ORGANIZING TO EXPLOIT THE INFORMATION DOMAIN: A CONTENT ANALYSIS OF THE TRANSFORMATION LITERATURE

THESIS

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Abstract

The US Department of Defense (DoD) has embarked on an ambitious plan to transform itself. A driving force behind this transformation is a realization that society has moved into an "information age" and that information age warfare will be significantly different from anything that has gone before it. At the heart of the transformation effort is a concept known as Network Centric Warfare (NCW). Transformation, information age warfare, and NCW all depend heavily on how the DoD handles the information domain. Although there are many organization structure/design issues that will derive from the transformation imperatives, one of central concerns is the need to alter the Information Technology (IT) functions/organizations that are the vanguard of this effort.

Given this background, this research attempted to answer the question "What does the military transformation literature say about how the DoD should organize to exploit the information domain?" Specifically, this research focused on ideas regarding organizing the IT organizations/functions of the DoD. Overall, the results showed that a majority of the transformation literature supports organizing the IT function to act as a service provider. The IT function would therefore act as a separate entity within the enterprise and would provide domain expertise to other parts of the enterprise. Further research is required to determine if this type of organizational structure is applicable across the entire spectrum of the information domain.

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Capt Todd Schug

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ORGANIZING TO EXPLOIT THE INFORMATION DOMAIN: A CONTENT ANALYSIS OF THE TRANSFORMATION LITERATURE

I. Introduction

Background

The National Security Act of 1947 created massive changes in the way the United States approached national defense. This act enabled the creation of a Joint Chiefs of Staff, a National Security Agency, and a separate Department of the Air Force for conducting warfare along an emerging plane of the Battlespace…the air. This one piece of legislation transformed the Department of Defense (DoD).

There have been myriad changes since this act became law. The United States (US) has fought wars in Korea, Vietnam, Kuwait, Kosovo, Iraq, Afghanistan, and are currently involved in a War on Terrorism. The US has had limited engagements in Panama, Somalia, Grenada and various South American countries. Perhaps most significantly, the US fought and won a so-called "Cold War" against the former Soviet Union.

At the same time, society has changed from an industrial society to an "information" or "knowledge" society (Drucker, 1993) This change has also been noted within the DoD. In 1947, the overriding warfighting doctrine was to control the land domain; however, by 1991 the U.S. demonstrated the doctrine of fighting first for air superiority in the Persian Gulf War. This focus on the air domain became even more

prevalent during the 78 days of NATO bombing in Kosovo in 1999. Today, however, the focus continues to move towards the information domain. According to VADM Arthur Cebrowski (USN-ret), Director of the DoD Office of Force Transformation, the DoD has moved beyond fighting first for air superiority to now fighting first for information superiority. (Cebrowski, 2003)

Against this backdrop of rapid change and multiple engagements, the DoD organizational structure has changed very little. The basic organization, a loose federation of three services established in 1947, still exists. This organization structure has proven itself in the past as an effective deterrent of global warfare, but will the same organizational structure support our future warfighting needs?

The leadership of the DoD, along with each of the service branches, have laid out what challenges they believe they will face in defending the US in the future. The landmark planning document, known as Joint Vision 2020 (JV2020), lays out what they believe will be required of the US military forces in the year 2020. They state that US forces will be operating across all 5 domains of the Battlespace (space, sea, land, air, and information) and that there will be a need to synergistically capitalize on the capabilities in each of these areas to achieve "full spectrum dominance".(Chairman Joint Chiefs of Staff, 2000). Special emphasis is placed on the information domain in JV2020, and it is seen as a key element of an ability to achieve full spectrum dominance. JV2020 is not a roadmap for how the DoD is to achieve success in the information domain, only a clear recognition that "transformation of the joint force to reach full spectrum dominance rests upon information superiority." Indeed, the DoD considers the transformation of the U. S.

military a strategic imperative to meet the security challenges of the new century (Hinton, 2002).

Given that, the purpose of this research is to identify, categorize and synthesize the transformation literature to ascertain what organizational structure(s) it proposes for how the DoD should organize to exploit the information domain. Particular emphasis is given to the Information Technology (IT) functions that are responsible for management of the information domain.

Research Question

In order to address the purpose of this research, the following central organizing research question is posited: What does the military transformation literature say about how the DoD should organize to exploit the information domain?

Methodology

A collection of 42 articles, focused on transformation, the information domain and organization in a military context, were collected. The articles were the focus of a content analysis completed by a team of six researchers. This research is an attempt to extract themes from the transformation literature and uncover insights on what this literature says about organizing the IT function to exploit the information domain.

Thesis Overview

This research is organized in accordance with the American Psychological Association (APA) and the Air Force Institute of Technology (AFIT) style guide.

Chapter I supplies some subject matter background, the research question, and a brief description of the study. Chapter II features a literature review that summarizes what scholars and researchers have published relevant to transformation and applicable organizational structures. Chapter III presents the justification for the methodology used in this research along with a step-by-step guide through content analysis methodology. Chapter IV sets forth a detailed analysis of the collected data and the findings that resulted from this analysis. Finally, Chapter V provides conclusions, limitations, and recommendations.

II. Background

The concept of transformation, or even the transformation of a military organization, is nothing new. Mr. Andrew Marshall of the DoD Office of Net Assessment coined the phrase "Revolution in Military Affairs" (RMA) in the 1980's to refer to changes in warfare technology and organization (Roxborough, 2002). Retired Admiral Bill Owens expounded on the concepts of RMA in his book "Lifting the Fog of War" (Owens, 2000). Both argued that as society moves into the information age, new technologies should be coupled with new and innovative ways of organizing and fighting the nation's wars. They advocated that a transformation needed to take place that would embrace the RMA.

These ideas were further inculcated within the DoD during the 1990's as evidenced by the language of the 1997 Quadrennial Defense Review (QDR). The QDR includes an entire section entitled "Transforming U.S. Forces for the Future" and it discussed the "so-called RMA." This work foreshadowed much of the current thinking on the topic of transformation.

The following literature review gives an overview of the beginnings of transformation in the DoD and a working definition of the phrase "information domain". It will also explore some theoretical underpinnings for how to organize to exploit the information domain and provides a framework for this research. Finally, a brief synopsis of the relevant organizational structures in the DoD provides a very high level view of the current state of the enterprise.

DoD Transformation…A Brief History

The genesis of the current transformation efforts in the DoD start at the very highest levels of the government. Less than a month after taking office, President George W. Bush followed through on a campaign pledge that gave the new Secretary of Defense direction to complete a "comprehensive review" of the DoD and a charter to "challenge the status quo as we design a new architecture for the defense of America and our allies" ("Remarks by the President to the Troops and Personnel at Norfolk Naval Air Station," 2001). On 21 June, 2001 , Secretary Rumsfeld briefed the Senate Armed Services Committee that this comprehensive review was complete and the leadership of the DoD had "agreed on some ideas that could become a new strategy and a force sizing approach" (Rumsfeld, 2001). He went on to say that these would be further detailed in the Quadrennial Defense Review (QDR). When the QDR was released September 30, 2001, many of the key transformation concepts were first codified. The document specifically identifies six operational goals of transformation as listed below (DoD, 2001):

- Protect bases of operation at home and abroad and defeat the threat of Chemical, Biological, Radiological, Nuclear and Explosives (CBRNE) weapons
- Assure information systems in the face of attack and conduct effective information operations
- Project and sustain U.S. forces in distant anti-access and area denial environments
- Deny enemies sanctuary by providing persistent surveillance, tracking, and rapid engagement
- Enhance the capability and survivability of space systems

- Leverage information technology and innovative concepts to develop interoperable Joint Command, Control, Communications, Computers, Intelligence, Surveillance, and Reconnaissance (C4ISR)

One of the first steps the DoD took towards implementing these goals was to set up the DoD Office of Force Transformation (OFT). This organization, led by retired Vice Admiral Arthur Cebrowski, formed on 29 October 2001. They report directly to the Secretary of Defense on issues of transforming the force, and have been the focal point for all transformation issues. The OFT published "Transformation Planning Guidance" in April 2003 and has required each service to author an annual roadmap on how they are meeting transformation guidelines.

One of the primary concepts advocated by the OFT is Network Centric Warfare (NCW). In fact, there is a primer on NCW available on the OFT website that clearly makes the connection between transformation and NCW. The primer says that "NCW is at the very heart of force transformation and the emerging way of war."(DoD, 2004). The primer goes on to explain the concept of NCW as focused on gaining an "information advantage" and translating that into a warfighting advantage. Some of the salient characteristics of NCW are as follows(DoD, 2004):

- NCW is an information superiority-enabled concept of operations that describes the way U.S. forces organize and fight in the information age.
- NCW generates increased combat power by networking sensors, decision makers, and shooters to achieve shared awareness, increased speed of command, high tempo of operations, greater lethality, increased survivability, and a degree of self-synchronization.
- NCW translates information superiority into combat power by effectively linking friendly forces within the battlespace, providing a much improved

> shared awareness of the situation, and enabling more rapid, effective decision making.

It is not surprising that one of the foremost experts in NCW holds an important position within the Office of Force Transformation. Mr. John Garstka is currently the Assistant Director of Concepts and Operations in the OFT. He, along with Dr. David Alberts and Mr. Frederick Stein, literally "wrote the book" on NCW when they co-authored "Network Centric Warfare: Developing and Leveraging Information Superiority" (Alberts, Garstka, & Stein, 1999). This seminal work further defined the concepts that would become the cornerstone of the transformation effort.

It is clear that the concepts of transformation and network centric warfare rely heavily on the information domain. What is less clear, however, is just how to define the information domain.

Defining the Information Domain

The phrase "information domain" is used extensively with the DoD but its exact definition is often dependent on context. In the area of Psychological Operations, the phrase refers to the information that is possessed in the mind of the opposing leaders (Denning, 1999). In the Intelligence field, the phrase refers to the data an analyst collects to help build a clear picture of what is happening in a particular arena.

In the context of Network Centric Warfare (NCW), the phrase refers to the domain where "information is created, manipulated, and shared."(Alberts & Garstka, 2001) In the NCW model, the information domain exists separate from the physical domain and the cognitive domain. NCW is at its best when the physical, cognitive and

information domains are all aligned. Figure 1 is a graphical representation of this relationship between the domains.

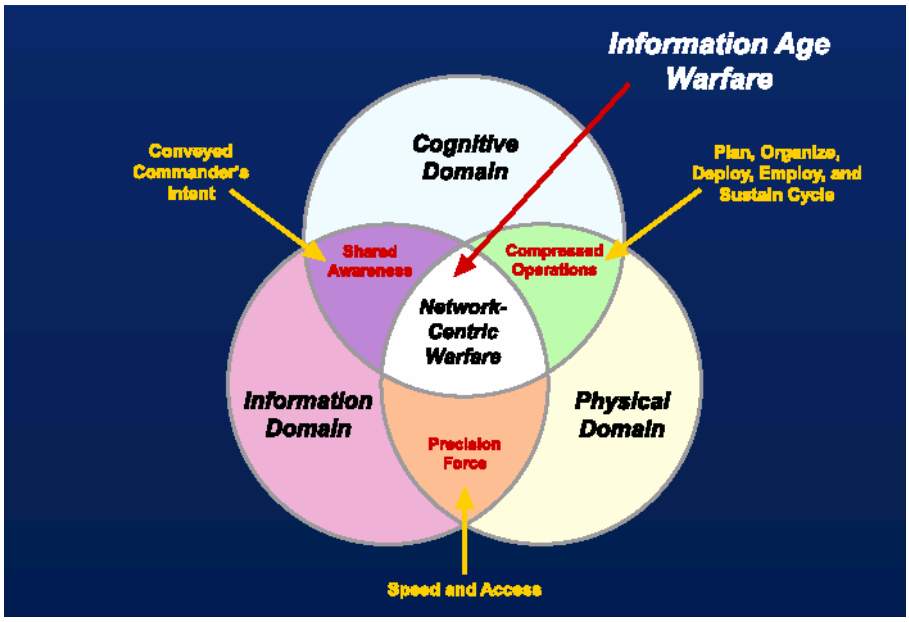

Figure 1. Network Centric Warfare (NCW) Information Domain

This concept of the information existing separate from a physical or cognitive domain is useful within the context of NCW. It makes the distinction between objects (physical domain), thoughts (cognitive domain) and information (information domain) and highlights how military forces can be more effective when acting across all domains simultaneously.

However, in the literature that the DoD uses, the "joint literature", the NCW definition of the information domain is not the currently accepted standard. In fact, there is no single, agreed upon definition found in the joint literature.

As discussed in Chapter 1, Joint Vision 2020 is the landmark planning document lays out what the leadership of the DoD believed will be required of our forces in the year

2020. The authors felt so strongly about the importance of the newly evolving information domain they stated that "…operations within the information domain will become as important as those conducted in the domains of sea, land, air, and space…"(Chairman Joint Chiefs of Staff, 2000). However, they did not define the "information domain." The closest attempt is where JV2020 references Joint Publication 1-02 which defines the "information environment." That definition is "the aggregate of individuals, organizations, and systems that collect, process, or disseminate information, including the information itself." (JP1-02)

Operationalizing this definition is an ongoing process and not imperative for this research. Indeed, the very fact that the DoD uses the term "information domain" and yet has no joint definition highlights that this is an emerging area worthy of new research. However, this definition of the information environment does provide a useful starting place.

In a military sense, the "individuals" and the "systems" are actually part of the superset of "organizations." This emphasis on "organizations" is plainly demonstrated by VAdm Cebrowski when he was quoted as saying that transformation is about " … new processes, new doctrine, new organizational structures, new information flows"(Stone, 2003). Further, the Transformation Planning Guidance states: "The United States is transitioning from an industrial age to an information age military. This transition requires transformation in warfighting and the way we organize to support the warfighter." ("Transformation Planning Guidance," 2003). Clearly, there is an interest in the way DoD forces are organized in an information age military.

New Organizational Structures

While working at National Defense University in 1993, Dr. Martin Libicki wrote an article for Joint Forces Quarterly entitled, "Do We Need An Information Corps?" In it, he argued that the Department of Defense needed to create a separate military service, an "Information Corps," to handle this plane of the Battlespace. He states that:

> As firepower becomes an appendage to information, organizational transformations will begin to underpin a new architecture. A separate *Information Corps* could guide this revolution, create common doctrine for the diverse requirements of information warriors, and facilitate liaison among civilian information agencies. Such a corps could also obviate the need for the services to integrate their data systems because standardization would exist from the outset. Moreover, the corps could foster innovations more consonant with the logic of the information revolution than would be the case if the services were left to their own devices. (Libicki, 1993)

In the ten years that have followed since this article there has been an increasing emphasis on the utility and management of information within the U.S Military. Some have concluded that the "information domain is the future battlefield" (Auster, 1994).

On 25 June, 2002 Deputy Secretary of Defense Paul Wolfowitz gave a speech to Department of Defense Chief Information Officers (CIOs) that appears to support Libicki's ideas regarding a new organizational structure to handle the information domain. As reported in the DoD Office of Force Transformation's newsletter, he stated that:

> The Pentagon should beginning thinking about whether combining disparate information "elements across DoD into a single department-wide information element" makes sense…. While such an effort is "a formidable challenge," the end result "might enhance jointness and might accelerate the adoption of network centric operations." Wolfowitz also said that there is no longer any debate over

whether network centric operations "makes sense but rather how best to achieve them."(Robert Holzer, 2002).

Both Deputy Secretary Wolfowitz and Dr. Libicki seem to be pushing for radical change within the DoD on how the information domain is best handled. However, it is difficult to discuss the information domain without an understanding of the IT organizational structures that exist to support efforts in the information domain. An overview of the current organizational structures may prove beneficial.

The State of the Enterprise

It is not the intent of this research to complete an organizational chart of how the DoD has organized to exploit the information domain. Indeed, such an undertaking would require years of research. However, a high-level understanding of the current organizational structures handling the information domain, particularly those focused on IT, is necessary to understand the context of the transformation efforts that are currently under way.

The Department of Defense

The United States Congress recognized the importance of the information domain in 1996 when it passed the Information Technology Management Reform Act (commonly referred to as the "Clinger Cohen Act "). This single piece of legislation has many facets but one chief aspect was that it created the legal requirement that each executive agency establish a Chief Information Officer (CIO). These agencies included all executive agencies (including the DoD) as well as the military agencies (Department

of the Army, Department of the Navy, Department of the Air Force). The general responsibilities of the CIO were to include:

- Provide advice to the agency head on the acquisition and management of information resources
- Develop, maintain and implement a sound information technology architecture
- Promote the effective and efficient design of all information resource management processes within that agency

("Information Technology Management Reform Act," 1996)

The DoD CIO is the Assistant Secretary of Defense for Network and Information Integration or ASD/NII. As such, he is a member of the Federal CIO council and chairs the DoD CIO council. In this capacity, he sets overarching guidance on items such as the Defense Information Infrastructure/Common Operating Environment (DII/COE) and the Global Information Grid-Core Enterprise Services (GIG-CES) Strategy. Further, the ASD/NII utilizes the Defense Information Systems Agency (DISA) to carry out the implementation of these policies.

DISA, originally designated the Defense Communications Agency (DCA), was established on May 12, 1960, by Secretary of Defense Thomas B. Gates. According to the DISA website, the DCAs mission was "to manage the Defense Communications System (DCS), a consolidation of the independent long-haul communications functions of the Army, Navy, and Air Force." (http://www.disa.mil/main/history.html, 2004) Today, DISA continues to provide long-haul communications services for the DoD and is in the process of reorganizing each of its core missions to support transformation and NCW. The identified core missions of DISA are communications, joint command and control, defensive information operations, combat support computing, and joint

interoperability support. Organizationally, however, the ASD/NII and DISA hold no direct authority over the CIOs of each service. This fact becomes apparent when one looks at how the individual services have organized to exploit the information domain.

The Department of the Army

The CIO of the Department of the Army (DoA) is a member of the DoD CIO council and he has centralized information domain expertise into one major command. On 1 October, 2002, the DoA officially stood up their Network Enterprise Technology Command/9th Army Signal Corp (NETCOM/9th ASC). NETCOM is intended to be the "Army's single authority for information management"(Internet, 2003b). They are a Direct Reporting Unit (DRU) to the CIO and act as the "operational executive agent…for the operation and management of the Army's total information structure." The NETCOM/9th ASC handles the technical control and support for Director of Information Management operations, the management and defense of the Army frequency spectrum, and the implementation and maintenance of the Army Knowledge Online (AKO) knowledge management tool.

The Department of the Navy

The Department of the Navy (DoN) does not have an organizational structure that is quite as clear-cut. The CIO of the DoN acts as The DoN makes a distinction between their "afloat" and "ashore" systems and how they are handled. The "ashore" systems are generally managed through a contract vehicle known as the Navy/Marine Corps Intranet or NMCI. Currently underway in the DoN, this 5-year, $4.1 billion effort started October

2000 seeks to outsource the technology, maintenance and help desk support for over 350,000 desktops and 200 networks to a single contractor.

The DoN afloat systems are handled by the newly established the Naval Network Warfare Command (NETWARCOM). This mission of this organization is to act as the "central operational authority for space, information technology requirements, network and information operations in support of naval forces afloat and ashore "(http://www.netwarcom.navy.mil, 2004). Of course, there are some areas where they must work closely with the NMCI contractor. These include all of the standards and data forms for connecting the "afloat" and "ashore" systems.

The Department of the Air Force

The Department of the Air Force (DAF) is perhaps the most difficult to categorize at this time. In the past couple of years, the DAF has tried to partner the information functions and organizations (ex: The Air Force Communications Agency) with many other functions and organizations. On April 29, 2002, the DAF established a Warfighter Integration Directorate(AF/XI) ("Warfighting Integration Directorate Opens," 2002). The intent in establishing this directorate was to enhance the integration of the Command, Control, Communications, Computers, Information, Surveillance, and Reconnaissance (C4ISR) communities and provide a single point of contact for other agencies that need to interoperate with the DAF.

At the same time that DAF established AF/XI, they established another organization to handle all of the day-to-day operations that affect the information domain. The Directorate of Communication Operations (AF/ILC) has been charged with

"developing policies and procedures for daily communication operations and maintenance, while ensuring the communications and information community is trained, organized and equipped for full-spectrum operations" ("Warfighting Integration Directorate Opens," 2002). The lines of authority and responsibility between the two organizations have not been firmly established at this time.

Having taken a look at how each of the services are trying to re-organize to better handle IT and the information domain, it seems that each of the military services recognizes the singular importance of exploiting the information domain. Each is attempting to transform itself and build on the principles of NCW. Yet, each has chosen a very different organizational design to handle this domain. There may be information technology organizational designs that help categorize the intent of the transformational literature.

Past IT Organizational Designs

There are several different ways of looking at how to organize an information function. Some argue that information technology resources should be centralized to provide so-called "centers of excellence" that can then provide capabilities to the rest of the enterprise as a service. This type of organizational design has led many to establish Information Technology (IT) departments within their enterprise. Others argue that resources should be diffused throughout the enterprise to ensure that IT capabilities can be tailored to meet the needs or each part of the enterprise. Recently, there has been an emphasis placed on the idea of outsourcing those functions that are not core competencies of the enterprise. This has led many organizations to conclude that since

their core competencies do not revolve around IT, they can contract with another organization to handle this domain

Early theories regarding how to organize to handle the IT function usually focused on a debate over the loci of control (Zmud, 1984). The provocative question seemed to be whether the IT function should be centralized or decentralized. This "either-or" mentality led organizations to vacillate back and forth attempting to come up with the best solution. These two concepts, centralized or decentralized, remain as significant factors in deciding on an organizational structure.

A relatively recent phenomenon in the context of the information domain is that of outsourcing. Outsourcing has added a new dimension to the historical "centralize-decentralize" models. Eastman Kodak is widely regarded to have started the movement to outsource IT in 1988 by outsourcing its entire infrastructure to a combination of IBM and Digital Equipment Corporation. At that time, outsourcing IT was viewed as a huge risk but today it is often depicted as a model of how business should handle their IT. Indeed, some business executives recommend the approach that a corporation should focus on their core competencies and outsource everything else (Gates, 2000). The implication is that if an organization is not specifically in the business of IT, they should outsource those needs and focus on their fundamental business. The academic literature seems to support this philosophy with a couple of notable caveats.

Lacity and Willcocks argue that companies should outsource IT, but need to be selective with regard to which services they outsource and which they maintain in house (Lacity & Willcocks, 1996). According to their research, the best examples from industry were those that did a cost benefit analysis on each service, such as infrastructure

or database management, to determine whether to outsource. Additionally, they recommended that only those functions that are not essential to that enterprise should be evaluated. They caution that care must be given to recognize the competing interests between the company that is outsourcing and the company that is now handling all of the IT needs. Each entity will operate in a way to maximize profits and the result may be less than adequate services.

Current IT Organizational Design Model

One of the most current organizational models comes from a journal article entitled "Principles and Models for Organizing the IT Function"(Agarwal & Sambamurthy, 2002). In their research, the authors state that they have "uncovered three viable organizational models." The three models, as they have labeled them, are the Partner Model, the Platform Model, and the Scalable Model. The authors point out that the three models all have equal validity. They state that their "findings suggest that there is no single 'best' IT organizational structure," but rather that the appropriate organizational structure will depend on the environment in which it exists. An explanation of each of the models follows below.

The Partner Model "primarily aims to ensure that the IT function is an active and direct participant in collaborating with business executives to make business innovation through IT a reality." In many ways, this can be viewed as a decentralized approach. The Partner Model seeks to embed information technology throughout the organization to enable collaboration between business and information systems personnel. This synergy acts as a catalyst for innovation.

The Platform Model "primarily aims to ensure that the IT function provides the assets, services, and resources for business innovation across the enterprise." This approach is said to provide the resources for global innovation. Centralizing the responsibility for IT ensures that innovations can be quickly diffused throughout the organization. The IT function thus acts as "business within the business of the firm".

The third organizational model discussed by Agarwal and Sambamurthy is the Scalable Model. This model "primarily aims for maximum flexibility in its people resources, so that the IT function can expand and contract in concert with business cycles". This model maximizes the utilization of sourcing relationships and often indicates that outsourcing is being used.

Taken together, these three models represent much of the current thinking in the area of organizing the IT function. The models bear similarities to the "centralize, decentralize, outsource" options discussed earlier in this paper. These models form the mental framework by which we can begin to synthesize the transformation literature.

Summary

This literature review has provided the foundation for going forward towards answering the central research question "What does the military transformation literature say about how we should organize to exploit the information domain?" The reader should now have a basic understanding of the concept and application of military transformation. The reader should also have understood what the phrase "information domain" and how we have utilized an IT organizational structure to begin to understand how to organize to exploit this domain. Finally, an organizational model is presented as a

way to begin to think about how to characterize the literature. The next section will discuss the methodology that was applied to attempt to answer the research question.

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III. Methodology

While this research was done inductively, the process of choosing the proper methodology was decidedly deductive. This section outlines the steps taken in deciding on the methodology and provides the reader with insights into why this methodology is most appropriate for this topic.

The nature of the inquiry is a primary factor in selecting a research approach (Cresswell, 2003). As stated in chapter 1 of this thesis, the purpose of this analysis was to identify, categorize and synthesize the literature that discusses how the DoD should organize to exploit the information domain. This emerging domain, the information domain, is discussed widely within DoD. However, during the literature review there was no agreed upon approach within DoD on how we should organize to exploit it. Indeed, the research question was revised to reflect more of a focus on the IT organizations to even begin to understand the relationship between organization and the information domain. Cresswell states, "if a concept or phenomenon needs to be understood because little research has been done on it, then it merits a qualitative approach." (Cresswell, 2003)

Qualitative Approach

The data required to provide this synthesis/analysis came from existing articles, memorandum, studies, briefings and other documents. This data-type lends itself most conveniently to a qualitative study (Patton, 2002). Further, Leedy states that a qualitative approach is indicated when the researchers primary intent is "developing themes from the

data"(Leedy, 2001). Clearly, Leedy, Patton and Cresswell, are in agreement that this research should be qualitative in nature

In Figure 2, Denizen and Lincoln provide an excellent topology of methodologies that deal specifically with qualitative data (Denzin & Lincoln, 2000)

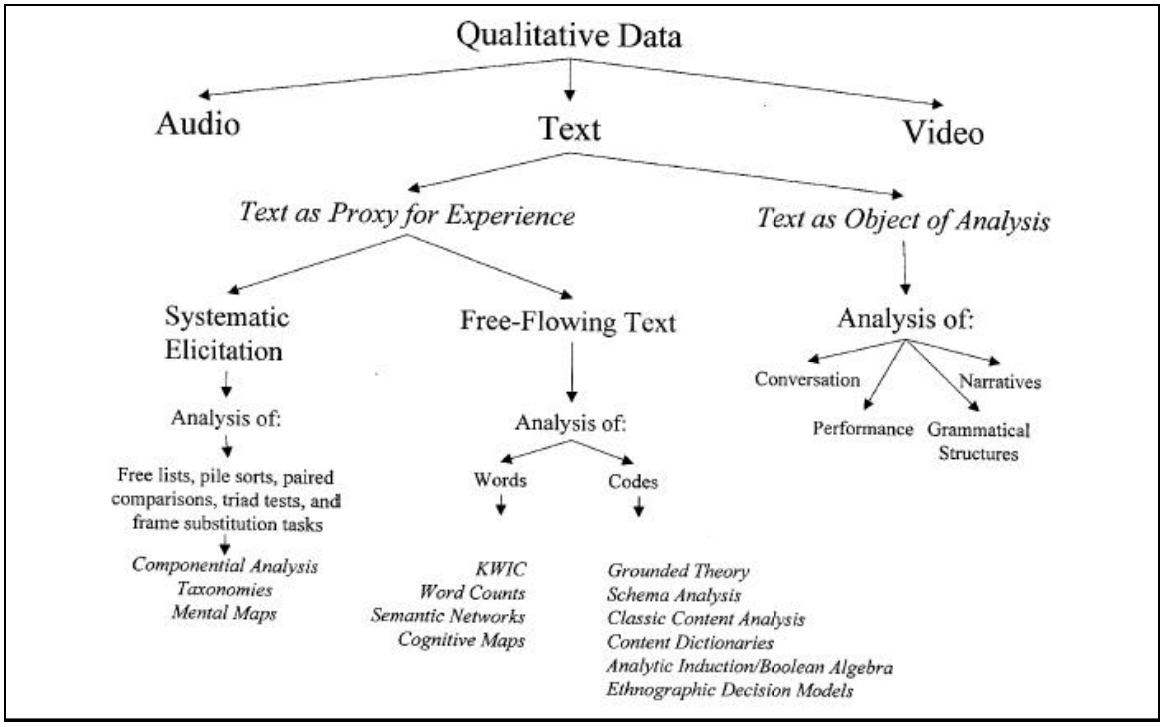

Figure 2. Topology of Qualitative Analysis Techniques

In this study, the text itself is not the object of analysis. The purpose of this research is to identify, categorize and synthesize the content of the selected literature. Therefore, any of the analyzed text is acting as a "proxy for experience." Coming from diverse sources, this "free-flowing text" will be analyzed based on the "codes" within what is written. Denizen and Lincoln have listed six different methodologies that could be used for this type of data. The selected methodology, content analysis, is defined as a

"detailed and systematic examination of the contents of a particular body of material for the purpose of identifying patterns, themes or biases."(Leedy, 2001). It is useful in taking large amounts of qualitative data and, in a "sense-making effort," attempt to identify core consistencies or themes (Patton, 2002). These themes were precisely what this research was intended to uncover.

Content Analysis

Content analysis requires that the researcher determine what they are looking to pull from the available data sources, and then may use quantitative statistics to determine the presence or absence of the item of interest (Neuendorf, 2001).
Neuendorf states that this is done in a systematic nine-step approach. The steps are

1) Theory and Rationale
2) Conceptualization Decisions
3) Operationalization Measures
4) Coding Schemes
5) Sampling
6) Training and Initial Reliability
7) Coding
8) Final Reliability
9) Tabulation and Reporting

Theory and Rationale

This step involved determining exactly what content would be analyzed and why. This research addressed the literature that discussed the transformation of the DoD. It should be noted that many organizations have complete libraries of articles and briefings that cover transformation. Organizations that have transformation libraries include the DoD Office of Force Transformation (Internet, 2003a), the Air War College (http://www.au.af.mil/au/awc/awcgate/awc-chng.htm, 2003) among others. By their very nature, these libraries are selected pieces and are therefore subject to bias. The articles "selected" for this thesis were discovered utilizing a database search engine in an effort to put more academic rigor to the selection process. Many of the transformation articles spoke specifically about organizational changes that are required for the DoD to exploit the information domain. Other transformation literature described organizational changes without specifically calling for any actions.

It should also be noted that some of this collection did not address organizational change at all but was focused on other areas of transformation. These pieces of literature that did address organization, either explicitly or implicitly were used to answer the central research question of "What does the military transformation literature say about how we should organize to exploit the information domain?"

Conceptualization Decisions

It is important to understand that, conceptually, this research views the DoD as one organization. The transformation effort is DoD-wide and any implications on how the DoD should organize to exploit the information domain is therefore focused on the

entire organization and not simply each service within DoD. This is an important distinction because each of the services are constantly reviewing their own approaches on how to organize, but on the surface there seems to be a lack of synchronization with the DoD.

While covered in the literature review, it is important to reemphasize that the model presented by Agarwal and Sambamurthy simply represents a starting place for this research. It gives one a way to begin to think about how to organize. The three organizational models presented were the partner model, the platform model, and the scalable model.

Operationalization measures

The "unit of measurement" was each piece of literature collected. There were no additional weights placed on any article reviewed based on qualitative or quantitative criteria. Additionally, no extra weight was given based on the author's level of expertise or the source of the document. Each piece of literature was given equal treatment and included as one data point.

Coding Schemes

The coding scheme selected was based on theory presented by Agarwal and Sambamurthy that identified three different organizational models: the partner model, the platform model, and the scalable model. For each article coded, the coder was asked to read/analyze the article and assess the organizational structure proposed in the article. If the articles' proposed structure matched with one of the proposed models (partner,

platform, or scalable) they were to mark the article accordingly. If the structure proposed in the article did not clearly match any of the models, the coders were asked to mark the article as an emergent theme and give a brief explanation as to that the emergent theme was. This process of letting the categories emerge as the researcher is going through them is called "open coding"(Strauss & Corbin, 1998) or simply "inductive method" (Berelson, 1952). By utilizing an open coding strategy in concert with the Agarwal and Sambamurthy organizational models, there are four distinct categories for coding each article.

Sampling

The collected materials were drawn from a database search utilizing the EBSCO database search engine. The search was accomplished using the following keywords: Transformation, Information, Military, and Organizational Structure. The Boolean "and" was used to ensure that the search was conducted on all four terms. This method yielded 42 articles that could be included in the study. A complete listing of this collection can be found at "Appendix A: Transformation Articles Used in this Research."

Training and initial reliability

A total of six researchers analyzed and coded the collection. The primary researcher, and author of this thesis, recruited five co-researchers were used in the coding of the articles. These co-researchers were volunteers from the Air Force Institute of Technology. Though they were all pursuing a masters degree in Information Resource Management, they were still a relatively diverse group ranging from a Coast Guard

Commander to a Marine Corp Master Sergeant. The three others were Air Force Captains. Additionally, two of the five were females.

A one hour initial training session was conducted with all of the co-researchers. The primary researcher explained the genesis of the work and gave an overview of the methodology that would be employed. The primary researcher then explained the three organizational models proposed by Agarwal and Sambamurthy and gave each co-researcher a copy of that original article. Further, the co-researchers were informed of the concept of "open coding" and were told that if the articles that they read did not fit into any of the three categories then they could record the article as an emergent theme with a brief explanation.

The co-researchers were provided a sample article that was not used in the actual collection to be studied and they were asked to independently review and code the article. This independent coding of the same article was to establish what Neuendorf refers to as "intercoder reliability" (Neuendorf, 2001) and ensures that all researchers have the same understanding of the coding scheme.

Each of the co-researchers was given 48 hours to code the sample article. Independently, each of the co-researchers decided that the sample article was representative of one of the models. This validated the training process and ensured that all researchers had the same basic understanding of the models and the process.

Coding

The primary researcher independently coded all of the articles in this collection and recorded the results directly onto a Microsoft Excel spreadsheet. The co-researchers

were given a package containing ten articles and were allowed three weeks to code their articles. The coding itself was done via a short transformation coding form (See Appendix B: Coding Form) created by the primary researcher. An electronic copy of the coding form was also created and made available to the co-researchers.

Final Reliability

The final measure of reliability was to compare the ratings that each researcher gave on identical articles and calculate the percent agreement. Though there are other ways that one can calculate reliability, the percentage agreement is the most commonly used measurement in this type of research (Lombard, Snyder-Duch, & Bracken, 2002).

Tabulation and Reporting

The results from each of the researchers were recorded on a Microsoft Excel spreadsheet. The data were sorted in four different ways. First, the co-researcher data were tabulated as a group. Second, the results gathered from the primary researcher were tabulated independently. Then, the primary and co-researcher data were combined to give a combined view of the coding. Finally, the data were correlated to identify which articles were identically coded by two or more researchers. The spreadsheet was utilized to populate radar charts. The charts themselves provided a graphical representation of the data and were used to identify patterns and trends in the data.

Summary

The content analysis methodology was the most appropriate method for attempting to answer the central research question and Neuendorf provided a systematic framework for examining the collected literature. This step-by-step approach helped to minimize the bias that is inherent in any qualitative research. The steps in this methodology led to a relatively unbiased collection of literature to study. Agarwal and Sambamurthy provided a framework that could be used as a way to begin to think about this literature. This framework was enhanced by utilizing "open coding" for those articles that did not fit any of the presented models.

IV. Results & Analysis

Introduction

This chapter describes the organizational models discovered by the researchers as they methodically read their assigned transformation literature. Several researchers commented that they needed to review Agarwal and Sambamurthy's models several times to ensure that they were looking for the right things. Table 1 below provides a brief summary/reminder of the salient characteristics of each of the models.

Table 1. Models for Organizing the IT Function (Agarwal and Sambamurthy, 2002)

• **The Partner Model** "primarily aims to ensure that the IT function is an active and direct participant in collaborating with business executives to make business innovation through IT a reality."
• **The Platform Model** "primarily aims to ensure that the IT function provides the assets, services, and resources for business innovation across the enterprise."
• **The Scalable Model** "primarily aims for maximum flexibility in its people resources, so that the IT function can expand and contract in concert with business cycles."

The results of the coding are presented below. The first section deals exclusively with the co-researchers results. The next section presents the primary researchers results. The next two sections provide a composite view, first by simply combining the results, and then by correlating these results. Each section includes a radar chart that graphically displays the data collected at each stage.

Co-researcher Coding Results

Each of the co-researchers reviewed his/her ten assigned articles over a three-week period. He/She coded each article and reported results via the coding form found at

Appendix B. Each person coded ten articles, for a total of 50 coding sessions that were considered in these results. Eight articles were coded twice to establish intercoder reliability and each of those data points were used in this section of the analysis. For the transformation literature gathered, co-researcher #1 coded articles numbered 1-10, co-researcher #2 coded articles numbered 9-18, co-researcher #3 coded articles numbered 17-26, co-researcher #4 coded articles numbered 25-34, and co-researcher #5 coded articles numbered 33-42. Figure 3 below graphically displays the intentional overlap between the co-researchers.

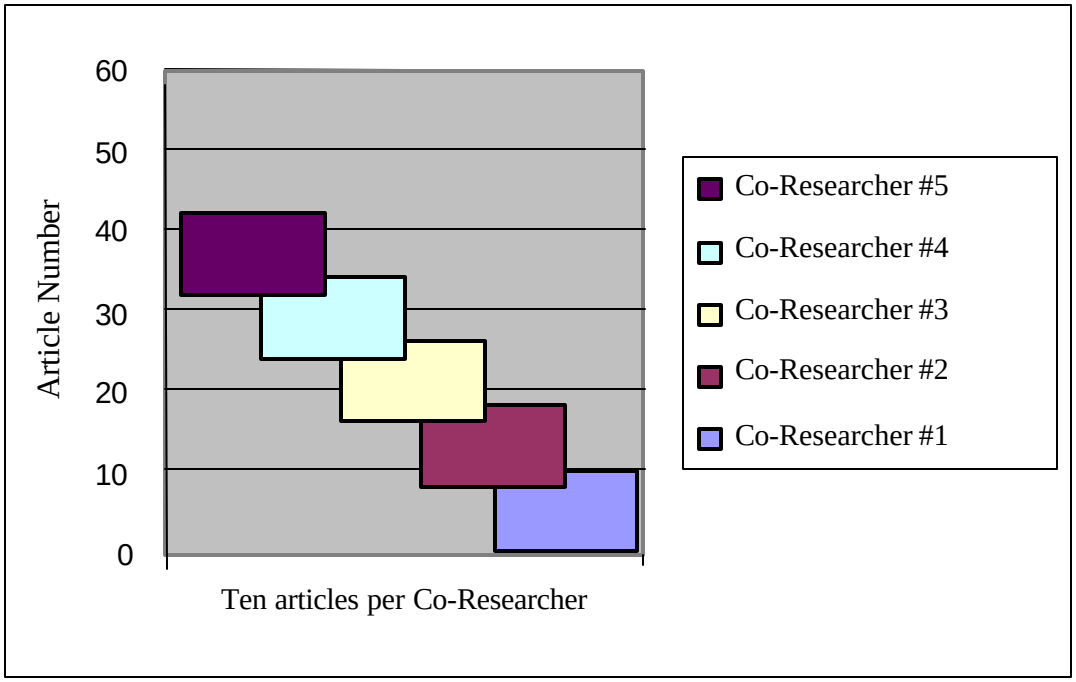

Figure 3. Article Number by Co-Researcher

The total numerical values for each of the four models (Partner, Platform, Scalable, or Emergent) are graphically represented in Figure 4 below. The results of the

50 coding sessions showed that the most prevalent model reflected in the literature was that of the Platform model. In 18/50, or 36%, of the coding sessions a co-researcher determined that the article reflected that IT should be an independent function that provided assets and services across the enterprise. According to the research, this is the model that views "corporate IT as a factory"(Agarwal & Sambamurthy, 2002).

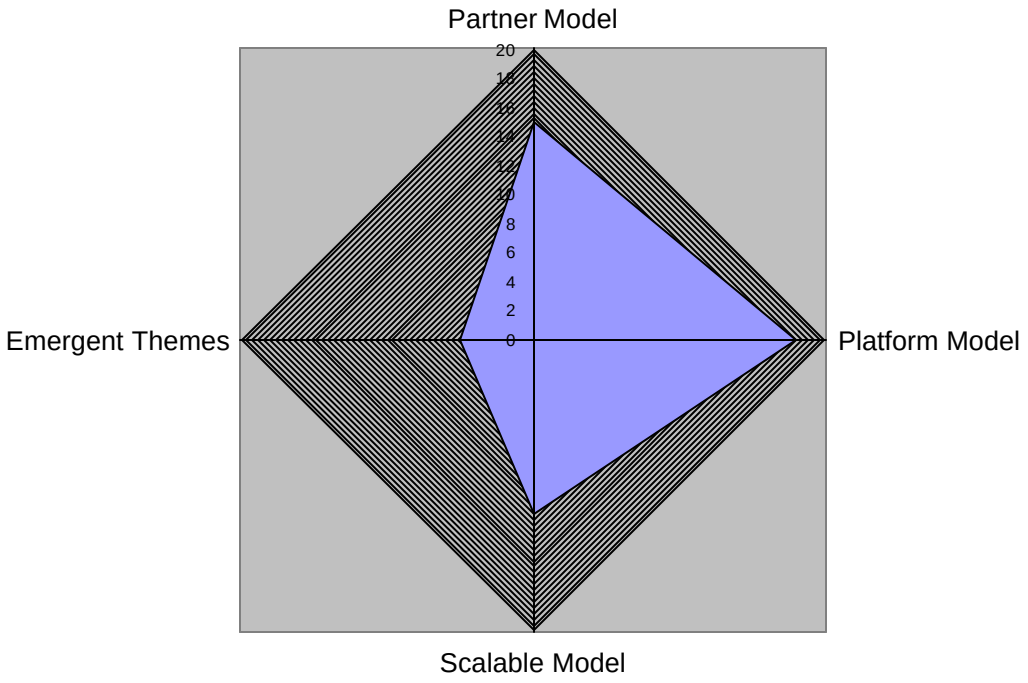

Figure 4. Numerical Results of IT Model/Literature Matching by Co-Researchers

The co-researchers also discovered that some of the articles represented the ideas presented in the other models. The Partner model was the second most represented model accounting for 15/50, or 30%, of the data points. In this case, the co-researchers determined that the article reflected the idea that the IT function should act as direct and

active participants with the leadership of the organization. The Scalable model was the third most prevalent theme accounting for 12/50, or 24%, of the results. These articles were focused primarily on the need for flexibility and had an emphasis on sourcing relationships. Finally, emergent themes were uncovered in 5/50, or 10%, of the articles. The emergent themes did not uncover any patterns that were useful for this analysis. In all five cases, the co-researchers reported that they decided to code an article as an emergent theme because they could not determine that it would fit in any of the other models presented. The co-researchers further stated that some of the articles they coded as emergent themes simply did not address organizing the IT function. Overall, 90% of the time the transformation articles fit within the "three viable organizational models" (Agarwal & Sambamurthy, 2002) that provided the mental framework for this research.

As discussed in Chapter 3, intercoder reliability was calculated as percentage agreement between researchers. Eight articles were selected at random from the collection of 42 articles. Each of these eight selected articles were given to two different co-researchers for coding. Once the co-researchers independently coded these articles, a percentage agreement was calculated. The reliability between co-researchers was 50%. This identified that when two of the co-researchers were looking at the same piece of literature, they coded it identically 50% of the time.

Primary Researcher Results

The primary researcher coded all 42 of the articles. This is consistent with the methodology and ensured that each article was coded at least twice. The primary researcher also discovered the trends observed by the co-researchers. The total numerical

values for each of the four themes (Partner, Platform, Scalable, or Emergent) are graphically represented in Figure 5 below. The articles reflected the salient characteristics of the Platform model 20/42, or 47.62%, of the time. These articles expressed that IT should be handled by an independent IT function within the enterprise.

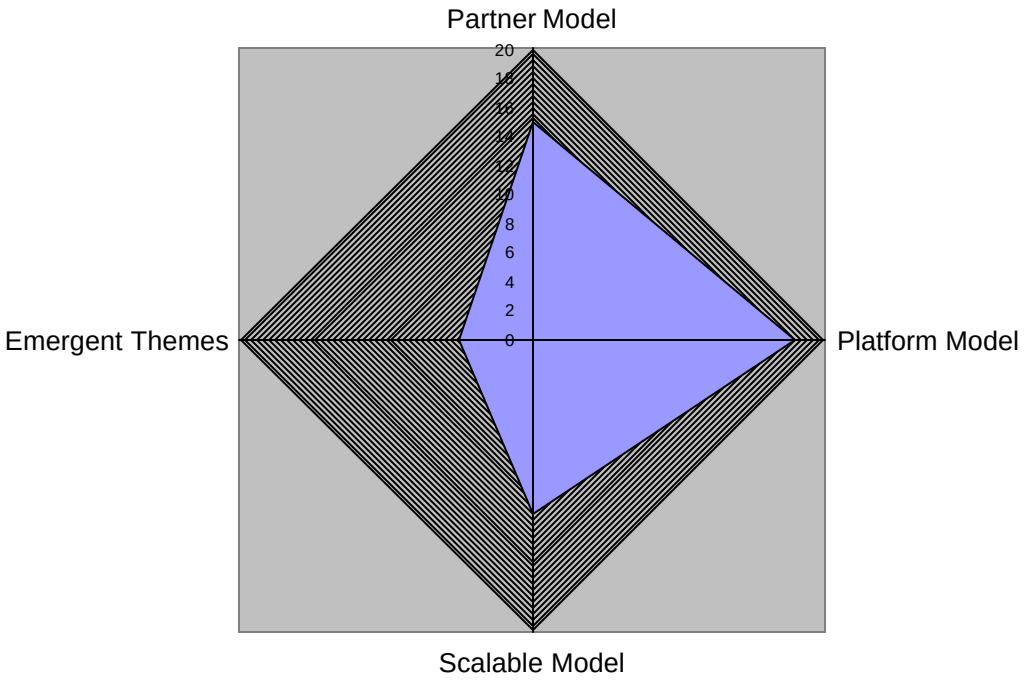

Figure 5. Numerical Results of IT Model/Literature Matching by Primary Researcher

The primary researcher observed that some of the articles also reflected the other three models. The Partner and Scalable models held equal weight as characteristics of both were observed in the literature 9/42, or 21.43%, of the time. These articles discussed the IT function as being diffused throughout the enterprise (Partner model), or that function being handled by expertise that exists outside the bounds of the organization (Scalable model). Finally, the emergent themes category accounted for 4/42, or 9.52% of

the articles. As the co-researchers had found, the primary researcher also stated that the articles classified as "emergent themes" were generally articles that did not address the intent of this research. For instance, the article that primarily discussed the historical importance of the Navy Sea Cadet Corps (Vergun, 2002) did not add any insights as to how to organize the IT function. The primary researcher concluded that 90.48% of the articles represented the salient characteristics of the organizational models of Agarwal and Sambamurthy.

In only one case was an emergent theme discovered. This emergent theme was a hybrid of the Scalable and Partner models (Walker, 2003). However, since this article was primarily focused on the national security personnel system and transformational changes in how DoD civilians are managed, there was little to be gleaned from further analysis.

Combined Results

When the results of all researchers were combined the trends remained consistent with the co-researchers data. For this analysis, the 42 coding sessions completed by the primary researcher were combined with the 50 coding sessions done by the co-researchers to yield a group of 92 data points. This aggregate approach meant that each time a coder read an article and completed a coding session, it was included in this section of the analysis.

The total numerical values for each of the four themes (Partner, Platform, Scalable, or Emergent) are graphically represented in Figure 4 on the next page. The ideas consistent with the Platform model were once again seen as the most prevalent.

This model accounted for 30/92, or 41.30%, of the results. Given that both the primary researcher and the co-researchers listed this as the most prevalent theme, it is not surprising that this theme stood out.

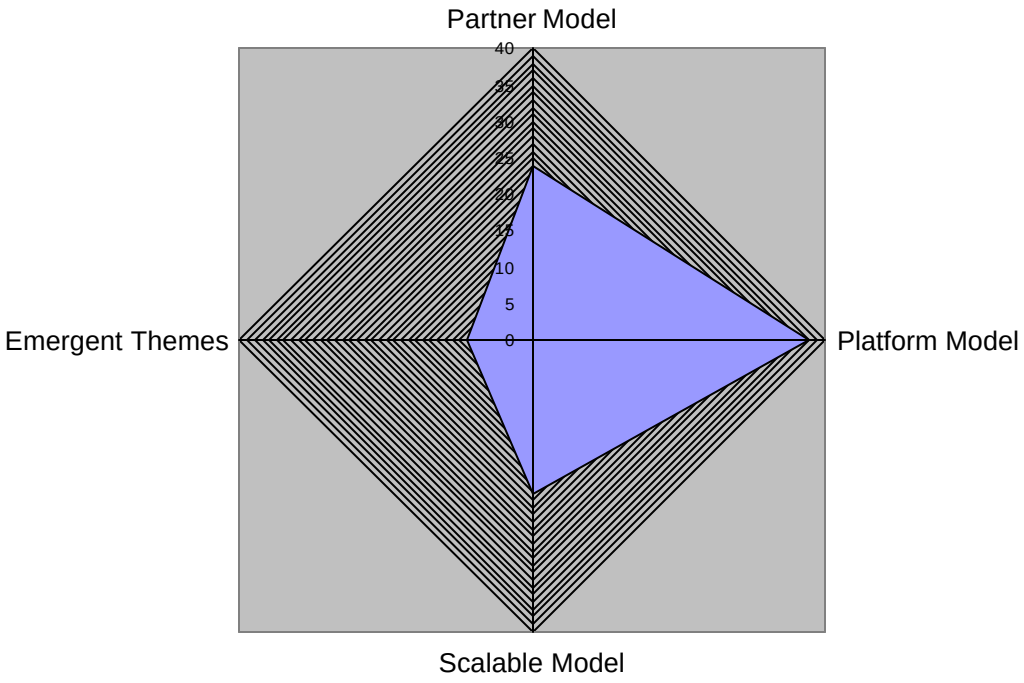

Figure 4 Numerical Results of IT Model/Literature Matching Found by All Researchers

The other models (Partner, Scalable and Emergent themes), or ideas reflected in the models, were also observed in the literature. The salient characteristics of the Partner model were shown in 24/92, or 26.09%, of the results. The Scalable model characteristics were nearly as prevalent with 21/92, or 22.83%, of the results. Finally, the Emergent themes (9) accounted for 9.78% of the results. As discussed earlier, these "emergent themes" were not truly new organizational models and did not address the organization of the IT function.

The intercoder reliability was calculated as the percentage agreement between the primary researcher and the co-researcher for each article. The co-researchers matched the primary researcher 31 out of 50 times for 62% reliability.

Correlated Results

For a particular article to be considered "correlated," two or more of the researchers had to agree on the coding or that article. For example, assume the primary researcher coded the article entitled "Perpetual Transitions" (Brown, 2002) as representative of the Platform model. If a co-researcher also coded this article as representing the Platform model, then this article was considered correlated and was included in the reduced set for analysis. An article was also considered correlated if two of the co-researchers agreed on the coding but the primary researcher came to a different conclusion. This type of correlation is only possible for those articles that were coded by two co-researchers to establish intercoder reliability (n=8). It is numerically possible that every article in the collection (n=42) could be coded by two or more researchers in the same way.

Two or more of the researchers agreed on the themes in 27/42, or 64.29%, of the articles. For these articles, the thematic patterns recognized in the other results became even more apparent. Figure 5 graphically displays the correlated numerical values for each of the models investigated (Partner, Platform, Scalable and Emergent themes).

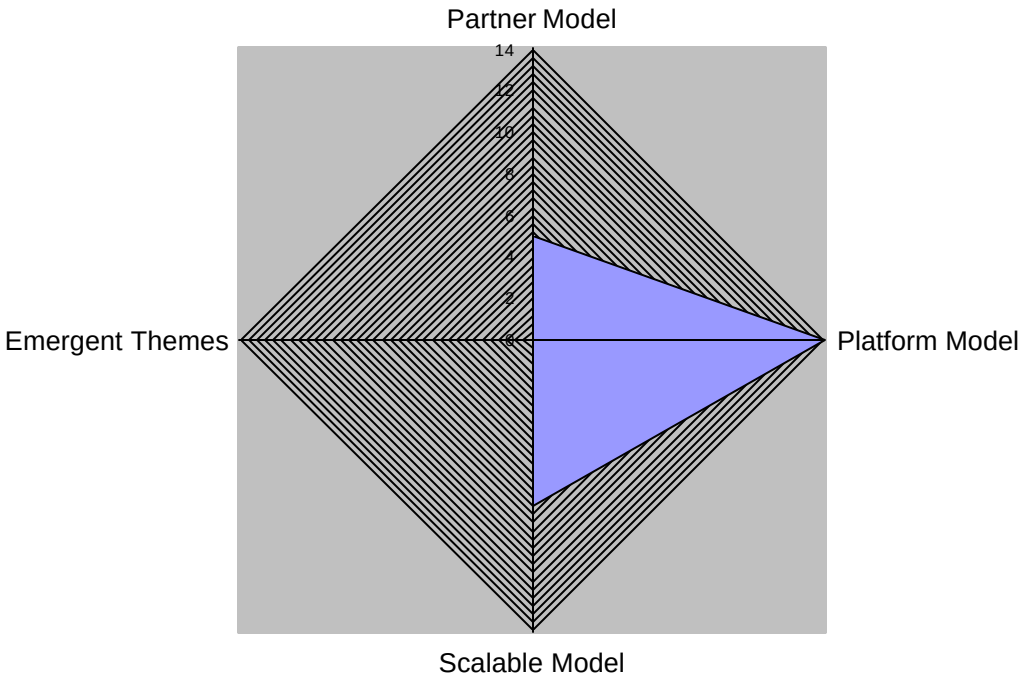

Figure 5 Numerical Results of IT Model/Literature Matching Agreed Upon by Two or More Researchers

In this correlated data set (n=27) the Platform model was the most prevalent theme uncovered in this analysis. In 14/27, or 51.85%, of the correlated articles, the Platform model was discovered. The Scalable model was the dominant theme in 8/27, or 29.63%, of the results. There were correlated articles that also emphasized the Partner model and this accounted for 5/27, or 18.52%, of the results. Finally, two researchers reviewing the same article never agreed that the article represented an emergent theme.

There is no reliability calculation for this reduced set of data. By definition, the reliability of this data is 100% because to be included in the reduced set, two researchers had to agree.

V. Discussion, Conclusions and Recommendations

The central organizing research question for this research was "What does the military transformation literature say about how we should organize to exploit the information domain?" Upon review of the literature and definitions available for this research, the research question changed to "What does the military transformation literature say about how we should organize the Information Technology (IT) function to exploit the information domain?" Within the myriad limitations of this study, the transformation literature studied seems to be highlighting Agarwal and Sambamurthy's Platform model as the appropriate IT organizational structure to exploit the information domain. The Platform model is distinct from the other models because in this model corporate IT acts s a factory that provides goods and services throughout the enterprise.

Discussion

The DoD considers the transformation of the U. S. military a strategic imperative to meet the security challenges of the new century (Hinton, 2002). This transformation is heavily dependent upon the information domain as evidenced in the literature review as well as throughout the transformation literature studied. As the DoD moves ahead with the transformation process there are a couple of key points that stand out:

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1. The DoD has not yet developed an IT organizational structure that supports the ability to exploit this domain.

2. Where the transformation literature is clear, there is a preference for an IT organizational design that views corporate IT as a factory providing services to the rest of the enterprise.
3. The transformation literature is not always clear about the form of an IT organizational structure that supports the DoD's ability to exploit the information domain.

The literature analyzed in this research showed support for three fundamentally different ideas for how to organize an IT function to handle the information domain. Ironically, all three models have similarities to the current approaches each of the services in the DoD have embarked upon.

The model that was reflected in most of the transformation literature reviewed in this research, the Platform model, was very similar to the Army's approach. The Army has created a separate IT organization within its enterprise boundaries. This organization (Network Enterprise Technology Command or NETCOM) is responsible for providing IT as a service throughout the rest of the Army. NETCOM reports directly to the Chief Information Officer of the Department of the Army and is responsible for both the IT functions and the information architecture. Programs such as Army Knowledge Online and the Center for Army Lessons Learned fall within the purview of NETCOM. This Platform organizational structure is the most strongly supported by the transformation articles in this study.

The Partner model held many similarities to the Air Force's approach. Current efforts in the Air Force focus on integrating the information domain with the warfighter.

The Air Force "senior communicator" is now the leader of AF/XI, Warfighter Integration. AF/XI is responsible for working with each functional area, both inside and outside the Air Force, to ensure that synergy is developed between the IT function and the business function. This partnering of efforts is intended to ensure that those responsible for the IT function are active and direct participants with the leadership of the Air Force. This direct connection leads to an IT function that supports the core business processes of the larger organization.

The Scalable model, with its emphasis on sourcing relationships, is similar to the Navy's approach. The Navy/Marine Corps Intranet (NMCI) is one of the largest examples of outsourcing the IT function in any area of the DoD. NMCI allows the IT function to be seen more as a commodity that can be purchased from the open market. This commodity can then be purchased in greater or smaller amounts dependant upon the requirements or the organization. Additionally, this model emphasizes the flexibility to expand or contract the IT function as business cycles ebb and flow.

At the DoD level, few people have actually discussed a DoD-wide organizational model for handling the information domain since Dr. Martin Libicki originally discussed a separate "Information Corps" back in 1993. It seems that the leadership of the DoD is content to have each of the services devise their own models. As the concept of transformation and the precepts of Network Centric Warfare continue to gain momentum in the DoD, it will become increasingly important to understand how to organize to exploit the information domain.

How to organize is an incredibly complex and difficult question to answer. Each service within DoD is attempting to answer this on their own and each has reached

different conclusions. The military services are positioning themselves to take advantage of, and defend against, the realities of information age warfare. If the DoD is sincere about the need for transformation, it will need to go beyond telling the military services to transform, and may have to transform itself. As some reformists, including retired VAdm Jack Shanahan, have argued:

> As for the organization of the Pentagon itself, only one mechanism for transforming large organizations has shown itself to be effective — the one used by Jack Welch, former chief executive officer of General Electric, that earned him the nickname, "Neutron Jack." Welch shed entire divisions and reorganized the company from the ground up. Such a process, while unlikely to happen, would be the best way forward for the Pentagon. (Shanahan, Richards, & Spinney, 2002)

In the context of this research, it is important to understand the current IT organizational structures in the DoD, but it is even more important to understand the way the transformation literature says the DoD should organize the IT function. If the DoD should decide to incorporate the transformational changes towards a Platform model, it may require a reorganization from the ground up.

Limitations

There are several limitations with this research effort. These are identified as training, article selection, and model selection.

Training

The low intercoder reliability may be indicative of insufficient training. Hypothetically, if all researchers were given the same training, they should have coded all of the articles identically. The fact that the reliability between co-researchers was

50% and the reliability between the primary and the co-researchers was 62% could indicate that the initial training was insufficient. There may, however, be other factors that contributed to this reliability figure.

The data used was not intentionally chosen as representative of the organizational paradigms. Several of the articles actually spoke very little about actual organizational design of the IT function. The researcher and the co-researchers had to make a logical judgment and determine if the author's remarks fit into any of the models. Further training may, or may not, have helped obviate these discrepancies.

Article Selection

In an attempt to ensure academic rigor, the articles chosen for this study were selected solely on the basis of key words. This approach ensured that bias on the part of the researcher selecting the articles was reduced. This also meant that some of the articles probably were not appropriate for inclusion in the study. Perhaps more significantly, the researcher is aware of many articles that were not included, but probably should have been. The articles that were used in this research represented a broad spectrum. They were randomly selected in that they were drawn from a database that simply did a key word search. There are many articles that were not identified using this technique. There are many organizations, including the DoD Office of Force Transformation, that are creating virtual libraries of documents dealing with transformation. Unfortunately, these virtual libraries contain articles that have been selected to be in those libraries. This process ensures that the articles they contain all pertain directly to transformation, but they may already be skewed towards the viewpoint

of the individual doing the collecting. The article selection process employed for this research ensured that bias was removed from the selection process as much as possible.

Model Selection

The models used in this research effort may not have been the appropriate framework for understanding the military transformation literature. Agarwal and Sambamurthy's Platform, Partner, and Scalable models were developed based on their research of private industry. These models may not necessarily apply to a public entity such as the DoD. Further, the terms that they used in describing their models do not readily translate to a DoD environment. The models included such terms as "visioning networks" and "innovation networks." The terms are not formally defined within the context of the DoD.

Suggestions for Further Study

This research was very exploratory in nature and further studies are required before any solid trends can be established. A confirmatory follow-on study, duplicating this methodology but using new researchers, should be conducted to establish if the results can be replicated. This would have the effect of removing whatever researcher bias there may have been amongst the six researchers in this study. Also, a follow-on study, utilizing a different collection of articles, should also be accomplished. This might involve using different key words for search or different databases. Perhaps the Office of Force Transformation library of documents would be a good collection for this type of

content analysis. Such a study would, as a matter of course, have to accept the bias that goes with using this library.

A Delphi study, using Agarwal and Sambamurthy's organizational models, would be a good starting place for some Delphi research. Such a study would need to identify the leaders in the area of transformation and follow the Delphi methodology to ascertain expert opinion on the IT organizational model that best fits the tenets of transformation.

Finally, several case studies on the instantiations of each of Agarwal and Sambamurthy's models should be conducted. These case studies should examine IT organizations throughout the DoD to gain a greater understanding of which models seem to be best suited to a transforming service.

Summary

This research sought to understand what organizational structure is being advocated for exploiting the information domain. Specifically, this research focused on how the transformation literature characterized an IT organizational structure that could exploit the information domain. A preponderance of the transformation articles studied indicated that the IT organizational structure should be focused on providing information domain capabilities as a service to other parts of the enterprise. At the level of the individual military services, the Army is currently utilizing this type of structure with NETCOM. At a DoD level, DISA is attempting to transform and position itself to provide the information domain talent and services to the rest of the DoD. It remains to be seen whether Dr. Libicki's 1993 call for a separate "Information Corps" will evolve

out of DISA or if the components of the DoD will continue to develop their own structures for handling the information domain.

Appendix A: Transformation Articles Used in this Research

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Appendix B: Coding Form

Transformation Coding Form

Coder Name _____

Article name _____

_____

Organizational Structure supported (Circle one)

Partner
Platform
Scalable
Emergent theme (describe)

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Vita

Captain Todd Schug was born in Kearney, NE, and graduated from high school there in 1984. He first enlisted in the Air Force Reserves in March 1988. He began his career as an F-16 Aircraft Armament Systems Specialist and in 1993 cross-trained to become a KC-135 Crew Chief. Highlights of his time in the Air Force Reserves and later the Arizona and Nebraska Air National Guard include: BMTS Honor Graduate/Honor Flight, two-time technical school Distinguished Graduate, and participation in numerous exercises and real-world contingencies including Red Flag and Operation NORTHERN WATCH.

In 1995, he entered Officer Training School (OTS) and received his commission in Mar 1996. After completing Basic Communication-Computer Officers' Training (BCOT), Captain Schug was assigned to ESC Det 5, Strategic and Nuclear Deterrence Command and Control (SNDC2) Systems Program Office (SPO), Peterson AFB, CO. He held several different positions there but his last duty title was Communications Infrastructure Program Manager for Cheyenne Mountain Air Station (CMAS). He moved on to 436 CS, Dover AFB, Feb 1999. He was the commander of all three flights in the Communications Squadron and the Support Group Executive Officer. He was twice the CS CGO of the Quarter, the Dover AFB Communications and Information CGO of the Year for 1999, and was the CS CGO of the Year for 2000. Additionally, Capt Schug was the 436 AW CGO of the Quarter (2d qtr, 2000) and the AMC Lt Gen Leo Marquez Communications-Electronics CGO Manager of the Year for 2000.

In Sep 2002, he entered the Graduate School of Engineering and Management at the Air Force Institute of Technology.

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14. ABSTRACT

The US Department of Defense (DoD) has embarked on an ambitious plan to transform itself. A driving force behind this transformation is a realization that society has moved into an "information age" and that information age warfare will be significantly different from anything that ha gone before it. At the heart of the transformation effort is a concept known as Network Centric Warfare (NCW). Transformation, information age warfare, and NCW all depend heavily on how the DoD handles the information domain. Although there are many organization structure/design issues that will derive from the transformation imperatives, one of central concerns is the need to alter the Information Technology (IT) functions/organizations that are called to task. Given this background, this research attempted to answer the question "What does the military transformation literature say about how we should organize to exploit the information domain?" Specifically, this research focused on ideas regarding organizing the IT organizations/functions of the DoD. Overall, the results showed that a majority of the transformation literature supports organizing the IT function to act as a service provider. The IT function would therefore act as a separate enti that provides IT related services to the other components of the enterprise

15. SUBJECT TERMS
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