political pressure, functional pressure, and social pressure (Oliver 1992). Scott writes:

*“Functional pressures* are those that arise from perceived problems in performance levels associated with institutionalized practices..... *Political pressures* result from shifts in interests or underlying power distributions that provided support for existing institutional arrangements..... *Social pressures* are associated with differentiation of groups and the existence of heterogeneous divergent or discordant beliefs and practices” (Scott 2001).

However, note that Oliver's pressures are *not* discrete in that they operate independently. Instead, the pressures she identifies that lead to the erosion and loss of legitimacy of institutionalized organizational arrangement co-mingle and reinforce each other.

The notion that institutions do not simply go away is intuitive since the conception of institution conveys permanency and constancy. Oliver's framework allows us to identify and analyze important elements that lead to the deinstitutionalization of organizational arrangements. However, in addition to

helping us to understand how these types of arrangements erode and lose legitimacy, this work also provides us with a set of tools to understand the context in which the new regime is constructed. Oliver provides us with a lens to see how the more enduring elements of organizational life erode. The lens also can be employed to reveal important contextual elements related to the construction of the organizational arrangements that come in its place. Oliver provides us with a powerful analytic device to see the deinstitutionalization of an IT governance arrangement, but the authors who follow give us a unique way of seeing the construction of the new regime.

**Table 3-2.** Summary of Oliver’s three pressures that lead to deinstitutionalization (adopted from Oliver [1992]).

Functional Pressure	Political Pressure	Social Pressure
Arise from performance problems	Byproduct of changing political environment. Includes changing interests of existing groups and introduction of new members with different interests	Larger environmental forces acting on the organization. Includes changing legal environment and changes in societal expectations that encourage or prohibit certain practices

As critics of neo-institutional theory have established, the lack of focus on the *process* of institutionalization is troubling. To fill this void, Hasselbladh and Kallinikos (2000) developed an original framework based on the work of Foucault to explain the institutional transformation process. The significance of their work is not only that it refocuses attention on the *process* of institutionalization, but they provide scholars with the tools to dissect the *action* of institutional construction. They do this by focusing on the evolving use of different forms of language.

Hasselbladh and Kallinikos (2000) differentiate between three distinct forms of communications: ideals, discourses, and techniques of control. “Institutions are conceived as consisting of basic ideals that are developed into distinctive ways of defining and acting upon reality (i.e., discourses), supported by elaborate

systems of measurement and documentation for controlling outcomes” (Hasselbladh and Kallinikos 2000). They go on to state, “At one extreme, ideals express themselves vaguely and in wholesale fashion, while at the other, control techniques specify rather precisely the relationship which they seek to regulate.” The three forms of communications provide a means to analyze and categorize the complex and rich context in which a transformation journey takes place. We can illuminate important components of the transformation process by subjecting our case study to the analytic device of ideals, discourses, and techniques of control, Table 3-6 summarizes the work of Hasselbladh and Kallinikos.

**Table 3-3.** Hasselbladh and Kallinikos's analytic device for capturing the transformation process (adopted from Hasselbladh and Kallinikos [2000]).

Type of communication	Ideals	Discourses	Techniques of control
<b>Definition</b>	Vague and general statements about organizational solutions, ambitions and goals	Organizational plans and goals that evolve past mere ideals. These include the written elaboration of social roles, performance ideals and plans	Taxonomies, codifications and elaborate systems of measurement
<b>Example</b>	Informal organizational communication about goals such as pursuing competitive advantage or, for public sector organizations to 'become more business like.'	Evolve past ideals and into written forms of communication such as strategic plans or software development methodologies etc	Codification into law, elaborate measurement systems such as statistical process control and the inscription into sophisticated technologies such as ERP systems and enterprise network operating systems

This work is not the first to focus on the evolving nature of communications to illuminate the process of institutionalization. Hirsch, for example, chronicles the evolution of hostile corporate takeovers from a deviant activity to a more acceptable strategy by following the evolution of the language used within the popular business press to describe these types of activities:

“Over time, the vocabularies used to describe takeovers expand beyond exclusively pejorative adjectives, applied to the earliest marginal players, to include more accepting and benign terms, accorded competitors already known to the targets and representing less social distance” (Hirsch 1986).

Hirsch argues that the changing communicative patterns helped to situate hostile takeovers as a legitimate corporate activity.

The focus on language to understand change processes has been used successfully in IS research also. Firth and Lawrence chronicled the use of genre analysis in IS research and suggest that it is a valuable approach for studying technology and change as well as the construction process surrounding open-source artifacts (Firth and Lawrence 2003). Our review of the IS literature shows that those who elected to use this form of analysis “had a desire to understand the communication being supported by the particular technology in use” (Firth and Lawrence 2003). While this dissertation does not employ genre analysis to deconstruct the transformation process, we are encouraged by the important contributions our colleagues have made to scholarship by focusing on language and communication in organizations.

By joining Hasselbladh and Kallinikos’ work with that of Oliver’s contributions, we hope to capture the messy and chaotic process that leads to the breakdown of a deeply institutionalized IT governance arrangement and the process that gives rise to a new regime for governing the acquisition, deployment, and management of IT resources in a large public sector organization. We submit that joining these analytic frameworks allows us to provide more insight into the transformation phenomena than we could provide by using one or the other independently.

### **3.3 Conclusion on theoretical framework**

In this chapter we examined the general themes related to neo-institutional theory as well as the IS literature that used this perspective. We have chosen a neo-institutional approach in this work because the approach provides a way of conceptualizing the IT function and the governance mechanisms that guide it in a more rigorous theoretical manner. We must first recognize that IT governance mechanisms in some organizations have become institutionalized before we can approach the transformation of IT governance as an instance of institutional change. After a thorough examination of the literature, we have elected to

combine two analytic frameworks so that a more faithful and nuanced interpretation of the IT governance transformation process can be rendered. By combining the work of Oliver with that of Hasselbladh and Kallinikos, we hope to enrich the IS discipline by providing insight into an important, but not very well understood area.

This research project takes us onto new ground on multiple fronts: This project is the first to explicitly recognize the institutional nature of IT governance in organizations, and is the first application of the Hasselbladh and Kallinikos framework in an actual empirical setting. Of equal importance, this research approaches the transformation process with an eye toward the deinstitutionalization of deep-rooted IT governance mechanisms along with a view of the process that led to the construction of a new IT governance regime. We submit that understanding the functional, political, and social pressures that compromised the old regime is integral in understanding the emergence of a new IT governance administration.

## Chapter 4: Methodology and Case Selection

### 4.1 Introduction

This chapter establishes the general philosophical approach and research strategy utilized in understanding the transformation phenomenon that is captured in the next chapter. The effect of the choices researchers make when choosing a research approach cannot be overstated, because “research methods shape the language we use to describe the world, and language shapes how we think about the world” (Benbasat and Weber 1996). As we established in Chapter 2, our research question is: *How do deeply institutionalized IT governance arrangements change over time?* Accordingly, this research project is concerned with providing insight into the process of change, which presents rich opportunities for the researcher, but also special methodological challenges that must be considered. This chapter discusses how we capitalize on this opportunity while addressing the inherent challenges associated with this type of research.

The first part of this chapter examines the three philosophical approaches found within the IS literature: positivistic, interpretive, and critical. In this examination we address the ontological and epistemological assumptions contained with these philosophical positions. This allows us to state explicitly our philosophical influences that shaped this doctoral work. Following this we establish the research strategy employed in this project along with the justification of our case selection.



## 4.2 Philosophical Approaches

### 4.2.1 Introduction

According to Zuboff, “behind every method lies a belief. Researchers must have a theory of reality and of how that reality might surrender itself to their knowledge-seeking efforts” (Zuboff 1989). Since all researchers have a point of view about the underlying reality of the organizations we study, we should state it clearly and plainly (Checkland 1999). In this chapter we take this advice and clearly establish the ontological and epistemological foundations that will help guide our analysis of the empirical data presented in Chapter 5.

Ontology is concerned with the basic beliefs researchers hold about the underlying reality of social phenomena. Orlikowski and Baroudi write,

“Ontological beliefs have to do with the essence of phenomena under investigation; that is, whether the empirical world is assumed to be objective and hence independent of humans, or subjective and hence having existence only through the action of humans in creating and recreating it” (Orlikowski and Baroudi 1991).

On the other hand epistemology is concerned with determining “how we know what we know” (Goles and Hirschheim 2000) or, in other words, “which research methods are appropriate for generating valid evidence” (Orlikowski and Baroudi 1991) about social phenomena.

Before we can establish our point of view, we will first examine the ontological and epistemological assumptions underlying positivistic, interpretive, and critical research.

### 4.2.2 Positivist Philosophy

The first approach we will discuss is positivism, which is the dominant perspective found within IS scholarship (Orlikowski and Baroudi 1991; Palvia, Mao et al. 2004). Positivist researchers “are concerned with codification, the normalization of experience, and the search for law-like relationships” (Schultze and Leidner 2002). From an ontological perspective positivism holds that

“an objective physical and social world exists independently of humans, and whose nature can be relatively unproblematically apprehended, characterized, and measured” (Orlikowski and Baroudi 1991).

Positivism is sometimes referred to as the “natural science method for social science research” (Lee 1989) and that researchers who adhere to this point of view have “physics envy” (Bennis and O'Toole 2005).

The methods most often associated with positivist research are laboratory experiments, field experiments, surveys, and theorem proofs (Galliers 1991). The case study method also can be employed in a manner consistent with the positivist philosophy (Sarker and Lee 2002; Pare 2004). Each of these methods typically relies on sample data that is thought to be representative of the population from which it is drawn. The sample data are analyzed with various statistical tools with the hope of rejecting the null hypothesis, which allows the researcher to claim support for the alternative, or research hypothesis. While statistical tools and rigor have contributed significantly to notions of rationality and modernity (Bernstein 1996), there is evidence that these tools have, at times, been misused in IS research (Pervan and Klass 1992). For example, some researchers have excluded concerns of Type II error (acceptance of the null hypothesis, when the null hypothesis is false), from their analyses (Baroudi and Orlikowski 1989). This has the effect of concluding some underlying phenomenon is not present when in fact it is.

Another important characteristic of positive methodologies is the ability of researchers to use sample data to make statements about characteristics associated with the larger population. This is called statistical generalizability, and

“it refers to the validity of a theory in a setting different from the one where it was empirically tested and confirmed. A theory that lacks such generalizability also lacks usefulness” (Lee and Baskerville 2003).

This is perhaps the most controversial aspect of the positivistic philosophy because it implies that there is a standard, generic underlying structure that, once revealed, can be assumed to be the law-like mechanism underlying the component of social life under consideration. The next section addresses this criticism in more detail.

### **4.2.3 Interpretive Philosophy**

The interpretive perspective counters many of the assumptions contained within the positivist philosophy because it possesses fundamentally different ontological assumptions.

“Interpretivism is thus an epistemological position, concerned with approaches to the understanding of reality and asserting that all such knowledge is necessarily a social construction and thus subjective” (Walsham 1993).

The view that the underlying elements of reality are social constructions represents a significant departure from the positivist tradition. This is because the interpretive philosophy places primacy on the shared meanings that are generated and negotiated by organizational actors. In short, these meanings, which structure action and organizational activities, do not exist independent of the socially constructed context. Thus, the interpretive approach holds that there are not underlying structures independent of human actors that can be revealed

by applying advanced mathematical models as found in natural science research (Lee 1999).

While positivism represents the primary research perspective within IS, the interpretive epistemological stance is becoming of increasing interest to IS scholars (Walsham 1995). In part this is due to the complex, dynamic, and evolving organizational environments, comprising both people and technology, that IS scholars find themselves striving to understand. To make advanced mathematical techniques work in this messy world, positivists are often forced to reduce complex problems to more basic and manageable elements. The effect of this simplification is that the unique context, which is an important part of the observed complexity, is often reduced out of the analysis (Checkland 1999). The interpretive position within IS research recognizes that understanding the complex holistic environment in which there are often contradictory meanings is central to advancing knowledge in our field.

#### **4.2.4 Critical Philosophy**

The critical perspective has garnered some interest in the IS research community. However, critical research within IS represents only a small portion of IS scholarship. Critical research holds a different philosophical position than positivism and interpretive research with respect to the role of the researcher. This category of research maintains

“... that the responsibilities of researchers do not end with the development of sound explanations and understandings, but also extend to the critique of unjust and inequitable conditions in society from which people require emancipation” (Lee 1999).

The critical research perspective has as its aim the emancipation of human beings from different forms of domination that occur in organizations and, more generally, society (Klein and Myers 1999).

Similar to the interpretive philosophy, critical researchers possess a social constructionist perspective. However critical researchers believe that inherent in organizational and societal arrangements are elements that naturally constrain some constituents while privileging others.

“Highlighting how certain kinds of interests, social practices, and institutional structures conspire to create power differences and how they silence and obscure other voices and alternative perspectives, the critical discourse aims to create the conditions in which the conflicts between different groups can be surfaced, discussed openly and dissolved” (Schultze and Leidner 2002).

One of the most frequently cited instances of critical research within the IS field is the work Ngwenyama and Lee where they examine communication patterns through an email system (Ngwenyama and Lee 1997). The authors analyzed a series of email exchanges and chronicled how certain actors emancipated themselves from distorted forms of communication. The emancipation came in the form of actors who were able to interpret the information richness of email messages and deduce a larger narrative that was not literally represented in the text of email messages (Ngwenyama and Lee 1997). This perspective has an explicit focus on how actors process information in organizations and then engage in sense-making activities based on the organizational context. Through this process it is possible for “organizational actors to formulate their communications to achieve specific outcomes” (Ngwenyama and Lee 1997) that might have the possibility of changing constraining and unjust organizational situations.

#### **4.2.5 Conclusion on philosophical approaches**

In this section we have discussed the three main philosophical approaches to methodological issues found within the IS literature: positivistic, interpretive and critical. Our discussion revealed that each approach contains unique

ontological and epistemological assumptions. Walsham captures the distinction between these approaches well when he writes,

“positivism is linked to the desire for technical control, hermeneutics and related interpretive approaches to a desire for understanding, but critical theory to a desire for emancipation.” (Walsham 1995).

While it is clear that most researchers fall within one of these distinct categories, there is a call to integrate multiple methodological approaches in IS research (Lee 1991). Lee argues that the two distinct approaches of positivistic and interpretive research share a common ground and can serve to strengthen the other. Although Lee makes a compelling argument for multi-method research, this approach has not made many inroads into the IS academic field as it has been convincingly demonstrated that there is a paucity of this type of research (Mingers 2003).

In this work we stay in the mainstream of IS scholarship by utilizing a single methodological approach, which is the interpretive perspective. Later in this chapter we clearly articulate our philosophical position along with our research strategy. But before we address these issues, we would like to weigh in on an important debate that has been ongoing within the field of IS research.

## **4.3 Toward a pluralist academic discipline**

### **4.3.1 Introduction**

During the last few years, distinguished scholars have published influential papers about the health and vibrancy of the IS field. Benbasat and Zmud published a controversial article suggesting there is a crisis in IS because the field lacks a distinct central identity. The authors suggest that we should correct this problem by focusing on “the IT artifact and its *immediate* nomological net”

(Benbasat and Zmud 2003). Other influential voices suggest we need to “put the IT back into IT research” (Orlikowski and Iacono 2001). Yet others voice concern because they see the IS research community becoming fragmented

“where there is insufficient communication between the different communities such that no core knowledge set exists. Individuals work in their own subcommunities without reference to other subcommunities” (Hirschheim and Klein 2003).

Evidence exists to suggest that these fragmented communities are not only separated on intellectual grounds but also geographically, as IS researchers are often “wedded to home-grown attitudes and perspectives” and often neglect contributions made by colleagues in other areas of the world (Galliers and Meadows 2003). These influential IS scholars bring up important issues for our community to debate and consider.

However, beneath many of these works resides the more basic issue of theoretical and methodological diversity within IS research. On one side of this debate we find those who view methodological and theoretical diversity within the IS field as a strength (Robey 1996; Mingers 2001; Alter 2002) and those who view it as a weakness (Benbasat and Weber 1996; Westland 2004). Those who view diversity as a problem suggest we should tighten the focus of our research community.

In our view this debate represents strength and vigor in our discipline and not weakness. We clearly fall into the first category of researchers who embrace pluralism as a major strength in our field. The primary reason is because as IS scholars our focus of study

“deals with systems for delivering information and communications services in an organization and the activities and management of the information systems function in planning, designing, developing, implementing, and operating the systems and providing services” (Davis 2000).

Inevitably much of our research is concerned with the messy and gray world of modern organizations. In this world there is no single theory or even a set of theories that can provide adequate explanations. Instead, we submit that it is through the process of piecing together the lessons learned and insights gained from multiple perspectives that we are able to really begin to understand the messy and complex world of contemporary organizations. In short, we as an academic community are able to provide more meaningful insight into our research and teaching because of the diversity within our field.

In the next section we establish why we have adopted an interpretive philosophical approach as well as issues relating to our case selection. However, before we expand upon the philosophical perspective that guided this research, we would like to state that on a more expansive level we are informed by a pluralist perspective and view diversity in methods and theoretical approaches as beneficial to our field.

## **4.4 Our philosophical approach and research strategy**

### **4.4.1 Introduction**

In this section we elaborate on our interpretive philosophical stance and the choice for the case study research method. In addition, we elaborate on the sources and types of data used in this research project along with the techniques used to collect and analyze it.



#### 4.4.2 Interpretive approach

In Section 4.2 we identified the three main philosophical positions found within IS research (positivistic, interpretive and critical). Our research philosophy is the interpretive perspective, which is increasingly becoming more prevalent within IS research (Walsham 1995; Palvia, Mao et al. 2003). As we established in Chapter 3, the analytical framework used in this project is based on ideas from neo-institutional theory. The notion that institutions are socially constructed was spelled out by Berger and Luckman in the *Social Construction of Reality* (Berger and Luckmann 1967). This view essentially holds that institutions such as organizational forms are constructed and given meaning and legitimacy by human actors. The social constructionist view holds that “people in organizations are viewed as active sense-makers, engaged participants, and creators of organizational life” (Schultze and Leidner 2002).

Since neo-institutional theory is closely linked with social constructionist thought, our interpretive perspective is consistent with the theory that informs this work. In addition, the framework we established in Chapter 3 is intended to capture important aspects of the process of deinstitutionalization and institutionalization by focusing on evolving forms of language. Klein and Myers write, “IS research can be classified as interpretive if it is assumed that our knowledge of reality is gained only through social constructions such as language, consciousness, shared meanings, documents, tools, and other artifacts” (Klein and Myers 1999). Again, our framework has an explicit focus on the evolving forms of language, which is also consistent with an interpretive philosophical position.

Finally, the basic aim of this research is to better understand the complex process of institutional change. The analytic framework developed in Chapter 3 serves as a lens that allows us to analyze the process of institutional change from a new vantage point. This type of research is not consistent with hypothesis tests

nor is our aim to emancipate organizational actors constrained in an unjust environment, which is consistent with a critical perspective.

#### 4.4.3 Case study strategy

The choice of a research method should depend on the type of research questions being asked and the nature of the subject matter being investigated (Galliers 1991). According to Yin,

“a case study from a research strategy point of view may be defined as an empirical inquiry that investigates a contemporary phenomenon within its real life context, when the boundaries between the phenomena and the context are not clearly evident, and in which multiple sources of evidence are used. It is particularly valuable in answering who, why and how questions in management research (Yin 1994).”

Once again, our research question in this doctoral study is:

***How do deeply institutionalized IT governance arrangements change over time?***

Our focus on *how* IT governance regimes change over time is clearly consistent with Yin’s declaration that “how” questions are particularly well suited to this type of method.

In addition to being a preferred methodology when “how” questions are the focus of the inquiry, Benbasat and colleagues suggest the case study method is preferable when few previous studies have been carried out on the topic (Benbasat, Goldstein et al. 1987). As we established in Chapter 3, little research has focused on examining the dynamic *process* related to the transformation of IT governance (Sabherwal, Hirschheim et al. 2001). In addition to being an under-researched area, our explicit focus on the process associated with the *transformation* of IT governance represents an important contribution to our

field because “process studies are fundamental to gaining an appreciation of dynamic organizational life....” (Van De Ven and Huber 1990).

#### **4.4.4 Conclusion on philosophical approach and research strategy**

In this section we established that we are grounded by an interpretive philosophical stance and have elected to use the case study strategy in this research project. Since this doctoral research project is focused on a “how” question and is exploring a research area in which there has been little prior work, we submit that the case study approach is the most effective and appropriate method. The purpose of identifying our interpretive philosophical approach and our method in the same section is to make explicit the general philosophic and analytic perspective that has guided this work. This is particularly important because our choice of case research can be approached from a positivistic or interpretive perspective and it is important to state which perspective is employed (Cavaye 1996). In the next section we discuss issues related to our specific case study.

### **4.5 Case selection**

#### **4.5.1 Introduction**

The empirical material for this research project was captured through a longitudinal study conducted at a state government within the United States. The focus of our study was the IT enterprise within the northwestern state of Montana. The majority of the fieldwork for this project was completed during the period of July 2002 through December 2003. Subsequently we have conducted follow-up interviews to clarify certain points and to ensure our interpretation was consistent with the participants’ understanding of events.

The time period during which our study took place is fortuitous because, by all accounts, the IT governance mechanisms within the state changed fundamentally during this period. This allowed us to follow first-hand some of the events that witnessed the delegitimation of one IT governance regime and the process that gave rise to a fundamentally different set of practices and structures for IT governance. However, there are important aspects of this transformation process that precede our analysis, which we were able to capture because the participants were not too far removed from these events. Moreover, we were provided with public and confidential documents that helped us contextualize the complex transformation story.

The case study we have focused on in this work is interesting on several fronts. First, we are able to identify clearly the genesis of the deep-rooted logic that guided IT governance when the first computers were introduced into government as well as the new logic that emerged to replace the historic IT governance regime. Second, this case captures the real-life issues, problems, and challenges faced by practitioners engaged in managing complex IT infrastructures in the public sector. The complexity and challenge encountered in our case was compounded by the deep-rooted organizational practices and the complex IT infrastructure within Montana's state government. Because this case takes place in the public sector, the deeply institutionalized arrangements were particularly rigid and buoyed by a long-standing history that served to reinforce a certain way of carrying out IT governance. Understanding the context of our case study is crucial in explaining the transformation process. Accordingly, we begin Chapter 5 by providing a detailed discussion of the rich context of our case.

The next portion of this chapter addresses important methodological issues relating to our data collection and analysis. Specifically we discuss issues regarding the collection and analysis of our data.

#### **4.5.2 Data collection and analysis**

In the winter of 2002 the CIO for the state of Montana was contacted regarding this project and agreed to provide unfettered access to the organization. Our empirical data was collected through multiple mechanisms including primary and secondary sources. The primary sources of data came from interviews conducted on site. The secondary sources included publicly available documents as well as confidential materials that were made available to us. The documents came in many forms including consultants' reports, internal audit documents, technical material related to the vast computer infrastructure as well as email correspondence concerning sensitive government issues. We also reviewed newspaper articles concerning major events captured in our study.

For this project we interviewed 31 people, many of whom were interviewed on multiple occasions. Most of these interviews were tape recorded and then transcribed. Most of the participants are public servants, and many were concerned about confidentiality. We also interviewed several private sector consultants who worked with the state over an extended period of time and did not want to jeopardize future consulting opportunities. In both instances we explained that the information will be published in a manner that will not reveal the identity of the person who made the statement. Based upon this guarantee many of the participants agreed to be tape recorded for future transcriptions. We conducted semi-structured interviews that lasted from 1 to 2 hours. This allowed us the flexibility to pursue fruitful themes that emerged during the interviews, but also allowed us to return to a general framework that was applicable across all of the interviews. In the instances in which the participant asked not to be taped recorded, notes were made following the interviews for later review.

Once the data was collected and the interviews transcribed we analyzed the data and attempted to organize it based on a sequential perspective. The first portion of our analysis was to consider how the events in this story unfolded over time. This allowed us to attempt to reconcile the different perspectives encountered.

Once we had an understanding of the sequence of events we confirmed our understanding with several of the participants.

After we developed a good understanding of the sequence of events, we transitioned our analysis to a more thematic approach. Initially, we scoured the data manually looking for themes that were consistent across the data. During this first phase of analysis we used concepts found within our theoretical framework as a general mechanism for organizing the data. This allowed us to organize the data systematically and also reveal themes that were not contained within the framework. Following the identification of general themes across our empirical data, we loaded our empirical material into Atlas.ti and coded the data based on the themes we identified previously. This proved to be of tremendous value because it provided us with a powerful way to scour a tremendous amount of data and to quickly retrieve all of the data around a particular theme.

## **4.6 Conclusion on Methodology and Case Selection**

This chapter has clearly established our research perspective in the social constructionist camp, which means we hold an interpretive epistemological point of view. An interpretive perspective

“...reminds us that the whole arena of social relations revolves around shared meanings, interpretations, and the production and reproduction of cultural and social realities by humans” (Orlikowski and Baroudi 1991).

In this doctoral project we approach the analysis of the transformation process from a holistic perspective and seek to understand the complicated organization-wide dynamics in its unique context. Because of this desire we have chosen the case study research strategy “because it allows an investigation to retain the holistic and meaningful real life events” (Yin 1994) that surround complex social phenomena such as the transformation of IT governance regimes in large organizations.

It is common for interpretive researchers to state explicitly that there can be multiple interpretations of organizational phenomenon and that the researcher's interpretation and theoretical perspective are not the only perspective available. This is an important point and it should be made explicit. However, we would also like to make explicit that we are theoretical and methodological pluralists and view this type of diversity as a major strength in our field.

In the next chapter we present the case study that is at the center of this research effort. In this chapter we have argued that analyzing the transformation process in its rich context is crucial to developing a deeper understanding of this type of phenomenon. Accordingly, we begin the following chapter by establishing important contextual aspects of our case study, including the political, social, economic, and technical characteristics within the research environment. We submit that excluding these important contextual attributes from our case would seriously compromise the analysis of the empirical material later in this work.

## **Chapter 5: Empirical Material**

### **5.1 Introduction – Technology in Government**

The case study described in this chapter chronicles the transformation of the organizing logic guiding the IT organization of a state government within America. Specifically, we illuminate the conditions that compromised the organizational legitimacy of the decentralized IT management logic, which had served as the ‘taken for granted’ ethos within our case study’s environment, and describe the process that gave rise to a new IT governance model. The first part of this chapter situates our case study in the larger context in which it is inextricably intertwined. Since the case study focuses on the governance of the IT function within the public sector, we begin by discussing the larger eGovernment agenda. We then transition into a narrower focus on the case context by providing an overview of the social, economic, political, and technological environment of our case. Following this, we delve into our case study, which spans four years and witnesses an organization’s struggle to change a deeply ingrained IT management structure, the failure of a \$63 million IS project, and a complex socio-technical process that has given rise to a new IT governance logic.

#### **5.1.1 The emergence of eGovernment**

At the dawn of the new century, governments across the globe are increasingly defined and constrained by their ability to apply information technology to the delivery of services to citizens (Dunleavy, Margetts et al. 2001). Technology’s promise to ‘reshape’ and ‘fix’ government is a notion that has captured the



imagination of citizens and politicians alike. The words of Elmagarmid and McIver (2001) capture this position well:

“Government transcends all sectors in society. It provides not only the legal, political, and economic infrastructure to support other sectors, but also exerts significant influence on the social factors that contribute to their development. Digital government, as a result, has the potential to profoundly transform citizens’ conceptions of civil and political interactions with government.” (Elmagarmid and McIver 2001).”

Because of technology’s “potential to profoundly transform” government, a subdivision of the academic literature has emerged that explicitly focuses on eGovernment. In recent years the field of eGovernment has garnered much attention from academics and practitioners alike.

The larger eGovernment agenda is focused upon the application of information technology to what are considered to be inefficient bureaucratic business processes for the purpose of rendering them efficient and responsive mechanisms for delivering services to citizens (Stamoulis, Gouscos et al. 2001; Eyob 2004). Essentially, technology is viewed as a ‘salve’ that can be applied to the perceived ills within governmental bureaucracies. For example, some writers within the eGovernment literature focus on how technology can transform society into electronic democracies that returns civic life to the control of the citizenry as opposed to leaving it in the control of special interests (Grossman 1995), while others look at the transformative impact technology might have on the notion of national boundaries and the nation state (Barrett 1997).

From a research perspective, studying the deployment, use, and management of IT within the public sector requires an explicit recognition of the unique context within public sector organizations. Essentially, IS researchers wading into public sector organizations must remind themselves of the long-held belief within IS studies that context matters (Avgerou 2001). The deployment of

technology and the crafting of eGovernment strategy “often require particular attention to the social and political elements” because “the main barriers are not technical but social and cultural” (Scott, Golden et al. 2004). Recognizing the unique nature of studying public sector organizations, Andersen and colleagues (2004) provide us with a set of eight general characteristics that frame governmental organizations, which are as follows:

**Adopted from (Andersen, Henriksen et al. 2004)**

- Labor Intensive
- Specific context constituted by the inherited political and regulated character of both goal-setting and performance
- Political actors setting the goals (not leaders and managers of public institutions)
- Diverse, broad, ambiguous, overlapping, and over-ambitious (with respect to impacts) goals are subject to change whenever shifting political coalitions find it opportune
- Strict rules and regulations as to how various tasks and jobs are to be accomplished, what is to be done, and what is not to be done, (e.g., the room for strategic maneuvering) is often very limited
- Rigid hierarchies and boundaries that cannot be crossed
- Less market exposure (indirect link to demand side), hence less incentive for productivity and effectiveness improvement
- Special work culture and expectations that public officials act fairly, responsively, accountably, and honestly.

With this in mind, the next section illuminates some of the important contextual elements of the public sector organization that is the basis for this case study. First, we will present an overview of the geographic and demographic characteristics of the state and then we will shift our attention to the rich and unique political context in which governance takes place within the state of

Montana. Following this we will provide an overview of the IT environment within our case site.

## **5.2 Context of Case Study**

### **5.2.1 Overview of Montana**

In many ways Montana represents a unique paradox within the larger American landscape. Geographically, the state is the fourth largest within the United States, but has fewer than one million residents and, therefore, is one of the least populated states. The effect of this is that it provides the state with what many consider to be its primary strength – its majestic open spaces, but also serves as its primary weaknesses – a small economic tax base. Observers of the state typically find the larger economic, political, and social debates swirling around these issues.

Geographically Montana spans 545 miles (877 km) from east to west and 340 miles (517 km) from north to south. The state is best known for its rugged, mountainous terrain, defined by the great Rocky Mountains. While the Rocky Mountains are the dominant geographic feature in the western third of the state, the Great Plains ecosystem, which stretches across the Midwestern United States, encompasses the eastern two-thirds of Montana. These geographic characteristics define important segments of the state's economy. First, the Plains, and the rich cattle grazing land they provide, have served as an important economic asset since the state's founding in 1889. The state's wealth initially derived from the large cattle ranches that emerged within the state. The Plains also provided a fertile and rich agricultural environment for growing wheat and other commodities. However, Montana's real treasure is the rich mineral resources and timber that have been developed throughout the state.

Cattle and agriculture were the foundations that built the early Montana economy, but it was mining and timber that sustained the economy throughout most of its history. The state has rich deposits of coal, copper, platinum, and gold along with vast timberlands. However, the introduction of more stringent federal environmental laws during the last 30 years has severely curtailed these extraction industries, which has had a profound negative effect on the state's economy.

The difficult economic environment within the state cannot be overstated. According to the 2004 U.S. Census, Montana ranks among the lowest within the country based upon several different economic indicators. In many cases, the only areas within the country that fall below Montana are the rural southern states, which have historically been centers of poverty in the country. Table 5-1 captures this in detail.

**Table 5-1.** Montana's rank by several economic indicators. Source: (U.S. Census Bureau 2004)

<b>Statistic</b>	<b>Ranking</b>
Gross State Product in Current and Real (1996) Dollars by State: 2001	48/50
Personal Income in Current and Constant (2000) Dollars by State: 2002	46/50
Personal Income in Current and Constant (2000) Dollars by State: 2003 preliminary	46/50
Personal Income Per Capita in Constant (2000) Dollars by State: 1990	43/50
Personal Income Per Capita in Constant (2000) Dollars by State: 2003 preliminary	44/50
Disposable Personal Income Per Capita in Current and Constant (2000) Dollars by State: 2002	47/50
Disposable Personal Income Per Capita in Current and Constant (2000) Dollars by State: 2003 preliminary	46/50
Disposable Personal Income Per Capita, Percent of U.S. Average: 1990	44/50
Disposable Personal Income Per Capita, Percent of U.S. Average: 2003	46/50
Persons Below Poverty Level—Rate by State: 2000 to 2002 Average	40/50

In recent years Montana has attempted to combat its decline into the lowest economic ranks within the United States by diversifying the economy. State and local governments have made a concerted effort to transition the economic base out of the extraction industries of mining and timber (in large part because of growing environmental restrictions) and into tourism. The state is attempting to capitalize on its natural geographic landscape to lure tourists from around the globe. While the economic foundations of the state, including cattle, agriculture, mining, and timber will always be present, it is widely believed that tourism is the economic future of the state.

### **5.2.2 Overview of Political Environment in Montana**

The political environment within the state plays a central role in this case study. Just as Montana has a special and rich landscape, its political environment is equally unique. During the 2004 Presidential election, the political pundits employed the terms Red States to describe states that supported Republican President George Bush for office, and Blue States for those states that supported Democratic Senator John Kerry. Montana is clearly a Red State, which implies a conservative tendency in matters politic and, in some instances, an overt hostility toward state government.

Montana's conservative credentials within the larger United States can be seen in the influence of one of the state's political stars. Former Montana Governor Marc Racicot served as Chairman of the Republican National Committee during the most recent presidential election, which placed him at the center of influence in political matters within the United States. While he was governor, he helped to set the general political tone by championing a move toward small government and the devolution of public services. His official website states,

“As Governor, Marc sought to improve government efficiency and bring government services closer to its owners, the people. He favored reducing government wherever possible and eliminated two executive agencies. The Governor's office staff was reduced to about half of the staff it had in 1977.”

The state's conservative nature is also embodied within its legislative structures. The state prides itself on having a 'citizen legislature'. This is accomplished by having strict restrictions on when the legislature can meet and how long the legislators are able to conduct the state's business once they do meet. As mandated within the state constitution, the legislature can only meet once every two years, and each legislative session can only last 90 days. Accordingly, the legislative environment is intentionally structured to force extended periods of time between legislative meetings to prevent the legislative branch from becoming overzealous in the life of the state's citizens. The result is that the legislature attracts part-time politicians who are expected to return to their communities and their regular life once the session is concluded. By default the legislative bodies comprise citizens whose 'regular' lives can accommodate a 90-day absence every other year and, thus, legislators tend to be retired professionals who view their political careers as a hobby.

Between the structural arrangement created by the constitution and the clear conservative leanings of many within the state, there is a widely held belief that the less government does, the better off the citizens will be. When asked if there is a difference between how Republican and Democratic legislators looked at technology, one member of the state legislature said,

“This state has a very strong contingent of Republicans who are right-wing no government. And so it isn’t that they hate technology per se, they hate government. There’s a difference, right? But because they hate government, they particularly don’t want to spend any more on technology. It’s very sad as far as I’m concerned because I think civilization as we have it needs both government and technology.”

A conservative legislator described his colleagues as possessing “a general malaise about the viability of government.” Another legislator believed that point of view was not determined by political sensibilities, but instead has to do with the fact that many legislators hailed from ranching or farming backgrounds, and believed that civil servants are living off the hard work of the state’s populace. A civil servant said,

“They come in off the ranch and they think they work very hard and nobody else works as hard as they do. And they have no respect for education or experience. It just doesn’t mean anything to them. They just think that it’s sort of like a gravy train and it’s all in Helena (the state’s capital).”

Understanding the special context that exists in our case site is crucial to understanding the case study we present later in the chapter. Our study takes place in the complex and messy stew of Montana’s harsh economic decline, a structural constitutional arrangement that calls for a citizen legislature that meets once every two years, and a population with conservative tendencies.

### **5.2.3 Overview of technology within Montana**

The technological environment within Montana is the epitome of the concept of a ‘heterogeneous portfolio of applications’ that is so often discussed in the IS literature. The contemporary environment has a wide range of platforms, from IBM mainframes to a mid-tier infrastructure based on Digital’s Alpha chipset to the ubiquitous Windows desktop operating systems. In addition, the scope of IT

within the state is significant, with annual IT-related expenditures of approximately \$160 million annually.

The evolution of Montana's IT capabilities parallels the development of computing in large organizations. Initially the state's computing needs were handled by a large mainframe computer. A pioneer in the use of technology within the state government said,

“We had a Honeywell computer that took up a thirty-foot by four-foot by four-foot space in the middle of a long room. A couple of tape drives with reel-to-reel tapes, [a] card reader, and printer stood along the wall.”

The mainframe was primarily used to handle state payroll and a few budgeting-related issues. Within a few years the state had several mainframes that were deployed in various agencies. One participant observed,

“In the early days, back in the late '70s, the Department of Education had a mainframe, the Department of Administration had a mainframe, the Department of Transportation had a mainframe – everybody had a mainframe.”

The next phase in the state's technology evolution saw the emergence of local area networks (LANs), which were largely a byproduct of the widespread availability of PCs. It became common practice for individual state agencies to bring up a LAN unique to that entity. A longtime network administrator described the emergence of LANs by saying,

“I think it was in '82 when [LANs] hit us and started becoming prevalent in the state. It was about '85 that we started seeing LANs being developed pretty extensively across government. So from [the] mid-80s to about 1990 was the period when we were connecting all these PCs together and it was basically a free-for-all.”



The LANs complemented the existing mainframe infrastructure, rather than replacing it. LANs also moved computing closer to individual employees in the government. A former agency director stated,

“I received my first computer in 1984. I actually had a computer, a PC on my desk after having worked there for 12 years and it was almost like a status symbol.”

If we can sum up the emergence of LANs across government as “Let’s hook them all together,” then we refer to the next phase in the state’s evolution, the client server phase, as “Now let’s start trying to manage them.”

In the early 1990s it was recognized that all of the IT resources that had grown across the state needed to be managed. State employees had a growing desire to gain access to information that was being stored on individual PCs throughout state government and an increased awareness of the security issues surrounding the enlarged IS infrastructure. This desire and awareness accompanied the introduction of powerful client server networks that could help facilitate the sharing of information.

First the state introduced Novell Directory Services (NDS), which helped to deal with security-related issues such as limiting user access to specific confidential data-sets. Next the state introduced servers that could store, and then make available, information that was created and manipulated on individual PCs. The servers would allow government employees to continue to create and manipulate governmental data on PCs, but the information could be cached on the powerful storage servers and made available to other governmental users.

The most recent phase in Montana’s computer evolution concerns the move toward internet-based systems. This phase coincides with the larger move toward electronic government (eGovernment) where information is available to citizens anytime and anywhere. An important element within our case study is

the desire of civil servants and elected officials alike to introduce a statewide eGovernment agenda. Later in this thesis we provide a more detailed discussion of this effort.

#### **5.2.4 Conclusion on context**

This section described important aspects of the economic, political, and technical elements related to this case study. This important contextual exploration reveals a larger environment that is in economic decline; a political environment with a conservative agenda, small government, and decentralized arrangements; and a technological environment that has grown in importance over time. What follows is a description of the breakdown of the historic IT governance arrangement and the process that introduced a new conceptual scheme for managing and coordinating the vast and complex information systems within the state.

### **5.3 Case Study**

#### **5.3.1 Introduction**

The case study that follows provides insight into a major transformation process that is related to the structure and management of the IT function in Montana's state government. The case study is organized into four sections. First, we establish the historical structure of the IT function and the governing logic that had dominated the governance of IT activities. Next, we identify the growing dissatisfaction with the larger IT enterprise within the case site. We then transition into an important component of this work: the failure of a major IS project that illuminated the breakdown of the IT function. Finally, we conclude with the organizational response to this breakdown, which gave rise to a new model for managing the IT function.

### 5.3.2 The structure of IT governance – The “good old days”

The state’s IT governance arrangement had long been decentralized. Historically, individual agencies were responsible for the selection, deployment, and management of their information systems and, according to one respondent, “the agencies would basically do their own thing.”

Although a few voices within the legislature and the civil service called for curbing the decentralized nature of technology management, the efforts did not gain widespread support. Several participants in this research project cited the robust resistance that existed across the civil service and the applicable legislative bodies.

Throughout the 1980s and 1990s Montanans fiercely resisted any governmental reorganization efforts that attempted to centralize governmental activities. Many of the reorganization efforts during this period ultimately had the contrary effect of further devolving activities and decision-making responsibilities into individual agencies. One participant summed it up clearly when he said,

“From a cultural point of view Montana is not set-up for centralization. Most people in government would rather be able to just say very independently, ‘Just leave me alone.’”

This strong ethos of decentralization was supported by the unique context of Montana and was reinforced by larger trends on the national level. First, the move toward a more decentralized government structure is one of the dominant public sector themes of the past thirty years within the United States. In part, this is a consequence of the national distrust of the Federal government, which was a byproduct of the government’s failure in Vietnam and President Nixon’s departure from office, both of which gave a tremendous boost to those calling for greater decentralization across government (Shafritz and Hyde 1997). The move toward decentralization accelerated with President Reagan’s emergence onto the national political scene in the 1970s. The Reagan doctrine called for

devolving decision-making away from the Federal government and back to the states and also to run government like a business. While the notion of approaching governmental problems from a business perspective had been championed by some politicians for years, it emerged as the dominant operational paradigm under Reagan's watch (Maier, Smith et al. 2003). The Reagan legacy of devolution and the application of business logic into the private sector is an important theme permeating this research project.

One of the greatest influences in public sector management within the United States during the 1990s was a book called *Reinventing Government* by Osborne and Gaebler. This influential book can be thought of as an extension of Reagan's desire to introduce business ideas into the public sector. However, the authors had in mind a special subset of business ideas focused upon entrepreneurial thinking. They describe the optimal governmental structure as one that is "...lean, decentralized, and innovative" (Osborne and Gaebler 1992) and that devolves decision-making to those who can best evaluate and capitalize on the threats and opportunities that emerge in a dynamic society.

The influence of their book can be attributed in part to two readers who were eagerly searching for guiding principles for government reform and were in a unique position to act: President Bill Clinton and Vice-President Al Gore. Osborne and Gaebler's book served as the foundation for the *National Performance Review*, which aimed for the complete restructuring of the Federal government. Clinton and Gore were driven to action because

"Public confidence in the Federal government has never been lower. The average American believes we waste 48 cents of every tax dollar. Five of every six want "fundamental change" in Washington. Only 20 percent of Americans trust the federal government to do the right thing most of the time – down from 76 percent 30 years ago" (Gore 1993).

The call for introducing business principles into government is not just a Republican phenomenon as is often maintained. Instead, using business management principles to enhance government's effectiveness has been championed by members of both major U.S. parties, Republican and Democrat, and has become an important discourse across public administration. As we will see later in the case study, the language of business is regularly drawn upon by members of the legislature and civil service alike.

The second element supporting a decentralized IT governance arrangement within Montana was widespread recognition that individual governmental agencies were becoming increasingly specialized and heavily reliant on expert knowledge within very specific technical domains. It was widely believed throughout government that the experts who resided within these individual governmental agencies were much better suited to assess the individual agency's needs and match these needs with the most appropriate technology.

“One of the troubles that government has different than a corporation is that what Fish, Wildlife, and Parks needs to do is wildly different from what Health and Human Services needs to do even though they happen to work for the same state. But their rules, their regulations, their businesses are not in any way connected and, frankly, other than they could be providing something to the same person, right, the same citizen, when you stop and think about it, the services provided are off the charts different.”

Because of the distinct differences between the various agency requirements, a common supposition during the 1980s and 1990s according to one participant was that, “We know our business needs. We know what we need, so stay out of our way and just let us do it.”

In addition, the larger discourse regarding technology during this period focused on empowering end users (Jessup and Valacich 2003). The emergence of PCs, LANs, and client server technology during the 1980s and 1990s made this

possible. Initially, management of an agency's IT resources was largely handled on an ad hoc basis by agency staff who showed an interest and aptitude for technology. However, at a certain point the burgeoning technology and increasingly sophisticated demands by end users resulted in the establishment of formal agency IT functions that emerged throughout the state's government. These new agency IT functions were largely given full responsibility for the selection and deployment of the technology.

However, even in this strict world of decentralization, a few elements related to the IT infrastructure remained centralized in the Information Services Division (ISD). Specifically the communications infrastructure for voice and data fell under its control. The ISD also was asked to identify the standards and protocols to be used across the state. However, this central authority was largely considered to be ineffective at developing statewide standards and protocols because it lacked resources and prestige to be effective. In addition, as a former member of ISD said,

“I think one criticism of the IT organization in the state during the past twenty years is that we tended to be the data heads and not necessarily customer focused. You know we didn't worry about how our customers perceived us or our customer service.”

Because of the low status given to this central group and the poor attention paid to customer service, ISD was often ignored when issues other than the backbone networks were under consideration. In addition, there was considerable uncertainty as to exactly what authority was given to the central organization. One participant said,

“Even though we have always had some statutory control over certain things (standards and infrastructure), it has always been somewhat murky on exactly what that is, I think, both from our perspective and the agencies' perspective.”

A consultant who is intimately familiar with the evolution of the IT function said,

“the old ISD had a good group of people but their ability to influence decision making, bottom line, was nothing. They couldn’t do anything because they didn’t have signature authority to approve or not approve.”

This relegated ISD to a “support organization” that could recommend standards for interoperability but lacked effective enforcement mechanisms to mandate the standards. The low status of the central authority coupled with a lack of legislative and executive clarity on IT matters served to strengthen and reinforce the decentralized arrangements.

### **5.3.3 Rumbblings: The Calm before the Storm**

During the 1990s, information technology became a more prominent and important part of the larger conversation about reshaping government in Montana. This was supported by the greater familiarity and exposure to information technology outside government by citizens, civil servants, and legislators. In addition, the hype associated with the dot-com era further enhanced the perception that IT can fundamentally reshape government to make it more responsive to citizen needs. A senior civil servant said,

“In 1994 or 1995 the Internet basically changed the whole landscape of things. You could be hiding under the biggest rock in Montana and you still would have heard about what the internet is and have an appreciation for its power. I think that phenomena changed everyone’s awareness for how important IT is and how this is going to change government a lot. Our old time legislators who had long been in denial even started saying, “Man, this is changing so much. I’ve got people in my district now that want more access to the internet and we don’t have it. How do we do that?” We have to start paying a different level of attention.”

Legislators and civil servants with oversight responsibility became more involved with IT-related issues because of their growing recognition of the importance of the larger IT enterprise. This new-found interest stood in stark contrast with the historic view of technology within the state's government. Until now the IT enterprise was largely ignored by governmental decision-makers, many of whom had previously held Nicholas Carr's position that IT is a commodity input into governmental processes (Carr 2003). Many legislators assumed that IT issues were largely generic issues that did not require involvement from the higher levels of government. A member of the civil service said,

“The legislature had been mostly farmers, ranchers, some teachers and other people. When we talked to them about IT, their eyes would just sort of glaze over. The legislators would say, ‘Don't talk to us about that. That's sort of like talking about a typewriter it's what you need to do your job.’”

Essentially, the dot-com era had the effect of washing away the indifference political leaders held for the state's IT activities and brought issues related to IT governance “out of the backroom and into the boardroom.”

This change in status for the state's IT activities drew interest from some of the most respected civil servants and legislators within the state, which resulted in the establishment of a formal statewide eGovernment policy:

“It is the policy of the state that information technology be used to improve the quality of life of Montana's citizens by providing educational opportunities, creating quality jobs and a favorable business climate, improving government, and protecting privacy and the privacy of the information contained within the systems. In doing so, the state's information technology systems should provide public access to information contained within the systems to the greatest extent possible, within the constitutional and statutory protections granted to private information.”



A senior civil servant said that

“EGovernment is both an initiative and a goal. The initiative is to move as many government services online as we can. The goal is to get to the point where there is a single web contact point where citizens can access all of our services.”

At the center of the e-Government policy was a basic requirement that data had to be shared across government and that citizens should be able to conduct business with all facets of the state through a single website.

For the first time in the state government’s history, the imagination of a large portion of senior officials had been captured by the promise of technology. However, many of these officials readily admit that they lacked any sort of real experience working with or providing oversight on IT projects. An agency IT director said,

“The legislature relies on a few of their colleagues to provide technical advice. And a lot of those folks aren’t even close to being qualified to do that. So that’s a little scary for those of us that are in the business and know it inside and out.”

One state legislator who owns a timber-processing facility said, “I’m the kind of guy who wants to see it on a truck ramp. When it drives up on a truck, I know I’ll see it. I’ll know what I want.”

This lack of familiarity with the intangible nature of the government’s IT infrastructure and governance issues was common across government. As the interest in technology grew and ambitious plans for utilizing technology were drawn up, many of these officials became increasingly frustrated because current capabilities and architectures precluded the state from embarking on the journey to the promised land of an interconnected government and citizenry. In

addition, the desired capabilities could not be “ordered and then delivered on a truck.”

The frustrated lawmakers and civil servants didn't understand why their desire for an interconnected government could not be met. Senior legislators observed that many of their colleagues either possessed or were developing a general skepticism about what they were being told regarding technology. One high-ranking legislator captured the frustration when he said,

“The overall belief within the legislature is that when a proposal is brought forward and [legislators] are asked to approve funding I think there's a high level of cynicism that the legislature is being given the full story. Now it may be that the people proposing it don't know the full story, but the cynical part is if they know it, they're not sharing it. They don't tell you the full cost of the system and they don't tell you the implications of implementing the technology for the different agencies.”

In response to the growing concern on IT governance issues, the legislature acted in 1999 by appointing a committee

“to review and assess Montana's governance, policy, planning, and budgeting structures and processes associated with the state's investment in IT and to recommend appropriate changes and processes that will enable the legislature to make policy decisions relevant to IT budget issues” (Montana Legislative Fiscal Division 2000).

The newly formed committee, which came under the jurisdiction of the Legislative Finance Committee and was directed to submit its report to the legislature and the governor's office, was charged with addressing two main issues. The first issue was tightly focused on the need to account for the state's aggregate IT budget. The second issue, which evolved into a more sweeping agenda, was specifically intended to address the frustrations experienced by the

legislature as the committee was charged with determining “how best to structure, for the long-term, how state IT resources are governed to satisfy legislative concerns and intentions” (Montana Legislative Fiscal Division 2000).

In searching for explanations as to why data could not be shared across governmental agencies, the committees came to a few firm conclusions. First, the decentralized logic that had governed the management of the IT function prevented effective communication among the 16 governmental agencies that possessed the data that needed to be shared. Many of the civil servants we interviewed stated that the silos between the various agencies “are very thick and very old” and that not much thought had been given to sharing data across the enterprise. A senior budget official noted that the silo effect was compounded because

“the funding model does not lend itself well to integration of resources. Each agency is responsible for providing the service to the citizen and they want complete control over their core business. It is hard for them to rely on another agency that is budgeted separately because they have no control over them. It is a mindset that is tough to change.”

A consultant supported this point when he said,

“There are some of the greatest data sets out there that if meshed together could do some wonderful things for people. But agencies just hesitate to work with each other.”

Another committee finding was that multiple, redundant IT development projects were simultaneously underway across government. A senior civil servant who advised the committee said that she began to ask,

“Do you really need to have this enormous spending in silo number one since the same capabilities are being developed in the larger enterprise? The agencies just did not get it.”

Another persistent frustration among the legislators was that no single person could stand before the legislature or its appointed committees and offer a comprehensive assessment on the state of IT across government. Several elected officials told us of the general frustration felt within the state's legislative bodies because there was no clearing house where the elected bodies and senior civil servants could obtain information about the status of IT projects and recommendations on IS issues. The lack of a clearing house for IT issues also indicated that no one person or organization had a clear idea of what projects were underway across government and how those projects fit into the larger IT landscape. A senior civil servant stated:

“The legislature was totally frustrated over not having one person who could explain technology projects to them. They never had a single person that had an overview of the whole state and how a project might fit in as a whole. I think everyone would agree that it was born out of frustration of legislators who didn't feel they had the information they needed to make good decisions on spending a lot of money on these large ticket items. The legislators started seeing things in the newspaper of IT projects that weren't working so well and it only took a short time before they wanted to have one person focusing and making recommendations on these projects.”

Historically, the IT consultancy role for the legislature had been filled by outside vendors who were experts in the area under consideration, but as in many consulting relationships, they were often experts with an agenda. Several participants attributed part of the state's problems to consultants who had been intimately involved with IT issues over time. A participant summed it up this way.

“What ends up happening is an agency brings in consultants who are sophisticated and savvy. The consultants immediately take the individuals from the agencies, which are not trained in these technologies, or contract negotiation, into the weeds. The individuals from the agencies do not want to admit they are in the weeds, they do not want to admit they are lost, so they just go along blindly with the consultant’s recommendations.”

The committee thought the legislature and the governor’s office would be well served with an internal expert who could provide relatively objective insight and guidance.

#### **5.3.4 Different levels of sophistication across agencies**

A consistent level of technical and managerial expertise was lacking across the various governmental agencies. Some agencies had grown to be sophisticated technology users both because these agencies had the extra financial resources to purchase more sophisticated systems, but also because they had more detailed requirements from the Federal government defining the capabilities they must maintain to continue to receive funding. Agencies such as Health and Human Services, and Transportation had long been managing and directing advanced IT applications. Other agencies, in contrast, had neither the externally mandated requirements nor the budgets to permit the deployment of more sophisticated technology applications.

The committee also concluded that just because some agencies historically had used technology in sophisticated ways, did not mean all was well. Specifically, the committee learned that some of the agencies that were regarded as more sophisticated users of IT had managerial problems, while other agencies had questionable relationships with certain vendors. Several participants believed that in some cases vendors who had tight contractual relationships with the state had a stranglehold on agencies with large budgets. A senior civil servant involved with budgeting stated in reference to one large governmental

department that, “They are very comfortable with their vendor. He used to work with the department. I mean there is a relationship there that is less than arm’s length.”

In many cases vendor contracts had been secured directly with the agencies, and some committee members questioned how contractual relationships for major IT projects could be made without larger institutional oversight.

The committee’s study made clear to all involved that IT governance within the state must change, but the lingering and more troubling question was “How do we fix this mess?” However, there was considerable uncertainty as to which direction to go. In response to this uncertainty, the committee began to look outside the state of Montana for different ways of organizing and governing the state’s IT activities.

“We had staff support from the legislative fiscal division and they spent a lot of time surveying the other 49 states and learning how they handled these problems.”

Although the committee surveyed all the other 49 states, they focused on seven states located in the same geographic region: Washington, Idaho, Wyoming, South Dakota, North Dakota, Colorado and Utah. These states shared similar economic, political, and social characteristics with Montana. While there was uncertainty as to which direction to proceed, the committee was unanimous about one item: regardless of which IT governance model Montana adopted, there must be accountability. As one participant stated, if something goes wrong we want “one throat to choke” instead of the amorphous and unaccountable leadership structures that had come to characterize IT governance within the state.

### 5.3.5 One Throat to Choke

In its search for a new IT governance model that possessed both accountability and coordination, the committee analyzed other states' IT governance arrangements, hired several consultants to analyze and address the committee's multiple points of concern, and invited highly regarded senior IT officials from other states to visit Montana and offer recommendations. The committee quickly learned that there is no shortage of mechanisms for coordinating an enterprise's IT activities.

In analyzing various solutions to the state's problem, the committee considered several different arrangements, which varied considerably in the degree to which the new office or officer would have control over IT operations. A review of the meeting minutes and discussions with the participants showed the options considered by the committee spanned a broad continuum. At one extreme was an arrangement where a figurehead within the governor's office would be restricted to making recommendations on policy without the ability to enforce such policies. On the other end were models with a centralized organization accountable only to the legislature and the governor. The committee also considered whether the state should get out of the IT management business altogether and outsource most IT activities to the private sector.

While the larger debate was unfolding as to the degree of influence the new position would wield, the committee members involved were spending increasing amounts of time studying success stories in other states. One consistent theme that emerged was that most states had instituted a Chief Information Officer (CIO) within the senior civil service hierarchy. The CIO model is the dominant model in the state government IT management landscape in America (Lawrence 2003). Depending on the state, the CIO carried differing levels of power, but in almost all cases the CIO was an influential figure whose views carried tremendous weight. The committee quickly conclude that they,

too, wanted a CIO of their own, but the debate as to the degree of power bestowed upon this new officer was becoming increasingly controversial.

Initially, many of the state's agencies didn't view the committee's investigation to be a threat to their power or operations. The state had initiated many reorganization efforts over the years, but few if any substantive changes had taken place. However, as the substantial scale of change the committee was considering began to leak out, various agencies made it known that they liked the decentralized arrangement that had served as the historic basis of operations. The lobbying effort intensified when agency directors contacted the various legislators with whom they had established good relationships and attempted to persuade them to avoid significant changes to the existing IT governance arrangement. Typically, legislators were sympathetic to the agencies' desire to stay independent of a central authority because they viewed the centralization of governmental activities as anathema to their conservative political sensibilities.

After a year of analysis and deliberations, the committee arrived at its conclusion: a fundamental reordering of the state's IT governance program. Specifically, the committee concluded that there must be some centralization of IT management and the state's technological resources in recognition of the problems created by redundant systems. The new arrangement would have at its center an individual charged with responsibility for the larger IT environment and authority over major IT projects, regardless of the governmental agency that would host the technology. These changes were directly aimed at curtailing the redundant systems-development projects revealed during the committee's investigation. In addition, the committee's intent was to prevent individual agencies from engaging in multimillion-dollar IS contracts by requiring the CIO to approve all major contracts. The vision of the committee was that the central figure would not only monitor the overall IT process but would also monitor individual projects to ensure they fit into the overall scheme. This was a major change from the historic IT governance arrangement in which agencies were



granted a great deal of autonomy. However, this was not the only major change the committee had in mind.

The committee was aware that previous reorganization efforts were ineffective and largely meaningless. A civil servant stated,

“Over the years there have been a lot of different reorganizations for whatever reason, and that put a bad taste in a lot of peoples’ mouths because they didn’t mean anything. They reorganized for no reason, never changed anything and so now when we talk about possibly realigning people again a lot of people are saying it doesn’t matter”

The committee, which was composed of seasoned legislators, was also aware of the difficulty of inducing change in the civil service. Accordingly, it was their ambition to introduce their proposal in the form of law.

“The committee recommends the 57<sup>th</sup> legislature enact a new section of law dedicated exclusively to laws associated with information technology. This section should begin with legislative guiding principles and consolidate all governing statutes for IT”

The committee’s recommendations resulted in Senate Bill 131 (SB 131), “The Information Technology Act” (ITA), which introduced sweeping changes to the IT management environment. By attempting to introduce the new IT management structure into law, the committee departed considerably from previous reorganization efforts. The bill called for the creation of a new central IT agency, the Information Technology Services Division (ITSD); the establishment of a statewide CIO; the development of statewide IT policies and an IT strategic plan; and the appointment of a board of directors to provide oversight of the state’s IT activities. In addition, the bill explicitly gave oversight for all IT projects to the CIO’s office. The bill also gave the CIO’s office responsibility over each agency’s IT spending and IT project

management. Additionally, the bill required each agency to submit IT plans to the CIO's office for approval. The arrangement called for under SB 131 envisioned the CIO's office as coordinating IT activities, establishing government-wide standards, and providing oversight of agency IT projects. However, most of the IT development and day to day administrative activities would continue to take place at the agency level.

Once the agencies learned that the legislature was intending to change the IT management landscape through the introduction of a law, the lobbying intensified. Many agency IT directors, senior civil servants, and legislators did not believe the bill had much of a chance of passing due to the conservative nature of the legislature. However, one of the Republican Party's most influential members, Senator Mike Taylor, became a champion of the bill. His unquestionable conservative credentials gave the bill instant credibility. Taylor was widely respected for his success in the private sector prior to entering politics, and many considered him to possess a first-rate mind along with political savvy. Once Taylor became the champion and clearly articulated the need for change, the bill was almost certain to pass. A civil servant who was skeptical that the bill would get through the senate said,

“I will give Senator Taylor credit for that because he's the one that pushed it through. He had a real interest in IT and he went out and got it done”

SB 131 became law in January of 2001 and initiated aftershocks throughout the Montana's IT management community. Soon after passage, the governor's office began a nationwide search for the state's first CIO. After interviewing several applicants, the governor's office hired its first CIO in August of 2001. The search committee selected a man named Brian Wolf who possessed significant private sector experience. Wolf began his tenure in October of 2001.

Many who participated in the crafting of the legislation that became SB 131 stated there was a bias toward an individual with private sector experience. Many of the states the committee had studied had CIOs with high levels of private sector experience. Montana's conservative legislators felt that someone from the private sector would help move the government in the direction of operating more like a business and would also introduce a fresh perspective into what was perceived as a stagnant environment. In addition, it was widely believed within the legislature that a person from the private sector would have a more sophisticated view of the use and management of technology.

The committee's model used a federal organizational structure for the IT function; that is, the CIO would be responsible for approving and coordinating IT, but most of the day-to-day administrative and development activities would take place in the periphery. As we stated in Chapter 2, in federal arrangements, enterprise-wide standards concerning protocols and architectures can be established and enforced, while individual agencies are able to innovate and make timely decisions based on their functional expertise. Many Montana legislators believed that, with the passage of SB 131, the transformation of the IT organization from a decentralized arrangement into the federal model was complete. After all, the legislature had spoken and it was now state law. Unfortunately, the larger bureaucratic organization did not quite see these matters so clearly.

### **5.3.6 A Recalcitrant Bureaucracy**

Brian Wolf, the new CIO, assumed office on October 1, 2001. Concurrently, the new Information Technology Services Division (ITSD) was formed. The new agency was staffed with personnel from the old central agency along with personnel who had previously worked for other state agencies. The new CIO began making the rounds to the 16 governmental agencies whose IT activities now fell under ITSD's purview. Almost immediately, most agencies began to

push back and in some cases simply ignore the requests from the CIO's office. A member of the new agency said, "To be honest, almost every agency I work with had a problem with the mandates coming out of our office" Another participant said, "There is no doubt the state of Montana needs a CIO, they just don't want one"

Part of the resistance was due to a lack of clarity as to what exactly should be reported to the CIO's office and the timeframe in which this should take place. Further complicating matters, the CIO's office did not have a strategic plan for IT; nor did it have the policies and procedures in place that SB 131 explicitly called for. The new CIO believed that the lack of a strategic plan for technology in government, and the articulation of statewide policies and procedures, placed the agencies under his jurisdiction at an unfair disadvantage as there was not yet a clear set of expectations. Accordingly, the development of these documents was a high priority for the new agency.

In addition to working toward a strategic plan and a set of governing policies and procedures, the new CIO set out to prove himself across government.

"There were a lot of doubters out there waiting to see what he would do. We've seen your talk, we've seen your real nice PowerPoint slides, but what are you going to do? We've seen it, we've heard it, but where is it?"

In addition to establishing himself within the senior-civil-servant hierarchy, Wolf spent a significant proportion of his time putting out fires that typically came in the form of angry IT staff from agencies across government. He continually fielded calls and visits by agency heads who were outraged at the reporting requirements that were being placed upon their staff. Meanwhile, Wolf was developing a deeper and more nuanced understanding of the scope and status of various IT projects across state government.

The new CIO and others detected resentment about his strong private sector experience; some viewed Wolf as a hotshot outsider who didn't understand government:

“Who is this upstart from the private sector? He is just going to be here for a year or two and then he will be gone”

The new CIO's critics also thought that he would surely return to the high-paying private sector after he completed a year in the new job. Many of these critics believed that all they had to do was wait the new guy out and then things would return to the 'good old days:

“They pick different ways to resist. A lot of them will just slow roll you and other times they will get in your face”

A senior civil servant who opposed the CIO's office stated,

“You have no idea how we can slow things down. We can slow things down for a whole administration. And with that in mind, you can understand how the change process can be very, very slow”

Another civil servant said,

“There is a long and extensive bloody history between the agencies and any central authority. I hear comments from insiders and they refer to themselves as a confederacy, as rebels, who are not going to fall under the line of the new CIO”

While the bureaucratic battles were underway and the resistance to the new ITSD was stiffening, few could foresee what was about to happen next.

### 5.3.7 The Breakdown – POINTS

During the 1997 legislature, the state government of Montana approved a plan submitted by the state Agency of Revenue to begin the development of a new computerized tax system. The new system was called POINTS, Process Oriented Integrated Tax System. The introduction of POINTS coincided with a major business process reengineering (BPR) effort that aimed to

“strengthen customer service through redesigned processes and enhanced technology; and improve the net financial results for the state by collecting what is owed from taxpayers more efficiently” (Legislative Audit Division 2001).

POINTS was designed to replace

“20 standalone, autonomous computer systems previously used to support business functions that could not exchange information, were not year 2000 compliant, were poorly documented, and contained extensive amounts of redundant data” (Legislative Audit Division 2001).

The new tax system was to be designed in a cooperative arrangement where the Department of Revenue would share responsibility in the development with a hired consulting firm.

According to the Legislative Audit Report, the project encountered major problems from the beginning. During the early development of the system, personality problems emerged between the state employees assigned to the project and the consultants. During the implementation phase, agency personnel experienced considerable difficulty migrating data from the legacy systems to the new POINTS project. In addition, outside experts determined that the system had over 200 known defects of which 91 were deemed ‘mission critical’. Even though mission-critical defects were identified, the system was put into service in December 1999 because the civil servants and the consultants believed the

defects could be addressed in a timely manner. However, by September 28, 2001, there emerged over 552 known defects within the system, of which 205 were deemed mission critical. As a byproduct of the technical problems, there were also widespread customer service problems. The Legislative Audit Report states,

“In general, staff indicate customer service seems to be less effective with POINTS because users either cannot find information due to defects, or the system information is too inaccurate to be useful for timely response” (Legislative Audit Division 2001).

The breakdown of POINTS occurred within the first 3 months of the new CIO’s tenure. The POINTS failure was brought out of the darkness and into the public realm in part because there was now a CIO overseeing IT projects. While he was assessing the IT project landscape, Wolf learned about the dubious status of the POINTS project and initiated action to determine the project’s viability. In addition to the comprehensive review by the CIO’s office, the CIO hired independent experts to assess the project’s likelihood of success. The CIO’s office and the consultants overwhelmingly concluded that the project was doomed and that it should be scrapped immediately. One consultant, who was responsible for determining the viability of POINTS, described to us the failed development effort as nothing short of “amateurish”.

In testimony before the legislature, the CIO said,

“We are talking about the state’s revenue engine. It is broken and we are all accountable to see that it gets fixed”

Soon after testifying before the legislature, the CIO, with the legislature’s approval, terminated the POINTS system.

The total cost of the failed project was estimated to exceed \$63 million, a large sum for a state with such a small economic base. In addition, the POINTS project was the first IT project to be bonded: the money to fund the project was to be raised through the selling of bonds in the public financial markets. The bonds are to be repaid in full during fiscal year 2008. Finally, it was determined that the POINTS application could not be used – either in whole or in part – by the replacement system, which is currently under development. A legislator stated,

“We will be paying that off in 2008 and we will have nothing to show for it. So we are going to be paying for a system that is no longer even on the drawing board, it is out the window”

A senior civil servant followed on by saying,

“POINTS was such an incredible waste of money and it has set us back politically in terms of the legislature”

### **5.3.8 Organizational Response to Breakdown**

The failure of POINTS soon became the focus of outrage from multiple constituencies across the state. In most economic environments a \$63 million dollar loss is painful; this is particularly true in Montana. As discussed in Section 5.21, above, Montana is among the poorest states in the union and its citizens' conservative tendencies are not sympathetic toward a government that wastes \$63 million of their hard-earned money. Chief among the outraged constituencies was the legislature. A senior senator summed up the POINTS project this way:



“Basically the legislature gave a credit card to a 13-year-old and said, “Here, go out and get a computer system.” And they did. We now see the results of all that. The sad thing about it is, when we began to see there was a problem with it, instead of leveling and saying, “It isn’t working, we ought to pull the pin on it,” ... they kept saying, “We’re going to do this, this, and this to fix it”

Another senator said, “I pretty much decided that either they didn’t know what they were doing or they were being misled by people that did know”

A consultant involved in the analysis of POINTS said, “it was a conspiracy of silence” because several people close to the project knew there were major problems within the POINTS architecture but this was not conveyed to the decision makers. Because of the POINTS failure, the growing interest in IT governance increased considerably as the legislature wanted to ensure there would not be another conspiracy of silence.

The new CIO gained considerable legitimacy for his handling of the POINTS fiasco. Following the closing of the POINTS project, a senior senator said,

“Brian Wolf is a top drawer guy. He’s going to do a great job in his position and it’s unfortunate we didn’t have him here six years ago when we started down this path. We didn’t. The damage has been done and that has engendered a lot of distrust on the part of the legislature toward agencies”

During this process, the new CIO established strong relationships across government, especially because multiple agencies were involved with the investigation including the Legislative Audit Office and the General Budget Office. In many ways, POINTS accelerated the new CIO’s introduction, and it is unlikely that without a crisis such as POINTS, Wolf would have had an opportunity to engage the larger civil service and legislative communities to

such a degree. In short, the new CIO earned the respect of the major players within state government.

This was also the first time an IT official from the state government had been so visible throughout Montana. For most legislators and senior civil servants, Wolf's visibility resulted in the association of the IT environment with a single person, which was the intended effect of SB 131. Further, because decentralization was considered to be a contributing factor to the POINTS failure, the logic of decentralization that historically had dominated IT governance in Montana was delivered a powerful blow.

The new CIO and the fledgling ITSD agency now had more credibility and a better view of the political and social landscape of the state's IT environment. Once they put POINTS behind them, ITSD began to generate the reports and documents required by SB 131. Specifically, ITSD crafted the state's first Strategic Technology Initiative (STI) as well as statewide IT policies and procedures. The experience of the POINTS investigation provided ITSD the understanding to articulate a strategic vision along with a set of policies and procedures that would, they hoped, prevent another POINTS from happening. During the crafting of these documents, ITSD and the CIO made a concerted effort to reach out across the various governmental agencies to solicit input. This reaching out served the dual purpose of trying to co-opt the agencies as stakeholders in the new vision and providing public notice for the ground rules to come.

In the time between the breakdown of POINTS and the introduction of a larger guiding vision for IT governance, a few important changes had taken place within the state's IT community. First, the CIO had become more visible across government and had earned the respect of key senior civil-servants and legislators. This had the effect of reinforcing the notion that there was a process for looking at and talking about IT issues. Now, when an agency approached a

legislator about an agency project, the standard protocol prior to the POINTS debacle, the legislator wanted to know what the CIO thought. Another key change was the awareness by both elected officials and civil servants of a larger vision for the governance of IT. For example, when ITSD introduced the state's first STI, the department sent a copy directly to each member of the legislature; in addition, the STI received widespread press coverage across Montana. The publishing of the state's first comprehensive policies and procedures document allowed ITSD to quickly convey a consistent set of accepted practices across government. The coupling of a statewide strategic vision with new policies and procedures allowed the state – and the ITSD specifically – to articulate the first consistent view of IT governance across government. Previously, strategic considerations were often isolated within individual agencies and comprehensive statewide IT policies and procedures were nonexistent.

The strategic plan for IT and the policies and procedures were the first tools the new CIO had to initiate change. Now when conflicts emerged regarding individual IT projects, the CIO could simply ask how the proposed or existing project fits into the larger strategic plan. It did not take long for those proposing IT projects to learn that they needed to situate the proposed system into the larger strategic direction as articulated in the STI. Meanwhile, the policies and procedures defined how certain activities should be initiated and carried out, providing the CIO with another tool. While these documents provided the CIO with useful tools, they were not as effective as they needed to be.

It did not take long for the CIO and ITSD to learn that they needed more than strategic plans and a set of coherent policies and procedures to initiate change. These two items simply were not enough to erode the deep-rooted decentralized logic. Although the failure of POINTS did a great deal to call into question the decentralized logic, which was still ingrained in many of the agencies, the implementation of the new federal arrangement as called for in SB 131 would require more than strategic visions and policies and procedures. Even though the

old model for managing IT was compromised by the failure of POINTS, there was still enough residual inertia to resist the generic notions contained with the strategic plan. A civil servant summed it up well:

“You can’t just bring in a CIO and say we are going to make you do these things. You know that’s not going to work because change doesn’t work that way. You can’t just dictate it because you are not going to be successful over the long run”

### **5.3.9 Change as social process: Do you speak my language?**

An important change to the IT process that was initiated by the CIO was the hiring of the state’s first IT Process Architect, whose primary responsibility was the development of a statewide IT project-planning methodology. A civil servant said,

“With SB 131 it was determined that one of the problems in state government is that they did not use good project management and project planning techniques. And for some agencies it is absolutely true.”

In addition, the CIO believed that good project planning techniques could help the state avoid another POINTS failure. The final report on POINTS attributed the failure to the poor management of project processes and a lack of oversight of the contractors involved in the project. A civil servant said,

“You had big egos managing this high profile project and they thought they knew what they were doing. They didn’t have the knowledge base to manage such a complex IT project.”

A senior civil servant added to this when he said,

“Much of what happened there had nothing to do with technology; it had to do with experience at different levels of project management.”

In selecting an individual to guide the development of better IT project-planning methods within the state, the search committee reached into the private sector for a person who had significant large-scale IT project-planning experience. The candidate that ultimately was selected had both private sector and public sector project management experience and had also served as a CIO of a public workers compensation fund. In addition to the hiring of a new process architect, the CIO also founded a new agency within ITSD called the Center for Project Management Excellence to be led by the process architect.

The new agency was directed to establish a rigorous project management methodology that was based upon the official Project Management Body of Knowledge (PMBOK), which is the accepted project management technique endorsed by the largest project management governing body in America. The new project methodology covered everything from the structure of proposals and progress reports, to how the project should be closed out at its conclusion. The new agency, the Center for Project Excellence, first conducted the methodology internally and then developed a training program to convey the principles to IT project managers across state government. The introduction of the project planning techniques into the various agencies complemented the policies and procedures already developed by the CIO’s office.

There was fear within the CIOs office that the project methodology could be viewed in a similarly weak light as the strategic plan and the policies and procedures that were developed earlier.

“We have laid out what we think is a reasonable process for managing IT projects, but we have to go and make it stick.”

One tool they had to enforce the utilization of the new methodology was the CIO's budget approval process. Before an agency could commence a large project, the agency first had to receive the CIO's approval. The CIO began to insist that all proposals be provided in the form specified by the newly implemented project methodology or the proposal would not be approved. This requirement was the source of significant battles between the CIO's office and various agencies. A major contractor for the state who participated regularly in meetings between the CIO's office and several different agencies said,

“I've seen agency heads absolutely go ballistic. I mean, screaming, shouting vulgarities trying to get their way. You know, in a lot of ways I can understand why they are so angry because they have been running their own shop for so long. You know basically, they just want to do their own project and go away.”

Many agency IT directors initially resisted the new methodologies because they felt they possessed adequate project management experience and didn't need to be told how to manage their projects. A senior IT director said,

“Personally, I have a bit of a problem with that because I've actually authored some methodologies throughout my career especially when I was selling services. I developed a software reengineering methodology. I went on a national tour and did speeches on it. So I know a little bit about methodologies and I think I know what methodology is best for projects within my department.”

The CIO held his ground and required all proposals meet the project management criterion established by the Process Architect's office. However, many of the agency IT directors thought they would beat the CIO at his own game. They would deliver the project proposals his way, but then, once it was approved, they would manage the project as they had in the past. They largely viewed the project management requirements as a formality that, once addressed, could be discarded. This assessment may have been correct except

for the emergence of an unexpected ally of the CIO – an ally that could not be ignored.

The Legislative Audit Office is a non-partisan group that reports directly to the legislature. The Audit Office is responsible for reviewing and assessing state agencies and their projects to ensure accountability and fiscal responsibility and then reporting their findings to the legislature. Due in part to the POINTS failure, the legislature asked the Audit Office to begin conducting IT audits. Specifically, the Office was asked to provide an independent assessment of the management and use of the state's IT resources. Furthermore, the legislature asked the Audit Office to provide an independent review of IT development projects as they were being carried out.

Most of the audit staff came from accounting backgrounds and held the position of Certified Public Accountant (CPA). Although the CPA education is rigorous and the credential is held in high regard, the auditors did not have the appropriate training to provide oversight of IT projects and activities. Because of this, the auditors sought the council of the state's Process Architect in assessing IT projects.

Enhancing the project planning methodology with the authority of the Legislative Audit Office served to bolster the prestige of the IT project management methodologies. The Audit Office legitimized the methodologies by adopting them as the template to assess ongoing IT development projects. A staff member of the Audit Office said,

“They (the CIO's office) use us all the time. We don't mind that at all. If an agency is not complying with the project reporting requirements they just tell the agency that the legislative auditor will be finding out about it.”

Essentially, the auditors required the agencies to speak the language and generate reports using the framework and the terminology of the project

planning methodologies. The agencies could view the CIO's requirement to use the new methodologies as a formality that must be endured for project approval and then could be abandoned, but the agencies could not view compliance with the Audit Office as a mere formality.

Another key civil servant who pays close attention to the legislative audit reports is the state's senior budget officer, who said,

“Well, I think that the sticks are that the budget director has considerable authority and the last several budget directors have been very close to the Governor. Whenever we hear from Brian (the CIO) or his staff that something is not being followed through on and needs to be addressed, I think it's very possible for Brian and the budget director to meet with the agency director who can easily be persuaded that something has to change here.”

The joining of interests between the legislative audit staff, the state budget director, and the CIO's office brought IT project planning into the mainstream of technology governance. While there was still resistance to utilizing the approved methodology, IT directors within the various agencies became aware that formalized project planning coordinated through the CIO's office was not going away. Some agency IT directors protested the statewide standard to legislators, who then took the matter to the CIO's office and the legislative auditors. The response was simple and direct: if you want to avoid another POINTS fiasco, then better IT project management is absolutely necessary, and this is the best way to accomplish that goal. The legislator's inquiry was usually dropped after that. In fact, the CIO's office and those supporting the restructuring of the IT function would regularly refer to POINTS to combat efforts to minimize the role of the CIO and the ITSD.



### 5.3.10 Change as a technological process: Active Directory

The co-opting of the project management methodologies by the legislative audit office and the budget office helped to reinforce the federal IT management structure, but significant problems remained to be addressed.

The project management program helped to shape important aspects of IT governance in the state; however, it did little to influence the firmly entrenched legacy IT infrastructure. Over the years, individual agencies had installed separate and discrete networks without consideration of the interconnectivity of the government's information systems. During this time, the individual agency networks were relatively small and easy to manage from an agency perspective. As interconnectivity became desirable, various patchwork solutions were used to bridge between the discrete agencies, but these bespoke solutions lacked the sophistication to manage the growing government network infrastructure. As we established in Section 5.3.3 above, until the passage of SB 131 and the introduction of the CIO's office, the central authority was weak and lacked the power and influence to guide a more progressive interconnectivity agenda. With the new IT governance model that placed the CIO at the center of the statewide IT management process, that was about to change.

Prior to the arrival of the CIO a small group was attempting to implement Microsoft® Active Directory, the company's enterprise version of directory services. CREN defines a directory service as a "specialized database that combines hardware and software with institutional policies and procedures and interconnects with many computer networks and information sources." A directory service is essentially a powerful database that has the Herculean task of keeping track of the dynamic objects (such as user login accounts and the location of network resources like printers) within a given computer domain. In addition, directory services like Active Directory play a central security role in determining the level of access users have on a given resource. Effectively, directory services make possible modern networks as we understand them

because they enable us to access network resources, such as databases and email servers, easily and securely. Accordingly, whoever controls directory services exercises important influence of the larger network infrastructure.

The next major move by the CIO's office was to push Active Directory as the primary directory services for the state. This move would require each of the 16 agencies to 'join' the Active Directory and, in so doing, relinquish some control of their network management to the central authority. It is important to note that while the individual agencies would relinquish some control they still would be provided the flexibility to address the day-to-day administrative issues, albeit within the Active Directory environment established by ITSD. This arrangement provided the agencies with the flexibility to address user needs and unique agency requirements but left the larger infrastructure management issues to ITSD. In addition, this technology also provided the CIO with another stick. If an agency wanted to introduce a new IT project in the state it had to be integrated in a manner that allowed it to work within the Active Directory infrastructure. If the technology is incompatible with Active Directory, the project would be denied immediately.

The introduction and deployment of Active Directory was viewed by many as a naked power grab by the CIO's office. A civil servant said,

"I would tell you that some agencies view the [Active Directory] deployment as a power grab, a centralization process. We don't see this as a centralization process. What he (the CIO) is trying to do is get his hands on what is out there and to rope in the outliers from the perspective of, "Let's make sure that we understand, we're all on the same page with where we are going with technology. The idea is that we are going to benefit from some collaboration, from the sharing of resources."

Initially, there was considerable dissention, but many agencies were persuaded that Active Directory was the only way to accomplish the interconnectedness

required by the legislature. Some of the smaller and less technically sophisticated agencies welcomed Active Directory because it would simplify some of their technological administrative activities. But, for some of the larger agencies there was continual resistance to the new requirement.

In particular, the Health and Human Services (HHS), which has elaborate systems because of Federal government requirements, protested the mandatory requirement to join. The agency argued that joining the Active Directory infrastructure would impede its operational activities and ability to innovate in the future. When talking about the Active Directory deployment, a technician working on the project said,

“And that’s the other complication here: big agencies that are funded different, by federal dollars in large part, just have opportunities to do things a little different. And so our biggest agency is oftentimes the hardest to deal with because they are so big and have so much federal money to spend on doing various projects and in this case, we wanted to make sure we got the biggest agencies in our camp. They (Health and Human Services) participated from day one all the way through. They have been a very active and cooperative participant in this even though they are in a separate child domain.”

HHS proposed utilizing a gateway between their network and the rest of the state’s resources as a compromise. As of July of 2005, HHS is the only governmental agency that has not fully joined the new Active Directory infrastructure.

The utilization of Active Directory to organize and keep track of critical directory services activities across government was an important step in streamlining the management of network resources. This technology, while far from perfect, not only makes it much easier to share resources and gain access to information across government but also serves as the nexus for most of the network computing. One of the interesting elements of the Active Directory

deployment in this case study relates to the matching of the inherent logic within the technology and the desired federal arrangement the restructuring of the state's IT governance model was suppose to accomplish. Essentially, Active Directory has a federal logic inscribed within it. The technology is designed with a central authority in mind but allows the delegation of authority to individual agencies, or organizational units (OU) as they are called in the language of Active Directory.

“Active Directory allows a single point of administration for all resources, including users, files, peripheral devices, host connections, databases, web access and network resources.” But the ability to “delegate administration allows very fine-grained control over who can do what and allows the granting of full administrative privileges to Organizational Units” (Minasi 2003).

The capabilities of Active Directory allow for a degree of central control, but the organizational units, which in this case are the individual agencies, are allowed to have control within their own environments. After the deployment of Active Directory, the chief network administrator described the state network architecture by saying,

“We have probably what you might call a federated architecture at this point.”

## **5.4 Conclusion**

This chapter has provided a detailed description of the case study that is at the center of this research project. By establishing the rich social, economic, and political context in which this case study is conjoined, we are able to capture and chronicle the IT governance transformation journey within one state government in America. Specifically, we have chronicled the transformation of Montana's state government from a heavily decentralized IT governance model to a federal arrangement. Table 5-2 represents a timeline of the major events

from our cases study. The next chapter provides a detailed analysis of this transformation process using the theoretic framework we developed in Chapter 3.

**Table 5-2.** Timeline of major events.

Late 70s	1985	Early 1990s	1993
Intro of mainframes in different departments across government ----- Emergence of Reagan	Emergence of local area networks	Emergence of client server environment ----- Publication of <i>Reinventing Government</i>	Publication of the National Performance Review

1999	January 2001	October 2001	March 2002
Appointment of committee to review IT governance structure in the State of Montana	Senate Bill 131 passed into law	CIO begins	POINTS project cancelled

July 2002	September 2002	October 2003
State strategic IT plan published ----- State IT governance policies and procedures published	State Project Architect appointed	Active Directory deployed throughout most State agencies

## Chapter 6: Analysis and Discussion

### 6.1 Introduction

In Chapter 5 we summarized the events that led to the transformation of IT governance within the state of Montana's government in the United States. This chapter interprets the transformation process using the theoretical framework we established in Chapter 3 to attempt to answer the question: *How do deeply institutionalized IT governance arrangements change over time?* Earlier in this work we showed that the dominant models found within the literature suggest these arrangements change in one of two ways. The first stream of research suggests change occurs through what Orlikowski describes as planned change models; the second body of scholarship argues that a punctuated equilibrium perspective is more applicable. However, the assumptions and insight contained within each of these perspectives do not account for the complexity of the transformation process observed in this research project.

The planned change models, which suggest rational managers are the driver of change and that the change event is a deliberate and discrete event separate from other organizational activities, are inconsistent with our observations. First as we mentioned in Section 5.3.5 the many attempts to reorganize the state's IT governance mechanisms met with no success. In fact, early in the process when the State senate committee was researching alternative IT governance structures, many throughout the state's IT community did not take the senate's efforts seriously but assumed this was simply another attempt a la the other alternatives that fizzled. In addition, the change process captured within this project was not

a discrete event with a clean start and finish. Instead, by taking a deep contextual perspective, we were able to reveal emerging pressures that had the effect of gradually delegitimizing the decentralized IT governance regime that had dominated IT governance. These pressures emerged independent of any formally planned transformation project.

The punctuated equilibrium perspective also fails to account for important aspects of the transformation process captured in Chapter 5. According to this view, the transformation process primarily could be explained by the failure of the POINTS system. Proponents of this perspective would argue that this major IS failure precipitated the replacement of the decentralized regime. While POINTS was a major event that played an important role in our case study, in itself it was not enough to replace the historic IT governance regime. As we will discuss later in this chapter, POINTS took place in a specific context where the legitimacy of the decentralized regime had been severely eroded over time. Furthermore, the transformation process captured in Chapter 5 was not a quick and episodic affair as the punctuated perspective would suggest. Instead, the replacement of the decentralized regime was an ongoing process that took several years. Since the punctuated equilibrium model and the planned change perspective fail to account for important aspects of our case study, a different perspective is required.

In Chapter 3 we suggested that an *institutional* perspective might be useful for conceptualizing and explaining this research question. Accordingly, we begin this chapter by establishing that IT governance arrangements in organizations *can* be conceptualized as an institution as that term is understood in neo-institutional theory. We then show that the transformation described in Chapter 5 is an instance of “profound institutional change” by using a framework developed by Scott and colleagues (2000) and demonstrating that our case study meets the applicable criteria suggested in Scott et al.’s work.



The analysis of our case study shows that an institutional lens provides original and valuable insight into the IT governance transformation process. By employing an institutional perspective we are able to provide a theoretically grounded conceptualization of the IT function along with an analytic lens that reveals important elements about how institutionalized IT governance arrangements erode and lose legitimacy. This research also captures the process that emerges in the midst of the uncertainty caused by a governing logic that is losing its organizational legitimacy.

## 6.2 IT governance and profound institutional change

### 6.2.1 IT Governance as institution

As stated in Chapter 2, we submit that the ontological conceptualization of the IT function within the larger IS literature is theoretically weak. The dominant perspectives within the IS literature fall under what Orlikowski describes as the planned change perspective, which contains several assumptions about the ontological nature of the IT function that are incongruent with organizational reality. Primarily these models assume the IT function, as a conceptual entity, is malleable and transitory. In addition, these models hold that management is largely responsible for assessing an organization's requirements, choosing a course of action, and then directing the enterprise's movement in the predetermined direction. In our view, this one-sided perspective, which is based on a managerial imperative, is the byproduct of our field not elucidating a more theoretically rigorous view of the IT function within a complex enterprise. Accordingly, we submit that viewing the organizing logic guiding the IT function from an institutional perspective will serve as a small step in moving our discipline in this direction.

A major component of our argument in this thesis is that the decentralized IT governance regime described in Chapter 5 can be equated to an *institution* as it

is understood in neo-institutional theory. That is, the decentralized IT governance form represents the taken-for-granted mechanism for guiding activities in the State government of Montana. After all, it is “organizational forms, structural components, and rules, not specific organizations, [which] are institutionalized” (DiMaggio and Powell 1991). In our case study the decentralized organizational form and its corresponding structural components were deeply ingrained in the fabric of the organization and, to use the words of Selznick, “infused with value beyond the technical requirements of the task at hand” (Selznick 1957). In short, the decentralized ethos was more than a rational organizing mechanism. It had become the anthem and organizational script of both the civil service and the legislature.

Before we move deeper into our analysis, we remind the reader of the varying levels of institutional analysis. Scott identifies five general categories: world system, society, organizational population, organization, and organizational subsystem (Scott 2001). Our analysis is focused at the organizational level. Specifically, we are concerned with analyzing the process where a deeply institutionalized organizational form underwent profound institutional change.

### **6.2.2 Profound institutional change**

This thesis is concerned with theorizing and analyzing how deeply institutionalized IT governance arrangements change over time. Thus, it is important to determine whether the empirical material described in Chapter 5 represents an instance of institutional change. To determine this, we employ a taxonomy developed by Scott and colleagues (2000). These authors state that instances of profound institutional change will meet the nine criteria listed in Table 6-1.

**Table 6-1.** The nine criteria that must be met for profound institutional change (adopted from (Scott, Ruef et al. 2000).

Criterion	Description
1. <b>Multilevel change</b>	Change takes place at the level of individual actors, in the development of new roles and individual identities affecting behavior and attitudes, but also at the wider levels of individual organizations as they take on new characteristics and pursue different strategies.
2. <b>Discontinuous change</b>	Rather than representing only “first order” (gradual or incremental) change in the behavior and attributes of the actors being studied, there is evidence of “second order” (fundamental, radical) change.
3. <b>New rules and governance mechanisms</b>	Rules governing the behavior of actors in the field are altered.
4. <b>New logics</b>	The logics that direct, motivate, and legitimate the behavior of actors in the field are changed. The types of ends pursued and/or the means–ends chains that guide action undergo change, as do the types of justifications that are given for action.
5. <b>New actors</b>	New types of social actors (both individual and collective) appear, sometimes representing new combinations or hybrids of existing forms, sometimes representing new entrants from other fields. Existing actors may transform their identities. The cast of characters undergoes change.
6. <b>New meanings</b>	The meanings associated with the attributes or behavior of actors in the field or the effects associated with them (e.g., changes in the casual relations among variables) are modified.
7. <b>New relations among actors</b>	The nature and extent of relations among actors in the field (including, in particular, exchange and power relations) are transformed. New types of linkages are created and the relational structure of the field exhibits substantial alterations.
8. <b>Modified population boundaries</b>	Boundaries once containing and separating organizational populations, organizations, customary activities, and personnel blend and blur.
9. <b>Modified field boundaries</b>	The borders of the field are expanded, reduced, or realigned. New definitions determine what types of activities and which types of actors are legitimate, and which actors are central or peripheral players.

The case study presented in Chapter 5 meets seven of the nine criteria, as described below. The other two criteria (Criterion 1, Multilevel change, and Criterion 8, Modified population boundaries), are used to determine the level of change in the macro environment. Because this thesis focuses on understanding how the change process unfolds in the context of a single organization, these two criteria are not relevant.

**Criterion 2: Discontinuous change.** Our case study represents an instance of fundamental change as it captures the transition from a decentralized IT governance arrangement to a fundamentally different federal form. One influential civil servant stated that the changes in IT governance captured in this thesis are “nothing short of a massive change.”

**Criterion 3: New rules and governance mechanisms.** Our empirical material meets this criterion as many of the fundamental rules governing individual actors changed in meaningful ways. Through the introduction and enforcement of project-planning methodologies, the actions of individual actors were modified over time. In addition, the deployment of Active Directory served as an important source of new rules and routines for those involved in the management of IT resources.

**Criterion 4: New logics.** In our case study, the decentralized ethos that guided IT governance was more than an organizing logic—it had become the anthem of both the civil service and the legislature. The new federated model represented a new set of organizational scripts and routines guiding organizational action.

**Criterion 5: New actors.** Our case study featured the introduction of important and powerful new actors. We witnessed the introduction of new organizational roles, such as the CIO and the Process Architect. We also revealed the emergence of hybrid actors in the form of legislative auditors and

budget personnel, who became intimately involved in enforcing important aspects of the new IT management regime.

**Criterion 6: New meanings.** New meanings permeate our case study. On a basic level the notion of IT governance took on an entirely different meaning. This is best illustrated in the creation of the Information Technology Services Division (ITSD), which was charged with coordinating and overseeing IT activities. The new division was created not only by changing the name of an existing organization but also giving it considerable power and authority. The change represents a nominal action, but the meaning surrounding what was once a weak, inconsequential organization changed considerably.

**Criterion 7: New relations among actors.** The emergence of a new IT governance logic entailed the transformation of fundamental power relations among the old and new actors. In addition, the federal governance arrangement represented a new set of relational structures within the civil service IT governance hierarchy.

**Criterion 9: Modified field boundaries.** This criterion is concerned with the larger macro elements related to institutional change; thus it appears to be outside the boundaries established in our case study. However, if we view the “field” as the domain of IT governance within our case study, we can clearly say that the field structure was modified significantly. In addition, the field of IT governance within the State of Montana witnessed the emergence of new power relations through the establishment of powerful actors. The ascendance of new actors came at the expense of the former decentralized IT governance regime.

### 6.2.3 Conclusion on profound institutional change

Based on the criteria established by Scott and colleagues, the transformation event captured in our case study is an instance of profound institutional change. However, by declaring that this is an instance of institutional change, it is now

incumbent on us to explain this transformation process. In short, can we reasonably proffer a theoretically based interpretation of the process that gave rise to institutional change? In the next section we provide an interpretation of the transformation process by utilizing neo-institutional theory.

## **6.3 A neo-institutional analysis**

### **6.3.1 Introduction**

An important contribution of this work is the application of an innovative analytic framework developed from progressive ideas found within neo-institutional theory that enables us to provide original insight into the transformation of deeply institutionalized IT governance arrangements. Earlier in this work we established that the IT governance environment within some organizations can be conceptualized as possessing institution-like characteristics, which suggests that drawing from neo-institutional theory might prove to be a useful enterprise for practitioners and academics. As we established in Chapter 3, neo-institutional theory is increasingly concerned with how institutional norms change over time. An important and significant vein within the neo-institutional research agenda suggests that we can understand the change process by identifying and analyzing the carriers of institutional norms.

These carriers are clearly identified and defined in the work of DiMaggio and Powell (1991) as the “Three Mechanisms of Institutional Isomorphic Change.” Isomorphism refers to the tendency for organizations embedded in the same general environment to resemble one another. Meyer and Rowan (1977) argue that this tendency is primarily due to the desire of organizations to be perceived as legitimate players within the larger environment:

That is, organizations are driven to incorporate the practices and procedures defined by prevailing rationalized concepts of organizational work and institutionalized in society. Organizations that do so increase legitimacy and their survival prospects, independent of the immediate efficacy of the acquired practices and procedures (Meyer and Rowan 1977).

The “three mechanisms of institutional isomorphic change” as stated by the authors are:

1. *coercive isomorphism*, which “results from both formal and informal pressures exerted on organizations by other organizations upon which they are dependent and by cultural expectations in the society within which organizations function” (DiMaggio and Powell 1991).
2. *mimetic isomorphism*, resulting from standard responses to uncertainty. “[W]hen goals are ambiguous, or when the environment creates symbolic uncertainty, organizations may model themselves on other organizations” (DiMaggio and Powell 1991).
3. *normative isomorphism*, which is associated with the influence of the professions as carriers of what are considered to be the legitimate techniques and norms for the appropriate conduct of organizational activities. Specifically DiMaggio and Powell identify the influence of the academy and the formal education it provides to professionals, along with professional networks, in shaping the appropriate and legitimate activities and techniques within specialized fields (DiMaggio and Powell 1991).

It would be reasonable to approach the analysis of the case study presented in Chapter 5 through the perspective of the carriers identified by DiMaggio and

Powell. As stated previously, Lawrence examined the larger IT governance environment within the United States and found similarities in IT governance structures and strategies at the state level across the country (Lawrence 2003). The similarities existed even though many of the states had drastically different economic, political, and geographic environments. Accordingly, our analysis could focus on tracing the manner in which the larger organizational field shaped the IT governance arrangement in our case study through the mechanisms of coercive, mimetic, and normative isomorphism. However, pursuing the analysis of our empirical material from the perspective of the carriers of isomorphism would simply refine our understanding of the reasons for the diffusion of certain IT governance arrangements and would not take us closer to an explanation of the *process* of institutional change. While this would be a contribution to our field, we submit that a more meaningful understanding can be developed through analyzing the process of institutional change as it unfolded in the empirical setting chronicled earlier in this work.

It is at this point that we will depart from the mainstream of neo-institutional theory and seek to explore one of its fertile tributaries through an original analytic lens. The map that will guide this inquiry is the analytic framework we established in Chapter 3.

## **6.4 A neo-institutional analysis of the transformation of IT governance**

### **6.4.1 Introduction**

We will conduct our analysis in two parts. First, we will analyze the empirical material related to the transformation process up to the failure of the POINTS system, which we chronicled in Chapter 5. We will then apply our analytic device to the events following the failure of POINTS. Breaking our analysis into two distinct sections allows us to establish the evolving and complex



interactions that gave rise to a new IT governance arrangement. A single sequential interpretation of the events would mistakenly convey a simplistic causal interpretation of the transformation phenomena. Likewise, limiting our analysis to only one of these two periods would be oversimplifying the events and overlooking key insights into the IT governance transformation process. Approaching our analysis in two distinct sections allows us to highlight the manner in which emerging events and the actions of the organizational actors interacted to bring about an important transformation event.

Both sections of our analysis are structured in a similar manner. First, utilizing Oliver's framework we focus on the pressures that coalesced to delegitimize the decentralized IT governance arrangement. We then continue our analysis by interpreting the transformation process from the perspective of the analytic lens developed by Hasselbladh and Kallinikos (2000). This provides insight into important elements that we suggest comprise the institutionalization of organizational practices. As we established earlier in this work, the coupling of ideas contained within these two frameworks allows us to provide an original and more meaningful understanding of the transformation of deeply institutionalized IT governance arrangements.

## **6.5 Period 1: Analysis of events leading to the POINTS failure**

### **6.5.1 Deinstitutionalization**

In this section we will analyze the events chronicled in our case study from the perspective of Oliver's framework. This analysis explicitly recognizes the three pressures identified in Oliver's work (functional, political, and social) and the manner in which each contributed to the gradual erosion of the institutional legitimacy associated with the decentralized IT governance mechanisms. Although we address the three pressures as individual entities, we do not mean

to imply they operate independently. Instead, the effect of the three pressures within organizational analysis is best conceived as a collective of forces that interact to erode the institutional legitimacy of organizational practices and arrangements.

### 6.5.2 Functional pressures

---

Functional pressures arise from performance problems.

---

The first of Oliver's three pressures we will explore is functional pressures, which arise from performance problems in organizations (Oliver 1992). In the first period of our analysis we identify three functional pressures that emerge from our empirical data. These functional pressures stem from the general operational problems associated with (1) an inability to share information across government, (2) the discovery of redundant systems within government, and (3) the IT contractual process, which lacked legislative oversight. All of these issues emerged as important functional pressures that contributed to the deinstitutionalization of the decentralized IT governance arrangement.

Our interviews revealed that these issues caused considerable frustration among the participants. Many of these issues came to the fore as a byproduct of the state's efforts to implement programs related to the eGovernment agenda, as discussed in Chapter 5. The inability to make information available to citizens, which the state had on a myriad of systems scattered throughout the various governmental agencies, was a serious affront to legislators' plans for rolling out eGovernment services. While many legislators did not originally express much interest in IT governance issues, interest began to grow as it became increasingly clear that the civil service could not deliver on the larger eGovernment agenda.

Another important functional pressure that emerged in our case study is the presence of redundant systems scattered throughout the state agencies. The duplicate systems that were discovered proved troubling on two fronts. First, the cost related to purchasing and administering these redundant systems was unacceptable to some of the legislators. Second, legislators realized there was little coordination of IT assets across government, which demonstrated that the state lacked a mechanism to coordinate its large IT infrastructure.

The last functional pressure we identified during the first period of our analysis concerned the lack of oversight in the state's IT contracting process. As we discussed in Chapter 5, many state agencies were engaging in high-dollar, long-term contractual obligations with little legislative oversight. This put the state at risk because the state employees in charge of the projects often did not possess the necessary sophistication required to manage the complex development and integration efforts. In addition, state employees often made no effort to determine how these projects fit into the larger IT landscape. This is not particularly surprising since the state lacked a general strategic position on IT related issues.

### 6.5.3 Political Pressures

---

Political pressures are a byproduct of a changing political environment, including changing interests of existing groups and introduction of new members with different interests.

---

The second of Oliver's three pressures we examine is political pressure. In our case study we identify two significant frustrations that emerged within the legislature that served to bolster opposition to the decentralized IT governance arrangement. The first was the emergence of a skeptical legislature when it came to IT issues. Several participants in this research project cited frustration with the state's IT activities as one of the reasons the legislature began investigating new forms of IT governance. These frustrations often stemmed

from issues we identified under the functional category. The inability of the IT infrastructure to facilitate the legislative ambitions bolstered political support for the reconsideration of the state's IT governance mechanisms. The second frustration came from a lack of a knowledgeable expert or experts who could provide the necessary insight regarding IT issues.

From a political perspective we also saw the emergence of a new, powerful political figure who served a central role in motivating and promoting a reconceptualization of IT governance. Senator Michael Taylor, who was highly regarded throughout government, began to champion a fundamental restructuring of the management of IT resources. His conservative credentials in this conservative political environment provided Taylor with the credibility to question the strict decentralization that had guided IT governance.

#### **6.5.4 Social Pressures**

---

Larger environmental forces acting upon the organization, such as the changing legal environment or changes in societal expectations, encourage or prohibit certain practices.

---

The last pressure Oliver identified is social pressure, which is the result of changing societal expectations with respect to the delivery of services to citizens through the state's IT infrastructure. We learned that both citizens and legislators were developing higher expectations and a growing sophistication with technology. These evolving societal expectations placed pressure on a technological infrastructure that is intended to provide services to the states citizens. In many ways the social pressures that came to bear in this process were a byproduct of issues related to legitimacy. These social pressures are captured in the words of former Governor Racicot in a letter he sent to agency heads across state government:

“The way we conduct business in State Government and interact with citizens is changing rapidly with the expanded use of technology within agencies. During the past several years, a growing number of citizens and businesses have come to expect access to services through electronic means. Clearly, the advent and maturation of the Internet is transforming our economic and social expectations. As the people responsible for delivering services to Montana citizens, we must also transform the way governmental systems operate to meet these new expectations.”

## **6.6 Analysis of the change process**

### **6.6.1 Introduction**

The next phase of our analysis will illuminate the process of change by employing the analytic device developed by Hasselbladh and Kallinikos (2000). Their device, which is based on evolving forms of language, is intended to provide us with a lens that will allow us to view the change process. Specifically, we hope to capture important elements of the social construction of the new IT governance structure and mechanisms. In the previous section we showed the pressures that colluded to erode the legitimacy of the hitherto taken-for-granted IT governance ethos. In the next section we use the analytic lens suggested by Hasselbladh and Kallinikos (2000) to illuminate the emergence of the ideals, discourses, and techniques of control that influenced the construction of the new IT governance regime. Although our analysis is divided into two distinct sections, we do not mean to imply that it is a sequential process. Instead, we view the development of ideals, discourses, and techniques of control as emerging in the unique context established by the breakdown of the old regime.

### **6.6.2 Ideals**

---

Ideals are vague and general statements about organizational solutions, ambitions, and goals.

---

Ideals, as they are understood within Hasselbladh and Kallinikos' framework, had their genesis in two distinct areas. First, the emergence of the Internet and the growing recognition of the significance and importance of technology within society served the purpose of bringing technology issues into mainstream discussions. In addition, we observed the emergence of ideals that were largely concerned with the frustrations associated with implementing the eGovernment agenda and the growing concern in the legislature and civil services related to the perceived lack of accountability within the decentralized IT governance regime. The ideals, which we identify below, served as the basis for the development of important discourses we identify later in this chapter.

In analyzing the social construction of a new IT governance arrangement, the illumination of the emergent ideals provides important insight into the transformation process. The ideals that began to take shape developed as a byproduct of the delegitimization of the old organizational form. They also developed from the multiple and diverse perspectives contained within the larger organizational landscape.

Based on the empirical material presented in Chapter 5 we identified the following ideals, which we express as general themes. Due to the informal nature of ideals we have elected to express this component of Hasselbladh and Kallinikos' framework as general themes. Beneath the theme we provide a representative quote from our empirical data. In the next section we discuss how many of these ideals evolved into organizational discourses.

**Table 6-2. Period 1 ideals**

---

<b>Themes</b>	<b>Representative statements</b>
<b>The introduction of the internet and the growing recognition of the significance and importance of technology within society</b>	
<i>A government official stated:</i>	"In 1994 or 1995 the internet basically changed the whole landscape of things. You could be hiding under the biggest rock in Montana and you still would have heard about what the internet is and have an appreciation for its power. I think that phenomena changed everyone's awareness for how important IT is and how this is going to change government a lot. Our old time legislators who had long been in denial even started saying, "Man, this is changing so much. I've got people in my district now that want more access to the internet and we don't have it. How do we do that?" We have to start paying a different level of attention."
<b>Introduction of the concept of eGovernment which called for a single face of government</b>	
<i>A civil servant stated:</i>	"E-Government is both an initiative and a goal. The initiative is to move as many government services online as we can. The goal is to get to the point where there is a single web contact point where citizens can access all of our services."
<b>Skepticism regarding the information related to the IT issues by the legislature and senior civil servants</b>	
<i>A senior civil servant stated:</i>	"The overall belief within the legislature is that when a proposal is brought forward and legislatures are asked to approve funding I think there's a high level of cynicism that the legislature is being given the full story. Now it may be that the people proposing it don't know the full story, but the cynical part is if they know it, they're not sharing it. They don't tell you the full cost of the system and they don't tell you the implications of implementing the technology for the different agencies."

---

(Continued on next page)

**Table 6-2a. (Period 1 ideals continued from previous page)**

<b>Recognition that structural organizational problems hindered eGovernment agenda</b>	
<i>A senior budget official stated:</i>	“The funding model does not lend itself well to integration of resources. Each agency is responsible for providing the service to the citizen and they want complete control over their core business. It is hard for them to rely on another agency that is budgeted separately because they have no control over them. It is a mindset that is tough to change.”
<i>and a consultant stated:</i>	“There are some of the greatest data sets out there that if meshed together could do some wonderful things for people. But agencies just hesitate to work with each other.”
<b>Lack of a central source who possessed a holistic view of the IT landscape throughout the state</b>	
<i>A senior civil servant stated:</i>	“The legislature was totally frustrated over not having one person who could explain technology projects to them. They never had a single person that had an overview of the whole state and how a project might fit in as a whole. I think everyone would agree that it was born out of frustration of legislatures who didn’t feel they had the information they needed to make good decisions on spending a lot of money on these large ticket items. The legislators started seeing things in the newspaper of IT projects that weren’t working so well and it only took a short time before they wanted to have one person focusing and making recommendations on these projects.”

### 6.6.3 Discourse

---

Discourses are organizational plans and goals that evolve past mere ideals. These include the written elaboration of social roles, performance ideals, and plans.

---

The next category we will examine relates to the discourses that emerged in our case study. Organizational discourses are less ephemeral and more concrete than ideals as they are solidified in the form of written documents and plans. The discourses that we identify below emerged from the multiple ideals that we chronicled above. A significant step in the transformation process is made in this phase when we see the evolution from the spoken word to the



“textualization by written language” of appropriate organizational activities and responses Hasselbladh and Kallinikos write:

“[Discourses] single out a domain of application, define the relevant goals to be accomplished and the roles involved, spell out the criteria of truth and designate causal theories and schemes of action and interpretation. Written language makes it possible to elaborate *ideals* to systems of power/knowledge that act upon the world, bring effects of various kinds” (Hasselbladh and Kallinikos 2000).

We identify three discourses that are important in this transformation journey: (1) the emergence of a written eGovernment policy, (2) the crafting of Senate Bill 131, which later was formally codified into law, and (3) the adoption of the CIO organizational role. The discourses represent the translation of general organizational ideals into more refined prescriptions for organizational action.

#### **6.6.4 eGovernment policy**

The formulation and publication of a formal eGovernment policy is an important discourse because it articulates a more enduring and ambitious vision for information systems in the state of Montana. Within the eGovernment policy we can see the reflection and formalization of two important ideals, which we highlighted in the previous section. The first ideal reflected in the eGovernment policy is the growing recognition within society of the increasing importance the state’s IT infrastructure plays in its ambitions for providing services to citizens. Second, it represents a clear expression of the desire for a single face of government “where citizens can access all of our services.” The translation of this ideal into a discourse has implicit implications for the structuring and organization of the IT governance mechanisms because it requires data to be made available from across state government. To accomplish this goal requires a fundamental restructuring of existing organizational practices.

The recently released Strategic Plan for Information Technology (2006–2007) reflects the enduring discourse of eGovernment.

“A goal of this initiative (eGovernment) is to encourage and assist those agencies that have not yet participated in providing eGovernment services to become involved. A second goal of this initiative is to continue developing and enhancing the *centralized* infrastructure for e-Government services. This includes the hardware software that supports the infrastructure and making sure it all fits well within the state’s architecture” (Information Technology Services Division 2004) [emphasis added].

### 6.6.5 Senate Bill 131

The next important discourse we identify is the crafting of Senate Bill 131, which had as its stated purpose:

“An Act generally revising the laws governing information technology; creating a department of information technology; for a chief information officer; establishing policies for state information technology; transferring establishing duties and responsibilities concerning information technology to the department of information technology” (2000).

A bill is very different than a law. A bill does not become a law until it is approved by the state legislature and then signed by the governor’s office. This bill, even though it is not the binding law of record, represented the advancement and formalization of several of the ideals we specified in the preceding section. The bill, which was 44 pages long, contained new mechanisms that fundamentally altered almost every aspect of the old IT governance landscape. As we chronicled in the preceding chapter, this represents a fundamental change for the restructuring of the state’s IT governance activities.

Senate Bill 131 represents one of the major discourses in our case study, so it is important to recognize explicitly important elements of its construction. As is true of most efforts surrounding the crafting of bills (and laws), the process is inherently political and represents the negotiated interests of many constituencies. Accordingly, Senate Bill 131 is a reflection and refinement of a wide array of organizational ideals. As we captured in our case study and identified earlier in this chapter, many of the organization-wide ideals were a byproduct of the general frustrations with the historic IT governance model.

#### **6.6.6 The emergence of the CIO role**

One important characteristic of discourses, as they are understood in the work of Hasselbladh and Kallinikos, is the formal elaboration of organizational roles. It is evident in our case study that the emergence of the CIO represents a crucial element in the larger organizational drama. The CIO role is a socially constructed organizational role that is the byproduct of a multitude of interests. First, the CIO represents an established and legitimate mechanism for governing an organization's IT activities in the private and public sectors. Second, the CIO represents a business focus on controlling and coordinating the state's IT activities. As we established in Chapter 5, a concerted effort was made to introduce this professional role into the state environment, and then to fill the position with someone with significant private sector experience. Accordingly, the articulation of the CIO role, which was a negotiated construction, came to be perceived as the legitimate and appropriate organizational response for governing the state's complex IT activities.

### 6.6.7 Techniques of control

---

Techniques of control include taxonomies, codifications, and elaborate systems of measurement.

---

The final category within the Hasselbladh and Kallinikos framework is techniques of control, which represents the evolution of discourses into codified formal mechanisms for executing organizational activities. Hasselbladh and Kallinikos write:

“The construction of codified systems makes it possible to act upon the social subject-object relationships constituted by a *discourse*. Through codification, various facets of the principal agent relations can become the target of calculation, reflection, comparison, manipulation which contribute to the social embeddedness of categories of *discourse*” (Hasselbladh and Kallinikos 2000).

In our case study only one technique of control emerged in the period leading up to the breakdown of the POINTS system. When Senate Bill 131 was passed into law it represented a detailed and formal enumeration of how the IT governance activities would be organized and executed. The law, commonly referred to as the Information Technology Act (ITA), serves as the codified articulation that specifically establishes and delineates the IT governance mechanisms within the state government. With the passage of the law a new organization for managing the IT enterprise was created, new organizational actors such as the CIO emerged, and codified mechanisms for controlling work related to the management and development of the IT infrastructure began to emerge.

The introduction of the ITA represents the last phase of the evolution of the ideals and discourses we earlier identified. By utilizing the work of Hasselbladh and Kallinikos we have followed the evolution of ideals and discourses into

techniques of control, providing unique insight into the transformation process. The value of this line of analysis is that we can see that carriers of change and institutional practices synthesize and gain legitimacy through the evolution of ideals into discourses and finally manifest into strict techniques of control, which formally codify the appropriate and legitimate ways of acting on the realities found in organizations. However, as we will discuss later in this chapter, the process of institutional change that we have described to this point was *not* robust enough to fully supersede the heavily decentralized logic that had historically guided IT governance.

### **6.6.8 Conclusion of first period of analysis**

By identifying and delimiting the pressures that led to the deinstitutionalization of the previous IT governance arrangement, we are able to capture important elements of the context in which our case study is intertwined. In the previous section we were able to identify specific instances in which the legitimacy of the mechanisms for managing the state's IT assets was seriously questioned. The effect of questioning was the erosion of some of the resilience of the decentralized IT governance arrangement. Again, it is important to note that while we delimit the events in our case study into the categories of Oliver's three pressures, we view the effect of these pressures as a collective. That is, the three pressures interact in a similar manner as the currents in the great rivers of the world. During floods, the currents can build and combine in such powerful ways they erode the landscape that has shaped the common experience for generations. The floodwaters wash away the commonplace and simultaneously lay the foundation for something new.

In the first period of our analysis we have brought to the fore important elements of the change process. We showed how the events we captured in our empirical data emerged and evolved to undermine the legitimacy of the decentralized IT governance arrangement. We accomplished this by filtering our empirical

material through Oliver's framework for understanding the deinstitutionalization process. Dominant institutional arrangements do not evaporate to be cleanly replaced by other more legitimate mechanisms for carrying out organizational activities. Instead, as Oliver suggests, deinstitutionalization is the effect of the collusion of functional, political, and social pressures that develop and undermine the taken-for-granted ways of doing business.

The next phase of our analysis revealed how the defined and legitimate ways for governing IT activities, as specified in the state's Information Technology Act, did not simply materialize as the legitimate organizational scripts for carrying out these specific activities. Instead, they evolved from various organizational ideals into discourses and finally into a technique of control for carrying out IT governance. The evolution of ideals to techniques of control did not occur in a vacuum. Instead, this evolution took place in the larger organizational landscape that had at its core the important feature of a progressively weakening IT governance mechanism. This provided an environment in which alternative schemes could be conceptualized and evolve. It is also worth restating that we do not conceptualize the transformation process as a linear series of events. The functional, social, and political pressures we identified commingle to erode the former institutionalized arrangement. In addition, the emergence of ideals, or alternative conceptualizations for acting on reality, bubble up in the messy world that sees an old logic eroding and washing away.

Table 6-3 summarizes our findings through the first period of analysis.

**Table 6-3. Findings of Period 1 analysis.****a. Oliver's Pressures of Deinstitutionalization**

<b>Function Pressure</b>	<b>Political Pressure</b>	<b>Social Pressure</b>
Lack of system interoperability	Legislative distrust of the State's IS function	Growing expectations technical expectations from citizenry
Redundant systems within the State infrastructure	Lack of expert who possessed insight into entire IT landscape	Politicians and senior civil servants possessing higher levels of sophistication
IS contract system that lacked Legislative oversight		

**b. Hasselbladh's and Kallinikos' ideals, discourses, and techniques of control.**

<b>Ideals</b>	<b>Discourses</b>	<b>Techniques of Control</b>
Growing recognition of the importance of technology within society	Formal eGovernment Policy	Information Technology Act codified into law the contents of Senate Bill 131 Included the founding of new org to guide IT governance and created the CIO position among other things
Promise of eGovernment to radically reshape government	Senate Bill 131 which called for the drastic restructuring of IT governance	
Skepticism toward IT function by government officials		
Structural problems impeding promise of eGovernment		
Lack of central expert who had the pulse on IT programs		

## **6.7 Period 2: The Breakdown of POINTS**

### **6.7.1 Introduction**

The next portion of our analysis focuses on the events surrounding the POINTS failure. In this section we analyze our empirical material using the same analytic lens that we previously employed. By separating the analysis into two distinct sections we are able to provide a better window into the change process and highlight important attributes related to the complex interplay of factors that lead to the delegitimization of one set of organizational norms and the creation of a new way to govern the state's IT assets. Consistent with the analysis of events leading to the POINTS failure we will follow the same format in our approach to examining the events surrounding the failure. First we will examine the deinstitutionalization process through Oliver's lens and then we will bring to the fore more detailed elements of the transformation process by employing the analytic device developed by Hasselbladh and Kallinikos.

### **6.7.2 Deinstitutionalization introduction**

During the first phase of our analysis we examined the empirical material with the intention of understanding how the former IT governance structure began to lose legitimacy. Using Oliver's framework, we were able to highlight the various functional, political, and social pressures that commingled with the effect of raising the query of how IT governance had been conducted historically. In this section we again employ Oliver's framework to reveal the increased functional, political, and social pressures that arose around the POINTS failure. The emergence of these pressures and the pressures that we described in the first portion of our analysis converge to further erode the decentralized IT governance arrangement.



### 6.7.3 Functional Pressures

---

Functional pressures arise from performance problems

---

The failure of the POINTS system serves as the source of a major functional pressure that contributed to the further erosion of the old IT governance arrangement. Earlier in this chapter, our analysis highlighted the collective pressures that combined to erode the legitimacy associated with the historic IT governance arrangement. Those pressures eroded the legitimacy of the historic IT governance arrangement to such a degree that action was taken by the organization to formalize a federated IT governance structure. However, even before the breakdown of the POINTS system, the larger bureaucracy showed considerable resistance to the new IT governance arrangement, which implies that the decentralized organizational logic was weakened, but still extant.

If the previously described functional pressures were such that they brought the organizational dynamic to a simmer, then the POINTS failure brought it to a boil. The breakdown of POINTS evoked outrage throughout government and the citizenry. The effect of this outrage was to further erode the historic IT governance mechanisms and reinforce the perception that the changes put forth by the legislature, and then signed into law, represented the best course of action for structuring and governing the state's IT resources. This further delegitimized the decentralized IT governance structure and reinforced the new regime. The emergence of this functional pressure also introduced increasing political and social pressures that combined to delegitimize the old IT governance arrangement even further.

### 6.7.4 Political Pressures

---

Political pressures are the byproduct of a changing political environment, including the changing interests of existing groups and the introduction of new members with different interests.

---

The breakdown of the POINTS project raised questions about existing practices and organizing logics, which increased the political pressure that further compromised the dominant institutional logic. The effect of the political pressure manifested itself in legislative hearings that thoroughly examined the POINTS failure. An important byproduct of the legislative investigations was the legislature's determination that poor project management was largely to blame for the failure. The legislature recognized that inexperienced state personnel were given a great deal of latitude in negotiating important elements of contracts with vendors. The state's relative lack of sophistication in technology and contractual matters was also deemed to play an important role in the POINTS failure.

Once the POINTS failure came out of the dark it became a significant political liability for those who supported the former decentralized arrangement. Accordingly, those who resisted the new IT governance arrangements that were a featured component of the Information Technology Act found themselves at a political disadvantage. The senior civil servants and politicians who were once sympathetic to those trying to protect the decentralized arrangement, now distanced themselves from this effort.

### 6.7.5 Social Pressures

---

Social pressures are the larger environmental forces acting upon the organization, such as changes in the legal environment or changes in societal expectations, that encourage or prohibit certain practices.

---

Another consequence of the POINTS failure was the emergence of additional social pressures to further erode the institutional norms for managing the enterprise IT activities. We mentioned previously that the growing sophistication of legislators and the state's populace with respect to technology emerged as an important social pressure for reforming IT governance. The

failure of POINTS reinforced these social pressures by emphasizing the state's lack of sophistication with respect to its IT activities.

## 6.8 Analysis of change process

### 6.8.1 Ideals

---

Ideals are vague and general statements about organizational solutions, ambitions, and goals.

---

The first set of ideals we identify concern those related to the recalcitrant bureaucracy. In Chapter 5 we established that there was considerable resistance to the changes instigated by the legislature. The ideals that emerged from the recalcitrant bureaucracy are an important part of our analysis. When deeply ingrained methods for carrying out organizational activities are subjected to increasing pressures for change, the result will always be friction and resistance. Immediately prior to the breakdown of POINTS, the opposition peaked. The new CIO and IT governance organization were experiencing resistance from across state government. The changes that the new office was charged with implementing, as decreed by the Information Technology Act, were a radical departure from the status quo. Accordingly, our analysis includes the ideals surrounding the resistance to change as well as the emergence of additional ideals supporting the changes called for in the Information Technology Act. Table 6-4 provides a sample of responses before and after the POINTS failure. Again, we present the ideals as themes and then trace the evolution of these ideals into discourses and, later, into techniques of control.

**Table 6-4.** Ideals demonstrating resistance to change from Period 1 and Period 2 analysis.

<b>Ideals <i>prior</i> to the POINTS failure</b>	<b>Ideals <i>following</i> the POINTS failure</b>
<ul style="list-style-type: none"> <li data-bbox="165 463 675 584">• “To be honest, almost every agency I work with had a problem with the mandates coming out of our office.” — <i>a member of ITSD</i></li> <li data-bbox="165 618 675 736">• “There is no doubt the state of Montana needs a CIO, they just don’t want one.” — <i>a civil servant</i></li> <li data-bbox="165 770 675 981">• “There were a lot of doubters out there waiting to see what he would do. We’ve seen your talk, we’ve seen your real nice PowerPoint slides, but what are you going to do? We’ve seen it, we’ve heard it, but where is it?” — <i>a civil servant</i></li> <li data-bbox="165 1014 675 1133">• “They pick different ways to resist. A lot of them will just slow roll you and other times they will get in your face.” — <i>a consultant</i></li> <li data-bbox="165 1182 675 1424">• “You have no idea how we can slow things down. We can slow things down for a whole administration. And with that in mind, you can understand how the change process can be very, very slow.” — <i>a senior civil servant who opposed the CIO’s office</i></li> <li data-bbox="165 1473 675 1715">• There is a long and extensive bloody history between the agencies and any central authority. I hear comments from insiders and they refer to themselves as a confederacy, as rebels, who are not going to fall under the line of the new CIO. — <i>a civil servant</i></li> </ul>	<p data-bbox="699 463 1209 492"><b>Increased accountability for IS projects</b></p> <ul style="list-style-type: none"> <li data-bbox="699 526 1209 703">• “We are talking about the state’s revenue engine. It is broken and we are all accountable to see that it gets fixed.” — <i>the CIO, in testimony before the legislature</i></li> <li data-bbox="699 741 1209 860">• “POINTS was such an incredible waste of money and it has set us back politically in terms of the legislature.” — <i>a senior civil servant</i></li> <li data-bbox="699 898 1209 1075">• “We will be paying that off in 2008 and we will have nothing to show for it. So we are going to be paying for a system that is no longer even on the drawing board, it is out the window.” — <i>a legislator</i></li> </ul> <p data-bbox="699 1108 1027 1137"><b>Distrust of the IT function</b></p> <ul style="list-style-type: none"> <li data-bbox="699 1144 1209 1503">• “Basically the legislature gave a credit card to a 13-year-old and said, ‘Here, go out and get a computer system.’ And they did. We now see the results of all that. The sad thing about it is, when we began to see there was a problem with it, instead of leveling and saying, ‘It isn’t working, we ought to pull the pin on it,’ but they kept saying, ‘We’re going to do this, this, and this to fix it.’” — <i>a senior senator</i></li> <li data-bbox="699 1541 1209 1682">• “I pretty much decided that either they didn’t know what they were doing or they were being misled by people that did know.” — <i>a senator</i></li> <li data-bbox="699 1720 1209 1805">• “[I]t was a conspiracy of silence.” — <i>a consultant, succinctly summing up the failure of POINTS</i></li> </ul>

## 6.8.2 Discourses

---

Discourses are organizational plans and goals that evolve past mere ideals. These include the written elaboration of social roles, performance ideals, and plans.

---

Our analysis identified two important discourses following the breakdown of POINTS. The first was the formulation of a formal statewide strategic plan for IT. The Information Technology Act (ITA) charged the CIO's office with developing the state's first IT strategic plan. The second important discourse was the elaboration of statewide policies and procedures for IT governance. As we stated in Chapter 5, the policies and procedures were a first-of-its-kind in the realm of IT governance in the state.

The state's first strategic plan was made available to the legislature and the general public at a press conference held in the governor's office. Taking advantage of the general sentiment in this post-POINTS environment, the governor used the occasion to emphasize the state's progressive position. The governor attempted to convey that the state was serious not only about using its IT resources effectively but also providing new, innovative services to the citizenry. The Strategic Plan for Information Technology began by repudiating the decentralized IT governance structure that had historically guided the state's IT activities. The first words in the state's inaugural strategic plan were:

“During the last quarter century, Montana state government agencies deployed information technology to pursue their missions to provide various services to the citizens of the state. For the most part, the efforts of these agencies were independent of each other, sometimes resulting in a duplication of systems and hardware. The needs of citizens were not always considered when government made investments in information technology” (Information Technology Services Division 2002).

The strategic plan then went on to state that all future IT governance decisions and the formulation of policy would be made on the basis of “universal principles for IT governance.” Those universal principles are listed in Table 6-5.

**Table 6-5.** Universal principles for Montana’s IT governance (*source:* (Information Technology Services Division 2002)).

---

**Enterprise View:**

“It is a goal of the State of Montana to promote and maintain an enterprise philosophy, whereas the State think and acts as one large entity instead of as individual agencies.”

**Aggressive use of IT:**

“Information Technology is a very effective tool in helping to streamline processes and to carry out the strategies of state government.”

**Strong Governance Function:**

“Montana has evolved a strong governance structure for information technology.”

**Cost Effective Use of IT Resources:**

“Information technology resource acquisitions have become critical components of an agencies overall strategy for fulfilling agency program objectives. In addition, the cost of IT resources is becoming a greater proportion of the total program budget as IT is deployed on an ever increasing scale.”

**Policies & Standards-Based Enterprise:**

“Montana’s IT infrastructure is managed under an umbrella of policies and standards that reflect the policy and technical decisions made by various governance groups that fall under the Information Technology Services Division.”

---

These basic principles encompass many of the ideals that we identified in the events that span the time before the POINTS breakdown as well as the time after. Essentially, the strategic plan represents the evolution of these notions into more formal organizational discourses. As one would suspect, in almost every instance the basic principles reinforce ambitions associated with the new IT governance regime.

The next discourse we identified was the development of the policies and procedures for IT activities. The government-wide policies and procedures encompassed six general categories: internet, network, personal computers, remote and public access, security, and telecommunications. Within each category numerous subcategories further delineated the topic. As we stated previously, this effort was the first in enumerating government-wide policies and procedures for the state's IT activities.

### 6.8.3 Techniques of control

---

Techniques of control include taxonomies, codifications, and elaborate systems of measurement.

---

This final portion of our analysis concerns the techniques of control that emerged in our case study following the breakdown of the POINTS system. In the previous section we identified what we submit are important organizational discourses that emerged in this change process. Specifically, we suggested that the strategic plan for IT and the formulation of government-wide policies and procedures represented important moments in the post-POINTS environment. As we stated previously, organizational discourses in and of themselves are not sufficient for solidifying change. Instead, as Hasselbladh and Kallinikos (2000) state, the formal and strict mechanisms underlying techniques of control are necessary for "the development of action models and systems of measurement and evaluation" (Hasselbladh and Kallinikos 2000). These mechanisms, as well as scripts and routines, are critical in institutionalizing a new organizational arrangement. In the post-POINTS environment we have identified in our case study the emergence of two significant techniques of control. The first is the development and enforcement of the formal project planning techniques we discussed in the previous chapter. The second is the deployment of the Active Directory.

**Project Planning Techniques.** The introduction of rigorous project planning techniques was a major goal of the new IT governance regime. Consistent with that goal, the CIO founded the Center for Project Management Excellence to develop a project planning methodology to use on state IT projects and to create a training organization to help state personnel learn the methodology. In addition, experts within the new Center could be assigned to difficult projects or, in a worst-case scenario, take over a project in its entirety. Accordingly, the process architect developed a detailed statewide methodology based upon the Project Management Body of Knowledge (PMBOK), the recognized standard for project management in the United States (Kerzner 2003).

The emergence of formal project planning techniques was met with considerable skepticism and resistance by many within government. However, as we chronicled in the case study, several powerful players within government emerged that established the new project planning techniques as the legitimate mechanisms for planning IT projects. The first and probably weakest of the players to emerge was the CIO. When the Information Technology Act became law, it required all governmental agencies to submit an annual plan and budget to the CIO's office for approval. In addition, all new IS projects required the CIO's approval before they could commence. The CIO used his position in the approval process to require all plans and new projects to conform to the standards and formats developed in the new project planning methodologies. The IT directors from the various agencies reluctantly agreed to use the new techniques but often reverted to carrying out the projects sans methodology once the project was approved.

However, two important enforcement mechanisms emerged to support the use of the ongoing project planning techniques. Both the Legislative Audit Office and the state Budget Director put their weight behind the project planning methodology. The legislative auditors were charged with reporting to the



legislature on the status of all IT projects within the state. The legislative auditors began to use the project planning methodology as a framework when assessing the status of IT projects. Specifically, they would require agency IT directors to submit status reports using the language and processes contained within the project planning methodology. Essentially, the project planning techniques became the legitimate ways for talking about and assessing IT projects. Similarly, the state Budget Director came to support the methodology's use. In the post-POINTS environment, the Budget Director was not sympathetic to those resisting the reforms introduced by the new IT governance mechanisms.

**Active Directory.** The second technique of control that emerged in the post-POINTS environment was the deployment of the powerful directory services software Microsoft Active Directory. In the previous chapter we stated that a directory service is what makes modern networks possible by keeping track of the dynamic objects that comprise heterogeneous computer networks. The benefit of having a sophisticated directory service is that it helps facilitate an infrastructure in which information can be seamlessly shared between what had, in Montana, previously been robust silos. Deployment of this type of technology may be resisted because once a silo joins the Active Directory system it gives up some of its autonomy.

By pushing Active Directory as the state's primary directory service, the new IT governance regime used a powerful technology to help facilitate its goals. The technology, once it is deployed, shapes and defines important elements of the system architecture. To ensure compliance with the Active Directory architecture, all proposals for new systems had to demonstrate clearly how the system fit into the Active Directory architecture. In Chapter 5 we showed how Active Directory has a federal logic inscribed within it, as it is designed to have a central organization that delegates various levels of authority to the periphery of the enterprise. Of equal importance is that Active Directory defines the types of objects that are contained within the network and establishes in a very

granular manner the types of things that can be done and the manner in which they are to be accomplished. In short, the technology possesses a distinct logic that defines with a high level of precision the types of things that exist within the network and the formal procedures for how things are accomplished.

#### **6.8.4 Conclusion of second period of analysis**

During the second period of our analysis, we revealed the additional functional, political, and social pressures that emerged surrounding the POINTS failure. The additional pressures we chronicled in this section continued to erode the decentralized IT governance arrangement. As the empirical material suggests, the state's decentralized IT governance structure was robust and resistant to change. Our case study reveals that the failure of the POINTS system unleashed a new set of pressures that, when added with those we identified in our first round of analysis, combined to further discredit the old IT governance arrangement. In our discussion presented later in this chapter, we suggest that the change process would probably not have progressed to the point that it has without the breakdown of POINTS. Simply put, a major event—in the form of a functional failure—was required to provide enough pressure to deliver a mortal blow to the decentralized IT governance mechanisms.

Following the failure of the POINTS system we can trace the emergence of new ideals, discourses, and techniques of control. We began our analysis by examining the events immediately preceding the breakdown of POINTS and the events that followed the breakdown. Prior to the breakdown, an important ideal circulating in the environment was the considerable resistance to the new IT governance regime. However, with the failure of POINTS a new rush of organizational ideals emerged that countered this resistance and strengthened the new regime. Important discourses also emerged in the post-POINTS environment. These discourses were the state's first IT strategic plan and a comprehensive set of policies and procedures. Finally, we identified the

emergence of two techniques of control that codified the ideals and discourses we revealed in our second round of analysis. The first technique of control was the diffusion and enforcement of formal project planning techniques, which had a powerful influence on the organization's social practice; the second was Active Directory, which affected central elements of the network infrastructure. Tables 6-6 and 6-7 summarize our second round of analysis. In the next section we identify and discuss our major findings from this research project.

**Table 6-6. Summary of second round of analysis.**

**a. Oliver's pressures of deinstitutionalization.**

<b>Functional</b>	<b>Political</b>	<b>Social</b>
The failure of the POINTS system. The write-off represented a \$50 million loss to the state.	<p>The POINTS system failure provided the legislature and the senior civil service with motivation for change.</p> <p>A powerful senior Senator emerged to champion IT governance reform.</p> <p>The POINTS failure became a politically sensitive issue. Politicians and civil servants distanced themselves from preserving the status quo.</p>	The state's citizenry were outraged to learn about the large and expensive failure. The state's IT credibility was questioned.

**b. Hasselbladh's and Kallinikos' ideals, discourses, and techniques of control.**

<b>Ideals</b>	<b>Discourses</b>	<b>Techniques of Control</b>
Resistance to the changes called for by the Information Technology Act.	Development of the state's first Strategic Plan, which called for an enterprise view of computing and strong governance mechanisms.	Enforcement of formal project planning techniques by the CIO, legislative auditors, and the state's Budget Director.
Call for increased accountability of IS projects.		
Distrust of IT functions as a byproduct of POINTS.	Publication of the state's first comprehensive policies and procedures.	Deployment of Active Directory with its inscribed federated logic to manage the larger infrastructure.

**Table 6-7.** Summary of first and second periods of analysis.**a. Oliver's pressures of deinstitutionalization**

<b>Function Pressure</b>	<b>Political Pressure</b>	<b>Social Pressure</b>
<b>Pre-POINTS failure</b>		
Lack of system interoperability	Legislative distrust of the state's IS function	Growing technical expectations from citizenry
Redundant systems within the state infrastructure	Lack of expert who possessed insight into entire IT landscape	Politicians and senior civil servants possessing higher levels of sophistication
IS contract system that lacked legislative oversight		
<b>Post-POINTS failure</b>		
The failure of the POINTS system. The write-off represented a \$50 million loss to the state.	The POINTS system failure provided the legislature and the senior civil service with motivation for change.  A powerful senior Senator emerged to champion IT governance reform.  The POINTS failure became a political sensitive issue. Politicians and civil servants distanced themselves from preserving the status quo.	The state's citizenry were outraged to learn about the large and expensive failure. The state's IT credibility was questioned.

Table 6-7. (continued).

## b. Summary of Hasselbladh's and Kallinikos' ideals, discourses, and techniques of control.

Ideals	Discourses	Techniques of Control
<b>Pre-POINTS failure</b>		
Growing recognition of the importance of technology within society	Formal eGovernment policy	Information Technology Act codified into law the contents of Senate Bill 131
Promise of eGovernment to radically reshape government	Senate Bill 131, which called for the drastic restructuring of IT governance	Information Technology Act formed a new organization to guide IT governance and created the CIO position, among other things
Skepticism toward IT function by government officials		
Structural problems impeding promise of eGovernment		
Lack of central expert who had the pulse on IT programs		
<b>Post-POINTS failure</b>		
Resistance to the changes called for by the Information Technology Act.	Development of the state's first Strategic Plan, which called for an enterprise view of computing and strong governance mechanisms.	Enforcement of formal project planning techniques by the CIO, legislative auditors, and the state's Budget Director.
Call for increased accountability of IS projects.	Publication of the state's first comprehensive policies and procedures.	Deployment of Active Directory with its inscribed federated logic to manage the larger infrastructure.
Distrust of IT functions as a byproduct of POINTS.		

## 6.9 Research Discussion and Findings

### 6.9.1 Introduction

In this section we identify our major findings that provide original insight into the research question we established at the beginning of this work. That is:

*How do deeply institutionalized IT governance arrangements change over time?*

Based upon an analysis of our empirical material we suggest that an institutional perspective is a useful lens in viewing IT governance in organizations. This position is in contrast to the dominant perspective found within the IS literature that largely views the transformation process as the byproduct of purposeful action by organizational actors. As we established in Chapter 2, most of the academic research in this area falls under what Orlikowski describes as planned change models, where “managers are the primary source of organizational change, [and] these actors deliberately initiate and implement changes in response to perceived opportunities to improve organizational performance or ‘fit’ with the environment” (Orlikowski 1996). By employing an institutional conceptualization and analysis we are able to provide an alternative perspective to the planned change models that dominate the literature.

In the next section we highlight the five major findings of this work and then elaborate on each.

### 6.9.2 Major findings

In this section we identify the major findings in this work. The findings are listed below and an elaboration of each follows.

- IT governance arrangements and logics represent more than a rational tool for coordinating and governing IT resources.
- IT governance arrangements are inextricably tied to and influenced by the larger institutional environment.
- Institutionalized IT governance arrangements do not simply go away; instead the legitimacy of these arrangements is eroded by delegitimizing pressures.
- The emergence of a new IT governance regime is a complex process in which increasingly specific ways for defining and acting on reality are socially constructed and enforced.
- Institutionalizing IT governance mechanisms can require the presence of codified social practices and the deployment of technologies that are inscribed with specific formal mechanisms for acting on reality.

### **6.9.3 IT governance arrangements as institution**

A major contribution in this research project is the conceptualization of IT governance arrangements in organizations as an institution. In our case study we suggest that the decentralized IT governance arrangement possessed institutional-like characteristics as understood in neo-institutional theory. That is to say, the decentralized IT governance arrangement “was infused with value beyond the technical requirements at hand” (Selznick 1957). This suggests that the decentralized logic had come to represent the taken-for-granted way of governing IT resources and served as the basis for the scripts and routines that were perpetuated and diffused throughout the organization. The decentralized perspective had been the dominant paradigm since technology began to diffuse across the organization. By revealing the institutional nature of the IT



governance arrangement in our case study, we are able to bring forward the inherent resilience some IT governance arrangements possess. Accordingly, it is extraordinarily difficult to transform what are considered to be the legitimate mechanisms for carrying out IT governance activities.

#### **6.9.4 IT governance and its social and technical institutional context**

Where the IT governance mechanisms have become an institution we need to recognize the connection to its institutional context. In our case study we tied the decentralized IT governance paradigm to elements in the macro and micro environment. On the macro level, the strong decentralized ethos had deep roots into the United States' political environment. During the past 30 years, notions of decentralization have been central themes in national politics within the U.S. The legitimacy of the decentralized paradigm accelerated during the Reagan years (Maier, Smith et al. 2003), and the paradigm is an important element in the New Public Management (NPM) (Barzelay 2001). Taking a step closer to the context of our case study we see that the decentralized ethos was deeply ingrained in Montana's political environment. The state's conservative tendencies played an important role in reinforcing and preserving the historical institutional logic.

In attempting to understand the larger institutional context, we realize that the technology deployed in the organization played a complementary role in establishing the institutional context. In our case, information technology was introduced in the form of mainframe computers installed in individual government agencies. This type of computer architecture is, by its very nature, decentralized. Accordingly, as computing grew in importance and capabilities, the individual departments continued to make decisions regarding the deployment and use of technology almost to the complete exclusion of other agencies' computing needs and capabilities.

In the present day context of our case study, we saw that the Active Directory system that was deployed possessed an embedded logic that was consistent with a federal IT governance architecture. As we established earlier in this work, this type of technology was designed with a central administrative unit that delegates authority to the periphery of the organization. The central unit explicitly defined the level of control the various agencies and departments could have on resources and established the type and structure of resources within the network infrastructure.

As we established in Chapter 2, an important element of institutional theory is how legitimate ways for carrying out organizational activities are developed in the macro environment and diffused first to societal sectors and finally to individual organizations. Implicit in this viewpoint is that these legitimate techniques are developed outside the organization and in a distinctly different context. We can consider the deployment of Active Directory in a similar light. This technology, which emerged into a technique of control, was developed outside the organization and possessed certain distinct characteristics for organizing and managing IT assets. This specific technology was co-opted by the organization and deployed by organizational actors for the purpose of shaping, defining, and controlling important organizational activities relating to governing enterprise IT activities.

#### **6.9.5 IT governance and the loss of institutional legitimacy**

Earlier in this work we showed how IT governance structures can be conceptualized as an institution within some organizations. This was accomplished by tying IT governance and its transformation to neo-institutional theory, which provides an elaborate and sophisticated theoretical foundation from which to work. An important contribution that stemmed from this effort is the use of strong theoretical conceptions in the form of Oliver's (1992) three pressures to analyze the deinstitutionalization process. Institutions are rich and

complex arrangements that are not simply swept away and instantaneously replaced by new more-legitimate regimes. Instead, the breakdown of an institutionalized management mechanism is a detailed process that provides invaluable insight into the larger context that sees the construction of a new regime. Equally important is that as an institutional arrangement is losing legitimacy it is simultaneously creating an atmosphere in which alternatives can be considered.

In analyzing the case study that is the backbone of this work, we chose to break our analysis into two distinct sections. The first portion of our analysis focused on the events leading up to the POINTS failure, while the second portion examined the events surrounding the system's failure through the build up of a new IT governance regime. One of the primary reasons for doing this is to reveal clearly the pressures that undermined the decentralized IT governance arrangement. In our analysis we identified multiple functional, political, and social pressures that commingled and began to erode the regime. As we captured in our case study and analysis, the decentralized regime was compromised to such a degree that new and conflicting IT governance mechanisms began to emerge. However, simply because an institution comes under pressure and an alternative conceptualization begins to emerge does not mean the alternative will prevail. Dacin and colleagues capture this point when they write:

“Pressures for deinstitutionalization, whether they are primarily functional, political, or social in nature, will not automatically lead to a breakdown in institutional norms”  
(Dacin, Goodstein et al. 2002).

Consistent with this understanding, we stated that at the conclusion of our first phase of analysis, the decentralized logic was still alive within the enterprise. This is not surprising considering the deep institutional roots possessed by the decentralization agenda. We believe it is arguable whether the federated regime

would have gained traction without the additional pressure produced by the failure of POINTS. The POINTS system failure served as a major functional pressure that further contributed to the deinstitutionalization of the decentralized ethos.

By focusing our analysis on the two distinct periods, we were able to perceive how the events in the first period influenced the context in the second period. If we were to view the transformation process from only one of these perspectives, we would see only a partial picture that is not faithful to the rich empirical context. Specifically, the deinstitutionalizing pressures identified in the two periods of our analysis are not independent sets of delegitimizing pressures. Instead, the pressures identified are reinforcing. The breakdown of POINTS, which occurred in the second period we analyzed, reinforced the organizational-wide concerns that we identified during the first phase of delegitimization. Similarly, the POINTS failure was interpreted in the context of the powerful functional, political, and social pressures we identified in the first phase of our analysis. These are inextricably tied together and should be viewed as such.

Using Oliver's framework provides significant insight into how institutionalized governance mechanisms erode. However, by including the deinstitutionalization process in our analysis, we move beyond the simple fact of erosion to better understand that which comes in its place. As we stated above, as institutions begin to erode and lose legitimacy alternatives begin to emerge. This is what Tyre and Orlikowski refer to as "windows of opportunity" for meaningful change (Tyre and Orlikowski 1994).

### **6.9.6 IT governance as a social construction**

We began our findings by stating that IT governance arrangements possess institution-like characteristics that are tied to the macro and micro context in which the organization is embedded. Consistent with neo-institutional theory,

we view the emergence of IT governance forms as a socially constructed process that incorporates the logics contained in the macro and micro environments along with the actions and sense-making activities of organizational actors. Accordingly, what emerges as an IT governance mechanism in an organization is the byproduct of the interaction of all these elements.

A major part of our analysis was concerned with examining the transformation process from the perspective of emerging ideals, discourses, and techniques of control. By employing this framework we were able to provide original insight into the transformation process. Our analysis clearly showed that the transformation process can be understood as the evolution of ideals in their basic form, to the more formalized organizational discourses and, finally, into codified techniques of control. It is through this evolution that we can trace the construction of the more enduring elements of organizational life. This implies that strict techniques of control are not simply planted in organizations for the purpose of establishing accountability and control. Instead they are the reflection of the evolution of ideals and discourses.

### **6.9.7 Institutionalizing IT governance: the social and the technical**

Another important finding in our case study is that institutionalizing an IT governance regime can require both social and technical enforcement mechanisms. We identified three important enforcement mechanisms or techniques of control within our case study that helped to shape the enforcement of the federated IT governance arrangement. The three techniques of control were: the passage of the Information Technology Act (ITA), which made the fundamental changes proposed by the legislature into law; the emergence of formal project planning techniques; and the deployment of Active Directory.

All three techniques of control played an important role in reinforcing the new IT governance regime. The passage of the ITA resulted in the formal codification of the new regime, which played a critical role in establishing its legitimacy within the state. However, we submit that this technique of control would not have been a sufficient enforcement mechanism on its own. Instead, the emergence of the project planning techniques (a social process) and the deployment of the Active Directory system (a technical process) were critical control mechanisms in this story of institutional change. Similar to the pressures that undermined the decentralized IT governance arrangement, we should view the techniques of control as a related set of accountability and control mechanisms. In a sense, the passage of the ITA prepared the macro landscape for the emergence of the project planning techniques and Active Directory deployment. The social control mechanisms (i.e., project planning techniques) and the technical control mechanisms (i.e., Active Directory) played complementary roles in enforcing the new regime, which was based on a federal IT governance model.

### **6.9.8 Conclusion on major findings**

We must draw upon new and interesting ideas to extend the body of knowledge related to the transformation of IT governance regimes. An institutional perspective complements this effort. By conceptualizing the IT governance arrangement as an institution we are able provided a deeper theoretical understanding of the phenomenon. In Chapter 2 we suggested that one criticism of much of the research related to this topic is the lack of a serious theoretical conception of the IT function and its governance. By using neo-institutional theory we are able to offer an original conceptualization of IT governance and provide more insight into the transformation process than simple normative prescriptions.

By conceptualizing an IT governance arrangement as an institution we explicitly recognize the resilience of such arrangements and the difficulty inherent in transforming them. Moreover, we are able to show that the transformation process is not a discrete event that rational managers drive. Instead, the transformation process begins with the subtle build up of functional, political, and social pressures that arise to erode the legitimacy of the IT governance regime. It is in this environment that alternative conceptualizations of IT governance begin to emerge. The construction of the new regime can be understood as an emergent phenomenon that can be traced through ideals, discourses, and techniques of control.

## 6.10 Chapter Conclusion

We began this chapter by setting out to answer our research question:

*How do deeply institutionalized IT governance arrangements change over time?*

We began our pursuit of an answer by first establishing that our case study is an instance of ‘profound institutional change,’ and then providing an analysis of the event studied with the theoretical framework we developed in Chapter 3. Our analysis took a holistic approach by considering two important, interrelated components of any change process. First, we adopted Oliver’s (1992) framework to reveal the functional, political, and social pressures that had the effect of eroding the decentralized IT governance arrangement that had guided IT activities since computer technology was introduced in Montana’s state government. Following this we utilized Hasselbladh and Kallinikos (2000) analytic device of ideals, discourses, and techniques of control, which allowed us to analyze the process of how new regimes are socially constructed.

Combining these frameworks provided us with a unique lens with which to interpret changes in a deeply institutionalized IT governance arrangement. We

intuitively know that deeply institutionalized organizational activities do not simply disappear. Instead, internal and external pressures to the organization emerge to erode gradually the legitimacy of the taken-for-granted IT governance structure and practices. The erosion process, which is a gradual and emergent phenomenon, produces as a byproduct an organizational environment in which alternative conceptualizations are considered and negotiated.

The construction of the new regime is also a complex and emergent process that sees the new regime built upon evolving forms of communication. Initially, general ideals emerge within the organization about an alternative conceptualization. These ideals have their origins in internalities of and externalities to the enterprise. Typically, the ideals are a direct byproduct of what are considered to be the legitimate techniques for IT governance as understood in the external and internal environments. Following the generation of ideals, more formal forms of communication emerge, often in the form of documents such as strategic plans and consultants' reports. These documents represent the formalization of *some* of the ideals that were considered within the organization. However, strategic plans and mission statements are not enough to change deeply rooted organizational practices. Instead, the ideas contained within documents such as strategic plans must be formalized and codified so that the legitimate mechanisms for carrying out organizational activities can be enforced within the organization. While this represents the general theoretical insight we gained from our analysis, it would be naïve to think that once IT governance mechanisms are codified the change process is complete.

Our analysis was divided into two periods. In the first section we analyzed the events leading up to the breakdown of the POINTS system while in the second portion we focused on the events surrounding the failure of the system. As mentioned earlier, focusing our analysis on the two periods helps us to provide a more sophisticated and nuanced understanding of the transformation phenomenon. During our first period of analysis we showed the delegitimization



of the old form and the emergent process that included the formal codification of the new IT governance mechanisms into law. However, as our analysis showed, there was considerable resistance to the new arrangement. In short, even though the new regime had been formally codified it was not enough to fully supplant the old logic. In fact, we believe a plausible case could be made that the transformation from a heavily decentralized model to a relatively strong federal model would not have taken place if the decentralized model was not further delegitimized by the POINTS failure.

Perhaps our work's most important contribution for theory and practice is that deeply institutionalized IT governance arrangements must undergo considerable delegitimization before a new regime can be constructed. It is worth noting that the new federated regime chronicled in our case study does not yet enjoy the same robustness the previous regime possessed—the change process continues. However, the federated regime has emerged as a legitimate mechanism for carrying out IT activities and has gained considerable strength during the last two years. It is our intention to continue to follow the IT governance regime and it is our sincerest hope that this work serves as the first installment in the ongoing organizational drama related to governing the IT resources in Montana.

In the next chapter we identify and discuss the contributions this research project has made to theory, practice, and pedagogy.

## **Chapter 7: Conclusion**

### **7.1 Introduction**

The concluding chapter of this thesis is organized into three sections. The first section provides an overview of the thesis. In the second section, we identify and discuss the contributions this work has made to theory, practice, and teaching. We conclude our final chapter by discussing the limitations of our work and identifying areas for future research.

### **7.2 Overview of the research**

In our introduction (Chapter 1) we identified the aims and motivations for this research project and introduced our research question. We began by discussing the increased interest in IT governance issues from both the academic and practitioner communities. This interest stems in part from the stringent reporting requirements imposed by the Sarbanes Oxley Act of 2002. This act requires organizations to critically examine all their corporate governance mechanisms, including IT governance. The latter is “often the weakest link in a corporation’s overall governance structure” (Brown and Grant 2005). Issues of IT governance are not isolated in the private sector; the public sector views technology as a central element in reshaping inefficient bureaucratic process in favor of more seamless and dynamic arrangements (Eyob 2004). In light of this increased interest from multiple constituents, our research question is:

***How do deeply institutionalized IT governance arrangements change over time?***

In Chapter 2 we reviewed the literature related to the structuring and transformation of the IT function and the IT function's governance mechanisms. We discussed the conventional models for structuring and governing the IT function as well as more progressive works. We also critically examined the literature discussing the transformation of IT governance regimes in organizations. First we recognized that this is an under-researched area within the IS literature (Sabherwal, Hirschheim et al. 2001). Second, most of the frameworks related to this topic fall under a category Orlikowski describes as "planned change models" (Orlikowski 1996). Adherents to this perspective argue that the transformation of IT governance takes place through the formal planned actions of rational actors. However, this perspective is problematic as it assumes that enlightened organizational actors are able to ascertain the ideal governance regime and structure for the IT function and then move the organization in the desired direction. This perspective also assumes that organizations are stable and, once the desired change is accomplished, the organization re-stabilizes until management implements another change. We concluded the chapter by discussing the limitations of this point of view and suggest that an institutional perspective might be useful to those interested in IT governance issues.

In Chapter 3 we discussed the central themes related to neo-institutional theory and established the theoretical framework we used to analyze the empirical data presented in Chapter 6. While neo-institutional theory has its roots in sociology, it is increasingly being used by scholars researching IS phenomena. After a review of the literature we concluded that an institutional perspective is particularly useful for theorizing the transformation of IT governance. We then introduced the theoretical framework that is derived from the work of Oliver (1992) and Hasselbladh and Kallinikos (2000). Oliver's work provides special insight into the process of deinstitutionalization while Hasselbladh and Kallinikos provide a lens whereby we can examine the process that leads to the construction of institutionalized arrangements. By coupling these works we

create an effective way of looking at the process of institutional change allowing us to understand and assess the factors that lead to the erosion of taken-for-granted organizational structures and routines along with the process of constructing a new set of institutionalized arrangements.

In Chapter 4 we discussed the methodological aspects of this work. The selection of a research method should depend on the type of research question being asked and the subject matter under investigation (Galliers 1991). This work is concerned with understanding the process of institutional change; thus, we chose the case study research strategy. In this Chapter 4 we discussed how the chosen strategy was well suited for illuminating the rich contextual elements that were central to the transformation process we captured in the next chapter.

In Chapter 5 we introduced our case study. We chronicled the transformation of a deeply ingrained IT governance regime of a public sector organization in the United States. The organization that served as the focus of our inquiry is the state government of Montana, a state located in the northwestern portion of the United States. We capture the events surrounding the erosion of a historically dominant IT governance regime and the process that led to the creation of a new set of IT governance mechanisms. In addition to presenting the events surrounding the transformation of the State's IT governance regime we endeavored to stay faithful to the rich social, economic, and technical context found in our field work.

In Chapter 6 we analyzed our case study using the theoretical framework developed in Chapter 3. Our analysis revealed that the transformation process is not a discrete event that rational managers drive. Instead, the transformation phenomenon can be viewed as a process whereby the historically dominant mechanisms for governing IT are compromised and lose legitimacy and are then replaced by other arrangements. We conclude the chapter by discussing the major findings generated from this research project.

## **7.3 Contributions**

### **7.3.1 Introduction**

The use of an institutional perspective in understanding the transformation of IT governance introduces a fresh perspective to this body of scholarship. However, the novel element of our theoretical orientation is our choice to combine two progressive works from the larger neo-institutional literature. By combining Oliver's framework for understanding deinstitutionalization and Hasselbladh and Kallinikos' focus on the construction of institutional arrangements we are able to provide a more holistic interpretation of the IT governance transformation process. It is our hope that this innovative and original approach to understanding the IT governance transformation process makes a significant contribution to our field by contributing to theory, practice, and pedagogy. We detail these contributions below.

### **7.3.2 To inform theory**

The application of a neo-institutional perspective to the IT governance transformation process is a fresh approach that represents an original contribution to this subset of the IS literature. The primary benefit of this approach is that it enables us to provide a more theoretically sophisticated conceptualization of the IT function and the governance mechanisms that guide it. In our case study we were able to clearly show that the decentralized IT governance logic that had guided IT-related activities during the preceding 25 years was an institution; that is, it was more than an idea on how to structure and govern the State's IT assets. Instead, this governance structure had developed into a deeply entrenched way to govern these types of organizational activities. The recognition of the deep-rooted nature of the IT governance logic in our case study represents a significant departure from most of the IS literature. One of the benefits of equating IT governance with neo-institutional theory is that we are

able to ground our understanding of the phenomenon in theory and not just a list of normative best practices.

Another important contribution comes as a byproduct of joining the two frameworks described above (Oliver's and Hasselbladh and Kallinikos'); that is, the union allows us to provide a more holistic view of the transformation process. This enables us to provide a more nuanced interpretation while remaining faithful to the complexity of the change process. As we stated in Chapter 3, the coupling of the frameworks allowed us to provide a more detailed analysis of the change process than we could using each model on its own. Another benefit of combining the frameworks is that it provided us with tools to reveal both the micro and macro elements that influence the change process. This distinction is important as we do not privilege one over the other. The joint framework places both micro and macro elements on equal footing.

### **7.3.3 To inform practice**

Our theoretical framework provides an important contribution to practice by providing a conceptualization of the IT function and its governance in a manner that makes intuitive sense to the non-academic. The notion of "institution" as it is generally understood presents a novel and useful conceptualization that conveys the enduring and entrenched elements of IT governance arrangements in complex environments. This familiarity makes it a more approachable perspective for the active practitioner, which allows us to focus on conveying the elements of this work that can be of direct benefit to practitioners.

Beyond the intuitive understanding of IT governance as institution, our framework also can help to convey the mechanisms that undermine these arrangements. We submit that a broader perspective based on understanding the pressures that combine to compromise institutionalized arrangements will enable those in practice to develop a better picture of the change process. In

practice we are often aware of functional problems such as a failed system and its effect in an organization. However, an appreciation of the political and social pressures can help practitioners better understand the more subtle aspects of the deinstitutionalization process.

The portion of our framework that addresses the process of change will also be of interest to practitioners. While the notions of ideals, discourses, and techniques of control are not as intuitive as the notion of institution, we believe the insight we provide utilizing these concepts will be of particular interest. A central concern in practice is to attempt to make the systems we build and the processes we introduce stick. However, for those of us that have attempted this, we know how difficult it is in the context of real organizations. One benefit of our approach is that it places primacy on various forms of communication in the change process. It is our experience that practitioners tend to focus on techniques of control and not the other forms of communication. Unfortunately, the role of the practitioner is often to implement a control mechanism (usually in a short period of time) that was appropriated completely outside the context of the organization without the enforcer understanding the larger organizational ideals and discourses. In our view there is considerable value in understanding how these various forms of communication help to illuminate the big picture.

#### **7.3.4 To inform pedagogy**

Another possible use of our framework is as a teaching tool. As we stated previously, the academic literature is dominated by the planned change perspective, which places a primacy on rational actors driving the transformation of IT governance. Our framework provides alternative ways of thinking about both IT governance in organizations and the change process. In addition, we illuminate the resilience some IT governance arrangements possess and the difficulty leaders encounter in changing deep-rooted organizational practices. Another benefit that students may realize from this work is its

emphasis on the holistic nature of the transformation process, because our model provides mechanisms for analyzing and assessing the broader transformation event.

Finally, we believe that our innovative use of theory in this work may capture the interest of students. One of the difficulties of academic life is conveying the importance of theory to students who desire to learn best practices, which often, unfortunately, come in the form of checklists and other simplified tools. These normative mechanisms rarely provide the insight needed to deal with the complexity of a world characterized by change. We recognize that this might be an ambitious goal, but the value of developing a sophisticated point of view on the basis of good theory will be of tremendous use to students as they make their way beyond our classrooms and into the world.

### **7.3.5 Conclusion on contributions**

Perhaps the most original aspect of this research effort is the framework used to analyze our empirical data. Earlier in this work we argued that one of the primary benefits of coupling Oliver's framework with that of Hasselbladh and Kallinikos is that it provides the researcher with the ability to understand the transformation process in a more holistic manner. Oliver gives us the ability to reveal important elements of the deinstitutionalization process while Hasselbladh and Kallinikos provide us with the tools to examine how a new regime is constructed. Together these frameworks provide more than each is capable of on its own. As we pointed out in Chapter 3, this is the first instance in which the Hasselbladh and Kallinikos framework has been applied to empirical data, and the first time the frameworks have been combined.

## **7.4 Limitations of research and future research**

"No single study can do everything, or even do the things it attempts to do as completely as one would like" (Scott, Ruef et al. 2000). This research is no



exception as methodological choices in IS research represent a set of tradeoffs, and the tools we choose possess strengths and weaknesses (Galliers 1991). In this section we identify the limitations associated with this research project. The primary limitations we elaborate on below include our use of a single case study for our empirical data and the coupling of two distinct frameworks for our analysis. In addition to identifying the limitations associated with this research we also identify opportunities for future study that are in part stimulated by the many questions this project has generated.

#### **7.4.1 The strengths and weaknesses of a single case study**

Our case study represents an exploration of the institutional nature of IT governance and offers insight into how deeply institutionalized IT governance regimes change over time. However, the insight generated from this exploration is based on a single organization rather than a larger cross-section of an organizational population. Research projects utilizing a single case are sometimes criticized because it is difficult to make generalizations from such projects (Flick 2002). However, Yin (1994) argues that single and multiple case studies “are generalizable to theoretical propositions and not to populations or universes” (Yin 1994). The notion of statistical generalizability is an important component of positivistic reasoning. Positivists argue that statistical generalizability allows researchers to build models that possess robust predictive power (Weber 2003). However, the interpretive tradition focuses on analyzing and explaining phenomena from the rich perspective of the organizational participants who are wrapped in a specific context. Essentially, the research approach we adopt in this project is not related to the notion of statistical generalizability, nor does our approach aspire to build predictive models of social phenomenon. Walsham captures this important distinction when he writes,

“...from an interpretive position, the validity of an extrapolation from an individual case or cases depends not on the representativeness of such cases in a statistical sense, but on the plausibility and cogency of the logical reasoning used in describing the results from the cases, and in drawing conclusions from them” (Walsham 1993).

Thus, by adopting an interpretive perspective we aspire to provide a theoretically rigorous analysis that is plausible and logically consistent to explain the complex social, technical, and political phenomenon we captured in our work. Accordingly, the findings contained within this project are not generalizable to any population.

It is also worth noting that many of the most frequently cited works related to the transformation of IT governance focus on single case studies. For example, several of the seminal articles on the transformation of IT governance published in MISQ draw on single case studies for the empirical data (see (Brown 1997; Clark, Cavanaugh et al. 1997; Cross, Earl et al. 1997; El Sawy, Malhorta et al. 1999). In part, we believe these authors chose single case studies because studying the transformation of IT governance inevitably requires the researcher to attempt an analysis that is “contextualist and processual in character” (Pettigrew 1990). To effectively conduct this type of research the investigation must capture “the cultural, social and cognitive forces of such a process” (Avgerou 2001). Our decision to focus on a single case study is consistent with some of the best academic work on this topic.

While a single case strategy was appropriate for the goals of this research project, the insights generated from this work could be improved on and enhanced by a larger study that took a longitudinal perspective across a broad cross-section of a population of organizations. An analysis of a larger cross-section of organizations would allow us to examine the institutional nature of IT governance regimes in more detail. For example, we may be able to generate insight into the antecedents that lead to the resilience of some IT governance

regimes. In addition, a larger study would allow us to refine the different subcategories of political, social, and functional pressures that emerge in organizations to undermine IT governance regimes.

#### **7.4.2 The coupling of two different frameworks**

The theoretical framework employed in this work was the byproduct of joining contributions made by Oliver (1992) with those of Hasselbladh and Kallinikos (2000). By joining these two works we were able to create an analytic device that allowed us to provide new insight into the transformation of IT governance. However, the work of Hasselbladh and Kallinikos, which is intended to provide a “theoretical framework for analyzing institutions in the process of formation and the mechanisms underlying these processes” (Hasselbladh and Kallinikos 2000), was inspired by the work of Foucault who was concerned with examining power relations in society. Since the Hasselbladh and Kallinikos framework is inspired by the work of Foucault and Oliver’s framework is not, it is reasonable to ask: Are these two frameworks compatible?

There is always a risk when combining analytic devices, but we believe that in this case the risk is minimal. While Hasselbladh and Kallinikos’ notion of ideals, discourses, and techniques of control was inspired by the work of Foucault, their motivation and intellectual reasoning was firmly grounded in extending neo-institutional theory. Accordingly Hasselbladh and Kallinikos’ work is not inconsistent with Oliver’s framework, which is intended to offer insight into how institutionalized organizational arrangements erode and lose legitimacy. While this is not an ideal situation we believe that any shortcomings in the work from the combination of these analytic devices is heavily outweighed by the robust analysis they provide when combined.

### 7.4.3 Future research

Our motivation for this research project came from a long-standing interest in IT governance and the management of technology in organizations generally. We set out to ask and answer an important question relating to IT governance, but now that we have accomplished this we are left with a multitude of interesting avenues to explore. This section discusses two of the ideas that we hope to pursue following the successful completion of this project.

In Chapter 3, wherein we introduced the theoretical framework used in this project, we discussed the work of Sonjay Gosain and his efforts to conceptualize ERP systems as carriers of institutional norms. Gosain writes of ERP systems:

“On one hand, these systems are subject to institutional forces and institutional processes that set the rules of rationality. On the other hand, they are an important embodiment of institutional commitments and serve to preserve these rules by constraining the actions of human agents” (Gosain 2004).

The same can be said of advanced directory service systems in organizations. Following Gosain’s lead, we believe it would be fruitful to make a more detailed exploration of the institutional nature of directory services technology. While this technology is ubiquitous and has a profound effect on the structure and governance mechanisms of organizations, it is an area in which little academic research exists.

As we stated earlier in this work, institutional analysis can take place on several different levels, ranging from the societal level to organizational subsystems. Since this project is concerned with how IT governance regimes change, our analysis has been focused at the organizational level. However, it may be interesting to refocus the level of analysis down to organizational subsystems to examine how individuals and the roles they occupy in organizations are influenced by institutional dynamics. Hasselbladh and Kallinikos address this

topic directly in their work as they suggest institutional pressures “shape the way actors understand themselves and their roles (Hasselbladh and Kallinikos 2000)” in organizations. In the context of this work it would be interesting to take a more detailed look at how new organizational roles, such as the CIO, emerge in organizations.

## References

Abrahamson, E. (1991). "Management fads and fashions: the diffusion of and rejection of innovations." Academy of Management Review 16: 586-612.

Agarwal, R. and V. Sambamurthy (2002). "Principles and Models for Organizing the IT Function." MIS Quarterly Executive 1(1): 1-16.

Alter, S. (2002). "Sidestepping the IT Artifact, Scrapping the IS Silo, and Laying Claim to "Systems in Organizations"." Communications of the Association for Information Systems 12: 494-526.

Andersen, K. V., H. Z. Henriksen, et al. (2004). Stray Dogs and Wild Cats Tracking Down Information Systems In Government. ECIS 2004, Turku, Finland, Turku School of Economics and Business Administration.

Avgerou, C. (2000). "Information systems: what sort of science is it?" Omega 28(5): 567-579.

Avgerou, C. (2000). "IT and organizational change: an institutionalist perspective." Information Technology and People 13(4): 231-262.

Avgerou, C. (2001). "The significance of context in information systems and organizational change." Information Systems Journal 11: 43-63.

Avgerou, C. (2002). Information Systems and Global Diversity. Oxford, Oxford University Press.

Avgerou, C. and T. Cornford (1998). Developing Information Systems: Concepts, Issues and Practice. London, MacMillan Press Ltd.

Banker, R. D. and R. J. Kaufman (2004). "The Evolution of Research on Information Systems: A Fiftieth-Year Survey of the Literature in *Management Science*." Management Science 50(3): 281-298.

Baroudi, J. J. and W. J. Orlikowski (1989). "The Problem of Statistical Power in MIS Research." MIS Quarterly 29(2): 87-106.

Barrett, N. (1997). The State of the Cybernation: Cultural, Political and Economic Implications of the Internet. London, Kogan Page Ltd.

Bartlett, C. A. and S. Ghoshal (1990). "Matrix Management: Not a Structure, a Frame of Mind." Harvard Business Review 68(4): 138-146.

Barzelay, M. (2001). The New Public Management: Improving Research and Policy Dialogue. Berkeley, University of California Press.

Benbasat, I., D. K. Goldstein, et al. (1987). "The Case Research Strategy in Studies of Information Systems." MIS Quarterly 11(3): 370-386.

Benbasat, I. and R. Weber (1996). "Research Commentary: Rethinking "Diversity" in Information Systems Research." Information Systems Research 7(4): 389-399.

Benbasat, I. and R. W. Zmud (2003). "The Identity Crisis Within the IS Discipline: Defining and Communicating the Discipline's Core Properties." MIS Quarterly 27(2): 183-194.

Bennis, W. G. and J. O'Toole (2005). "How Business Schools Lost Their Way." Harvard Business Review 83(5): 96-104.

Berger, P. L. and T. Luckmann (1967). The Social Construction of Reality: A Treatise in the Sociology of Knowledge. London, Penguin Books.



Bernstein, P. (1996). Against The Gods: The Remarkable Story of Risk. New York, John Wiley & Sons, Inc.

Bowker, G. C. and S. L. Starr (1999). Sorting Things Out. Boston, MIT Press.

Brint, S. and J. Karabel (1991). Institutional Origins and Transformations: The Case of American Community Colleges. The New Institutionalism in Organizational Analysis. P. J. DiMaggio and W. W. Powell. Chicago, The University of Chicago Press: 337-360.

Broadbent, M., P. Weill, et al. (1999). "The Implications of Information Technology Infrastructure for Business Process Redesign." MIS Quarterly 23(2): 159-182.

Brown, A. E. and G. G. Grant (2005). "Framing the Frameworks: A Review of IT Governance Research." Communications of the Association for Information Systems 15: 669-712.

Brown, C. V. (1997). "Examining the emergence of hybrid IS governance solutions: Evidence from a single case study site." Information Systems Research 8(1): 69-94.

Brown, C. V. and S. L. Magill (1994). "Alignment of the IS Function With The Enterprise: Toward A Model of Antecedents." MIS Quarterly 18(4): 371-403.

Brown, C. V. and S. L. Magill (1998). "Reconceptualizing the Context - Design Issue for the Information Systems Function." Organization Science 9(2): 176-194.

Brown, C. V. and V. Sambamurthy (1999). Repositioning the IT Organization to Enable Business Transformation. Cincinnati, Pinnaflex Educational Resources.

Carr, N. G. (2003). "IT Doesn't Matter." Harvard Business Review 81(5): 41-49.

Cavaye, A. L. M. (1996). "Case study research: a multi-faceted research approach for IS." Information Systems Journal 6: 227-242.

Chan, Y. E. (2002). "Why Haven't We Mastered Alignment? The Importance of the Informal Organizational Structure." MIS Quarterly Executive 1(2): 97-112.

Chandler, A. D. (1962). Strategy and Structure: Chapters in the History of the American Enterprise. Cambridge, M.I.T Press.

Checkland, P. (1999). Systems Thinking, Systems Practice. Chichester, John Wiley & Sons, Ltd.

Ciborra, C. U. (1996). "The Platform Organization: Recombining Strategies, Structures, and Surprises." Organization Science 7(2): 103-118.

Ciborra, C. U. (1999). "Notes on improvisation and time in organizations." Accounting, Management & Information Technologies 9(2): 77-94.

Ciborra, C. U. (2000). From Control to Drift: The Dynamics of Corporate Information Infrastructures. Oxford, Oxford University Press.

Clark, C. E., N. C. Cavanaugh, et al. (1997). "Building Change-Readiness Capabilities in the IS Organization: Insights from the Bell Atlantic Experience." MIS Quarterly 21(4): 425-455.

Cross, J., M. Earl, et al. (1997). "Transformation of the IT Function at British Petroleum." MIS Quarterly: 401-423.

Currie, W. L. (2004). "The organizing vision of application service provision: a process-oriented analysis." Information and Organization 14(4): 237-267.

Currie, W. L. and L. P. Willcocks (1998). "Analysing Four Types of IT Sourcing Decisions in the Context of Scale, Client/Supplier Interdependency and Risk Mitigation." Information Systems Journal 8: 119-143.

Dacin, T. M., J. Goodstein, et al. (2002). "Institutional Theory and Institutional Change: Introduction to the Special Research Forum." Academy of Management Journal 45(1): 45-57.

Daft, R. L. (2001). Organization Theory and Design. New York, Southwestern Thomson Learning.

Davis, G. B. (2000). Information Systems Conceptual Foundations: Looking Backward and Forward. Organizational and Social Perspectives on Information Technology. R. L. Baskerville, J. Stage and J. I. DeGross. Boston, Kluwer.

Davis, G. F. and W. Powell (1992). Organization-Environment Relations. Handbook of Industrial and Organizational Psychology. M. Dunnette and L. M. Hough. Palo Alto, CA, Consulting Psychologists Press: 315-374.

DiMaggio, P. J. (1991). Constructing an Organizational Fields as a Professional Project: U.S. Art Museums, 1920-1941. The New Institutionalism in Organizational Research. P. J. DiMaggio and W. W. Powell. Chicago, The University of Chicago Press: 267-292.

DiMaggio, P. J. and W. W. Powell (1983). "The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields." American Sociological Review 48(1): 147-160.

DiMaggio, P. J. and W. W. Powell (1991). The Iron Cage Revisited: Institutional Isomorphism and Collective Rationality in Organizational Fields. The New Institutionalism in Organizational Analysis. P. J. DiMaggio and W. W. Powell. Chicago, The University of Chicago Press: 63-82.

DiMaggio, P. J. and W. W. Powell (1991). The New Institutionalism in Organizational Analysis. Chicago, The University of Chicago Press.

Dunleavy, P., H. Margetts, et al. (2001). Policy Learning and Public Sector Information Technology. American Political Science Association's Annual Conference 2001, San Francisco.

El Sawy, O. A., A. Malhorta, et al. (1999). "IT Intensive Value Innovation in the Electronics Economy: Insights from Marshall Industries." MIS Quarterly 23(3): 305-335.

Elmagarmid, A. K. and W. J. McIver (2001). "The Ongoing March Toward Digital Government." IEEE Computer Society 34(2).

Eyob, E. (2004). "E-Government: breaking the frontiers of inefficiencies in the public sector." Electronic Government 1(1): 107-114.

Feldman, M. S. (2000). "Organizational Routines as a Source of Continuous Change." Organization Science 11(6): 611-629.

Firth, D. (2001). The Organizing Vision for Customer Relationship Management. Sixth Americas Conference on Information Systems (AMCIS), Boston, Massachusetts.

Firth, D. and C. Lawrence (2003). "State of Research Review: Genre Analysis in Information Systems Research." Journal of Information Technology Theory and Applications 5(3): 63.

Flick, U. (2002). An Introduction to Qualitative Research. London, Sage Publications.

Fountain, J. E. (2001). Building the Virtual State: Information Technology and Institutional Change. Washington D.C., The Brookings Institution.

Fulk, J. and G. De Sanctis (1999). Articulation of Communication Technology and Organizational Form. Shaping Organizational Form: Communication,

Connection, and Community. J. Fulk and G. De Sanctis. Thousand Oaks, Sage: 5-32.

Galliers, R. (2004). Reflections on Information Systems Strategising. The Social Study of Information and Communication Technology: Innovation, Actors, and Contexts. C. Avgerou, C. L. Ciborra and M. S. Feldman. Oxford, Oxford University Press: 231-262.

Galliers, R. D. (1991). Choosing Appropriate Information Systems Research Approaches: A Revised Taxonomy. Information Systems Research: Contemporary Approaches & Emergent Traditions. H.-E. Nissen, H. K. Klein and R. Hirschheim. Oxford, North-Holland: 327-343.

Galliers, R. D. and M. Meadows (2003). "A Discipline Divided: Globalization and Parochialism in Information Systems Research." Communications of the Association for Information Systems 11: 108-117.

Galliers, R. D. and A. R. Sutherland (1991). "Information Systems Management and Strategy Formulation: Applying and Extending the 'Stages of Growth' Concept." Journal of Information Systems(2): 89-114.

Garfield, M. J., A. A. Kamis, et al. (2004). "Champion Networks in Federated Interorganizational Systems: Case Studies in Telemedicine." Communications of the Association for Information Systems 14: 596-615.

Gibson, C. F. (2003). "IT-Enabled Change: An Approach to Understanding and Managing Risk." MIS Quarterly Executive 2(2): 104115.

Giddens, A. (1984). The Constitution of Society. Cambridge, Polity Press.

Goles, T. and R. Hirschheim (2000). "The paradigm is dead, the paradigm is dead ...long live the paradigm: the legacy of Burrell and Morgan." Omega 28: 249-268.

Goodhue, D. L., J. A. Quillard, et al. (1988). "Managing the Data Resource: A Contingency Perspective." MIS Quarterly 12(3): 323-337.

Gore, A. (1993). *Creating a Government that Works Better & Costs Less: Report of the National Performance Review*. Washington D.C., U.S. Government: 127.

Gosain, S. (2004). "Enterprise Information Systems as Objects and Carriers of Institutional Forces: The New Iron Cage?" Journal of the Association of Information Systems 5(4): 151-182.



Greenwood, R. and C. R. Hinnings (1993). "Understanding Strategic Change: The Contribution of Archetypes." Academy of Management Journal 36(5): 1052-1081.

Greenwood, R. and C. R. Hinnings (1996). "Understanding Radical Organizational Change: Bringing Together The Old and The New Institutionalism." Academy of Management Review 21(4): 1022-1054.

Greenwood, R., R. Suddaby, et al. (2002). "Theorizing Change: The Role of Professional Associations in the Transformation of Institutionalized Fields." Academy of Management Journal 45(1): 58-80.

Grossman, L. (1995). The Electronic Republic: Reshaping Democracy in the Information Age. New York, Penguin.

Handy, C. (1990). The Age of Unreason. Boston, Harvard Business School Press.

Hasselbladh, H. and J. Kallinikos (2000). "The Project of Rationalization: A Critique and Reappraisal of Neo-Institutionalism in Organization Studies." Organization Studies 21(4): 697-720.

Hawley, A. (1968). Human Ecology. In International Encyclopedia of the Social Sciences. New York, Macmillan.

Hirsch, P. M. (1986). "From Ambushes to Golden Parachutes: Corporate Takeovers as an Instance of Cultural Framing and Institutional Integration." American Journal of Sociology 91(4): 800-837.

Hirschheim, R. and H. K. Klein (2003). "Crisis in the IS Field? A Critical Reflection on the State of the Discipline." Journal of the Association of Information Systems 4(5): 237-293.

Holm, P. (1995). "The Dynamics of Institutionalization: Transformation processes in Norwegian Fisheries." Administrative Science Quarterly 40(3): 398-423.

Information Technology Services Division (2002). State of Montana Strategic Plan for Information Technology. Helena, Montana State Government: 28.

Information Technology Services Division (2004). State of Montana Strategic Plan for Information Technology 2006-2007. Helena Montana, State Government of Montana.

Jessup, L. M. and J. S. Valacich (2003). Information Systems Today. Saddle River, New Jersey.

Kallinikos, J. (2004). "The Social Foundations of the Bureaucratic Order." Organization 11(1): 13-36.

Keiser, A. (1997). "Rhetoric and Myth in Management Fashion." Organization 4(1): 49-74.

Kerzner, H. (2003). Project Management: A Systems Approach to Planning, Scheduling and Controlling. Hoboken, John Wiley & Sons.

King, J. L., V. Gurbaxani, et al. (1994). "Institutional Factors in Information Technology Innovation." Information Systems Research 5(2): 139-169.

Klein, H. K. and M. D. Myers (1999). "A Set of Principles for Conducting and Evaluating Interpretive Field Studies in Information Systems." MIS Quarterly 23(1): 67-94.

Kling, R. and S. C. Iacono (1989). "The Institutional Character of Computerized Information Systems." Office: Technology and People 5(1): 7-28.

Kraatz, M. S. and E. J. Zajac (1996). "Exploring the Limits of the New Institutionalism: The Causes and Consequences of illegitimate Organizational Change." American Sociological Review 61(5): 812-836.

Krackhardt, D. and J. R. Hanson (1993). "Informal Networks: The Company Behind The Chart." Harvard Business Review 71(4): 104-111.

Lacity, M., D. Feeny, et al. (2003). "Transforming A Backoffice Function: Lessons from BAE Systems' Experience with An Enterprise Partnership." MIS Quarterly Executive 2(2): 86-103.

Lacity, M. and R. Hirschheim (1999). Information Technology Outsourcing - What problem are we trying to solve? Rethinking Management Information Systems. W. L. Currie and R. D. Galliers. Oxford, Oxford University Press: 326-360.

Lamb, R. and R. Kling (2003). "Reconceptualizing Users As Social Actors in Information Systems Research." MIS Quarterly 27(2): 197-235.

Lawrence, C. (2003). An examination of the homogeneity among Strategic Technology Initiatives in the United States: A Neo-Institutional perspective. 3rd European Conference on e-Government, Trinity College Dublin, Ireland.

- Lee, A. S. (1989). "A Scientific Methodology for MIS Case Studies." MIS Quarterly: 33-50.
- Lee, A. S. (1991). "Integrating Positivist and Interpretive Approaches To Organizational Research." Organization Science 2(4): 342-365.
- Lee, A. S. (1999). Researching MIS. Rethinking Information Systems. B. Galliers and W. L. Currie. Oxford, Oxford University Press: 7-27.
- Lee, A. S. and R. L. Baskerville (2003). "Generalizing Generalizability in Information Systems Research." Information Systems Research 14(3): 221-243.
- Legislative Audit Division (2001). Process Oriented Integrated System (POINTS). Helena, State of Montana: 9.
- Luftman, J. N., C. V. Bullen, et al. (2003). Managing the Information Technology Resource: Leadership in the Information Age. New Jersey, Pearson.
- Maier, P., M. R. Smith, et al. (2003). Inventing America: A History of the United States. New York, W.W. Norton & Company, Inc.
- March, J. G. and J. P. Olsen (1984). "The New Institutionalism: Organizational Factors in Political Life." American Political Review 78: 734-749.

Markus, M. L. and R. I. Benjamin (2003). Change Management Strategy. Strategic Information Management. R. Galliers and D. E. Leidner. Burlington, Butterworth-Heinemann: 625.

Masada, G. (2005). "To Centralize or Decentralize?" Optimize 4(5): 58-61.

Mendelson, H. (2000). "Organizational Architecture and Success in the Information Technology Industry." Management Science 46(4): 513-529.

Meyer, D. N. (2004). "Systemic IS Governance: An Introduction." Information Systems Management 24: 23-34.

Meyer, J. W. and B. Rowan (1977). "Institutionalized Organizations: Formal Structure as Myth and Ceremony." American Journal of Sociology 83(2): 340-363.

Minasi, M. (2003). Mastering Windows 2003. San Francisco, Sybex.

Mingers, J. (2001). "Combining IS Research Methods: Towards a Pluralist Methodology." Information Systems Research 12(3): 240-259.

Mingers, J. (2003). "The paucity of multimethod research: A review of the information systems literature." Information Systems Journal 13(3): 233-250.

Montana Legislative Fiscal Division (2000). Information Technology Management Study Final Report. Helena Montana: 20.

Moorman, C. and A. S. Miner (1998). "Organizational Improvisation And Organizational Memory." Academy of Management Review 23(4): 698-723.

Murthy, S. (2004). "The Impact Of Global IT Outsourcing On IT Providers." Communications of the Association for Information Systems 14: 543-557.

Ngwenyama, O. K. and A. S. Lee (1997). "Communication Richness in Electronic Mail: Critical Social Theory and the Contextuality of Meaning." MIS Quarterly 21(2): 145-167.

Nolan, R. L. (1979). "Managing the Crises in Data Processing." Harvard Business Review 57(2): 115-126.

Oliver, C. (1992). "The Antecedents of Deinstitutionalization." Organization Studies 13(4): 563-588.

Orlikowski, W. J. (1996). "Improvising Organizational Transformation Over Time: A Situated Change Perspective." Information Systems Research 7(1): 63-92.

Orlikowski, W. J. and S. R. Barley (2001). "Technology and Institutions: What Can Research on Information Technology and Research on Organizations Learn From Each Other." MIS Quarterly 25(2): 145-165.

Orlikowski, W. J. and J. J. Baroudi (1991). "Studying Information Technology in Organizations: Research Approaches and Assumptions." Information Systems Research 2(1): 1-28.

Orlikowski, W. J. and S. C. Iacono (2001). "Research Commentary: Desperately Seeking the "IT" in "IT" Research - A Call to Theorizing the IT Artifact." Information Systems Research 12(2): 121-134.

Osborne, D. and T. Gaebler (1992). Reinventing Government: How The Entrepreneurial Spirit is Transforming The Public Sector. New York, Plume.

Palvia, P. C., E. Mao, et al. (2004). "Research Methodologies IN MIS: An Update." Communications of the Association for Information Systems 14: 526-542.



Palvia, P. C., E. Mao, et al. (2003). "Management Information Systems Research: What's There In a Methodology." Communications of the Association for Information Systems 11: 289-309.

Pare, G. (2004). "Investigating Information Systems With Positivist Case Study Research." Communications of the Association for Information Systems 13: 233-264.

Pare, G. and J.-F. Jutras (2004). "How Good is the IT Professional's Aptitude in the Conceptual Understanding of Change Management?" Communications of the Association for Information Systems 14: 653-677.

Pervan, G. P. and D. J. Klass (1992). The Use and Misuse of Statistical Methods. IS Research. R. D. Galliers. London, Blackwell Scientific Publications: 208-229.

Peterson, R. (2004). "Crafting Information Technology Governance." Information Systems Management 24: 7-22.

Pettigrew, A. M. (1990). "Longitudinal Field Research on Change: Theory and Practice." Organization Science 1(3): 267-291.

Porter, M. E. and V. E. Millar (1985). "How Information Gives You Competitive Advantage." Harvard Business Review.

Ramanathan, S. (2004). Diffusion of E-Procurement In The Public Sector: Revisiting Centralization Versus Decentralization Debates As A Twist in the Tale. European Conference on Information Systems, Turku, Finland.

Ramiller, N. C. and E. B. Swanson (2003). "Organizing Visions For Information Technology and The Information Systems Executive Response." Journal of Management Information Systems 20(1): 13-50.

Rau, K. G. (2004). "Effective Governance of IT: Design Objectives, Roles, and Relationships." Information Systems Management 24: 35-42.

Robbins, S. (2004). "IS Governance." Information Systems Management 24: 81-82.

Robey, D. (1996). "Research Commentary: Diversity in Information Systems Research: Threat, Promise, and Responsibility." Information Systems Research 7(4): 400-408.

Robey, D. and M.-C. Boudreau (1999). "Accounting for the Contradictory Organizational Consequences of Information Technology: Theoretical

Directions and Methodological Implications." Information Systems Research 10(2): 167-185.

Ross, J. (2003). "Creating a Strategic IT Architecture Competency: Learning in Stages." MIS Quarterly Executive 2(1): 31-43.

Sabherwal, R., R. Hirschheim, et al. (2001). "The Dynamics of Alignment: Insights from a Punctuated Equilibrium Model." Organization Science 12(2): 179-197.

Sambamurthy, V. and R. W. Zmud (1999). "Arrangements For Information Technology Governance: A Theory of Multiple Contingencies." MIS Quarterly 23(2): 261-290.

Sambamurthy, V. and R. W. Zmud (2000). "Research Commentary: The Organizing Logic for an Enterprises IT Activities in the Digital Era - A Prognosis of Practice and a Call to Research." Information Systems Research 11(2): 105.

Sarker, S. and A. S. Lee (2002). "Using a Positivist Case Research Methodology to Test Three Competing Theories-in-Use of Business Process Redesign." Journal of the Association of Information Systems 2(7).

Schilling, M. A. (2004). Strategic Management Of Technological Innovation.

New York, McGraw-Hill/Irwin.

Schultze, U. and D. E. Leidner (2002). "Studying Knowledge Management in Information Systems Research: Discourses and Theoretical Assumptions." MIS Quarterly 26(3): 213-242.

Schwarz, G. M. (2002). "Organizational hierarchy adaptation and information technology." Information and Organization 12(3): 153-182.

Scott, M., W. Golden, et al. (2004). Implementation Strategies For E-Government: A Stakeholder Analysis Approach. ECIS 2004, Turku, Finland, Turku School of Economics and Business Administration.

Scott, W. R. (2001). Institutions and Organizations. Thousand Oaks, Sage Publications.

Scott, W. R. and J. W. Meyer (1991). The Organization of Societal Sectors: Propositions and Early Evidence. The New Institutionalism in Organizational Analysis. P. J. DiMaggio and W. W. Powell. Chicago, The University of Chicago Press: 108-142.

- Scott, W. R., M. Ruef, et al. (2000). Institutional Change and Healthcare Organizations. Chicago, The University of Chicago Press.
- Selznick, P. (1949). TVA and the Grassroots. Berkeley, University of California Press.
- Selznick, P. (1957). Leadership in Administration. New York, Harper & Rowe.
- Shafritz, J. M. and A. C. Hyde (1997). Classics of Public Administration. New York, Harcourt Brace College Publishers.
- Shafritz, J. M. and S. J. Ott (2001). Classics of Organizational Theory. Belmont, Wadsworth Group.
- Silva, L. and J. Backhouse (2003). "The Circuits of Power Framework for Studying Power in Institutionalization of Information Systems." Journal of the Association of Information Systems 4(6): 294-336.
- Smith, H. (2004). "Developments in Practice XIV: IT Sourcing - How Far Can You Go?" Communications of the Association for Information Systems 13(Article 26): 508-520.

Somogyi, E. K. and R. D. Galliers (2003). Information Technology in Business: From Data Processing to Strategic Information Systems. Strategic Information Management. R. D. Galliers and D. E. Leidner. Burlington, Butterworth-Heinemann: 3-26.

Stamoulis, D., D. Gouscos, et al. (2001). "Revisiting public information management for effective e-government services." Information Management and Computer Security 9(4): 146-153.

Swanson, E. B. and N. C. Ramiller (1997). "The Organizing Vision in Information Systems Innovation." Organization Science 8(5): 458-474.

Swanson, E. B. and N. C. Ramiller (2004). "Innovating Mindfully With Information Technology." MIS Quarterly 28(4): 553-583.

Tyre, M. J. and W. J. Orlikowski (1994). "Windows of Opportunity: Temporal Patterns of Technological Adaptation in Organizations." Organization Science 5(1): 98-118.

U.S. Census Bureau (2004). Statistical Abstract of the United States: 2004-2005. Washington D.C., U.S. Census Bureau: 1006.

Van De Ven, A. and G. P. Huber (1990). "Longitudinal Field Research Methods for Studying Processes of Organizational Change." Organization Science 1(3): 213-219.

von Simson, E. M. (1990). "The 'Centrally Decentralized' IS Organization." Harvard Business Review 68(4): 158-162.

Walsham, G. (1993). Interpreting Information Systems in Organizations. West Sussex, John Wiley & Sons Ltd.

Walsham, G. (1995). "The Emergence of Interpretivism in IS Research." Information Systems Research 6(4): 376-394.

Weber, M. (1946). Max Weber: Essays in Sociology. Oxford, Oxford University Press.

Weber, R. (2003). "The Reflexive Researcher." MIS Quarterly 27(4): v-xiv.

Webster, J. and R. T. Watson (2002). "Analyzing the Past to Prepare for the Future: Writing A Literature Review." MIS Quarterly 26(2): xii-xxiii.

Weick, K. E. (1993). "The Collapse of Sensemaking in Organizations: The Mann Gulch Disaster." Administrative Science Quarterly 38(4): 628-652.

Weick, K. E. (1995). Sensemaking in Organizations. Thousand Oaks, Sage.

Weick, K. E. (2001). Making Sense of the Organization. Oxford, Blackwell Publishers Inc.

Weick, K. E. and K. M. Sutcliffe (2001). Managing the Unexpected. San Francisco, Jossey-Bass.

Weill, P. (2004). "Don't Just Lead, Govern: How Top-Performing Firms Govern IT." MIS Quarterly Executive 3(1): 1-17.

Weill, P. and M. Broadbent (1998). Leveraging the New Infrastructure: How Market Leaders Capitalize on Information Technology. Boston, Harvard Business School Press.

Weill, P. and J. Ross (2005). "A Matrix Approach to Designed IT Governance." MIT Sloan Management Review 46(2): 26-34.

Weill, P. and J. W. Ross (2004). IT Governance: How Top Performers Manage IT Decision Rights for Superior Results. Boston, Harvard Business School Press.



Weill, P. and M. Vitale (2002). "What IT Infrastructure Capabilities Are Needed To Implement E-Business Models?" MIS Quarterly Executive 1(1): 17-34.

Westland, C. J. (2004). "The IS Core XII: Authority, Dogma and Positive Science in Information Systems Research." Communications of the Association for Information Systems 13: 136-157.

Withington, J. (2003). Capital Disasters: How London Has Survived Fire, Flood, Disease, Riot and War. Phoenix Mill, Sutton.

Yang (2003). "Neoinstitutionalism and E-Government: Beyond Jane Fountain." Social Science Computer Review 21(4): 432-442.

Yin, R. K. (1994). Case Study Research Design and Methods. Thousand Oaks, Sage Publications.

Zmud, R. W. (1984). "Design Alternatives for Organizing Information Systems Activities." MIS Quarterly 8(2): 79-83.

Zuboff, S. (1989). In The Age of The Smart Machine: The Future of Work and Power, Basic Books.

*References*

Zucker, L. G. (1991). The Role of Institutionalization in Cultural Persistence.

The New Institutionalism in Organizational Analysis. P. J. DiMaggio and W. W.

Powell. Chicago, The University of Chicago Press: 83-107.