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THESIS

AN ANALYSIS OF SOCIO/CULTURAL IMPACT
OF CIM ON THE DEPARTMENT OF DEFENSE
AND POSSIBLE IMPLEMENTATION STRATEGY

by

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March 1991

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91-14251



91 10 28 043

REPORT DOCUMENTATION PAGE

1a REPORT SECURITY CLASSIFICATION Unclassified			1b RESTRICTIVE MARKINGS		
2a SECURITY CLASSIFICATION AUTHORITY			3 DISTRIBUTION/AVAILABILITY OF REPORT Approved for public release; distribution is unlimited.		
2b DECLASSIFICATION/DOWNGRADING SCHEDULE					
4 PERFORMING ORGANIZATION REPORT NUMBER(S)			5 MONITORING ORGANIZATION REPORT NUMBER(S)		
6a NAME OF PERFORMING ORGANIZATION Naval Postgraduate School		6b OFFICE SYMBOL (If applicable) 37		7a NAME OF MONITORING ORGANIZATION Naval Postgraduate School	
6c ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5000			7b ADDRESS (City, State, and ZIP Code) Monterey, CA 93943-5000		
8a NAME OF FUNDING/SPONSORING ORGANIZATION		8b OFFICE SYMBOL (If applicable)		9 PROCUREMENT INSTRUMENT IDENTIFICATION NUMBER	
8c ADDRESS (City, State, and ZIP Code)			10 SOURCE OF FUNDING NUMBERS		
			Program Element No	Project No	Task No
					Work Unit Accession Number
11 TITLE (Include Security Classification) An Analysis of Socio/Cultral Impact of CIM on the Department of Defense and Possible Implementation Strategy Unclassified					
12 PERSONAL AUTHOR(S) William M. Hantjis Donald A. Kelley Jr.					
13a TYPE OF REPORT Master's Thesis		13b TIME COVERED From To		14 DATE OF REPORT (year, month, day) March 1991	
15 PAGE COUNT 111					
16 SUPPLEMENTARY NOTATION The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.					
17 COSATI CODES			18 SUBJECT TERMS (continue on reverse if necessary and identify by block number)		
FIELD	GROUP	SUBGROUP	Organizational culture, Organizational change, MIS implementation, CIM, Change resistance, Information systems		
19 ABSTRACT (continue on reverse if necessary and identify by block number) The Corporate Information Management (CIM) initiative in the Department of Defense (DoD) is an attempt to eliminate duplicate Automatic Data Processing (ADP) systems through the standardization of functional area requirements across all DoD agencies. CIM initiative management recognized that the DoD organizational culture might impact or be impacted by such an all-encompassing initiative. The purpose of this thesis is to estimate the possible impact of culture on information systems implementations by conducting a literature review of cultural theory, change theory, resistance to change, and information systems implementation. The thesis concludes with a recommendation for implementation of the CIM initiative through a four part plan based on the findings of the literature review.					
20 DISTRIBUTION/AVAILABILITY OF ABSTRACT ☒ UNCLASSIFIED/UNLIMITED ☐ SAME AS REPORT ☐ DTIC USERS			21 ABSTRACT SECURITY CLASSIFICATION Unclassified		
22a NAME OF RESPONSIBLE INDIVIDUAL Kenneth J. Euske			22b TELEPHONE (Include Area code) (408) 646-2860		22c OFFICE SYMBOL AS/EE

DD FORM 1473, 84 MAR

83 APR edition may be used until exhausted
All other editions are obsolete

SECURITY CLASSIFICATION OF THIS PAGE
Unclassified

Approved for public release; distribution is unlimited.

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Submitted in partial fulfillment
of the requirements for the degree of

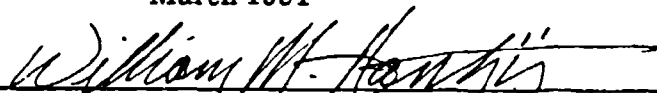
MASTER OF SCIENCE IN INFORMATION SYSTEMS

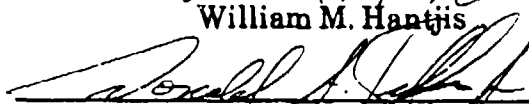
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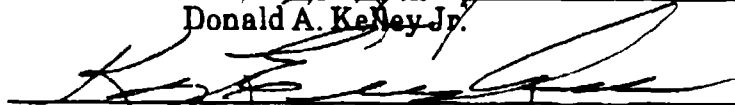
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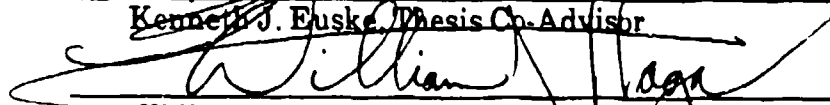
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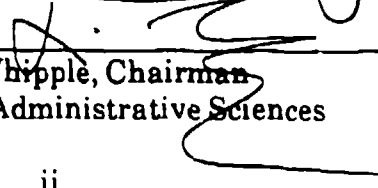

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ABSTRACT

The Corporate Information Management (CIM) initiative in the Department of Defense (DoD) is an attempt to eliminate duplicate Automatic Data Processing (ADP) systems through the standardization of functional area requirements across all DoD agencies. CIM imitative management recognized that the DoD organizational culture might impact or be impacted by such an all-encompassing initiative. The purpose of this thesis is to estimate the possible impact of culture on Information systems implementations by conducting a literature review of cultural theory, change theory, resistance to change, and information systems implementation. The thesis concludes with a recommendation for implementation of the CIM initiative through a four part plan based on the findings of the literature review.



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I. INTRODUCTION

The Corporate Information Management (CIM) initiative within the Department of Defense (DoD) was created to correct deficiencies in Automatic Data Processing (ADP), such as system redundancies across services and agencies, ADP management ineffectiveness, and dissimilar data architectures across similar functional areas within various agencies. These deficiencies were emphasized by criticisms from the Congress, the Government Accounting Office (GAO), and the "Defense Management Review to the President" (submitted by the Secretary of Defense in July, 1989). For further information on the creation of CIM in the DoD, see Appendix A.

CIM in DoD has three main objectives:

1. ensure standardization, quality, and consistency of data within DoD's various information systems,
2. implement standard management policies that support the information system life cycle, and
3. eliminate duplication of effort in the development of similar information systems that provide similar functional capabilities across different DoD agencies (Leong-Hong, 1990).

It is expected that these CIM objectives will eventually encompass all administrative functions and tactical systems short of airborne weapons systems within DoD.

Accomplishing CIM's three main objectives necessitates changing the policies regulating the purchase and development of information systems, as well as information management policies throughout the different agencies within the DoD. CIM management recognized that changes of this magnitude could meet with resistance from DoD and service agencies. Consequently, a study of the cultural impact (and the possible attendant resistance) to the CIM initiative was requested. This paper is an answer to that request.

Initial research into the topics of culture and the effects of information system implementations on an organization, led to a realization that the answer to CIM management's problem involved more than just culture. As an innovative change within DoD, the impact of CIM led to further research in the areas of innovative change theories and implementation of strategic change strategies. This was required because no other change initiative of such magnitude had been attempted across all DoD agencies. Therefore, this paper reflects the larger body of literature by addressing the requested issues of culture and resistance, as well as the topics of change theory, general considerations for reducing resistance, and increasing the

acceptability of strategic change and information system implementation.

Chapter II explores the phenomenon of organizational culture: its levels, formation, and member indoctrination. Methodologies for assessing cultures are then presented. Chapter III deals with definitions; change (according to Lewin), innovation, and the organizational change cycles defined by Tichy are presented. Resistance to change and tactics for dealing with resistance to change are also addressed. Chapter IV examines how to determine an appropriate change strategy based on the use of either the instrumental view of change or the navigational view of change. Chapter V explains a change approach to information system implementation and explores various issues related to system implementations. Chapter VI contains recommendations for CIM management actions based on the literature review.

11. ORGANIZATIONAL CULTURE

This chapter explores the phenomenon of organizational culture. First, organizational culture is defined and observed at various levels (visible, conscious, unconscious). Next, the way in which a culture forms and the manner in which new members are indoctrinated into the group is explained. Once culture itself has been discussed, a case is made for the necessity of studying an organization's culture if changes to the organization are to be made. Finally, four methodologies for studying culture and performing a cultural assessment are presented.

A. WHAT CULTURE IS

1. Definition of Culture

A comprehensive definition of organizational culture offered by the organizational psychology school is given by Schein (1983) as "a pattern of basic assumptions - invented, discovered, or developed by a given group as it learns to cope with its problems of external and internal integration - that has worked well enough to be considered valid and therefore to be taught to new members as the correct way to perceive, think, and feel in relation to those problems." Others (Louis, 1981; Deal and Kennedy, 1982; Sathe, 1983; Wilkins, 1983), in the process of

developing perspectives on organizational culture, have defined organizational culture by emphasizing various aspects of Schein's definition. These definitions do not contradict the basic tenets of the organizational psychology school, but are less comprehensive than Schein's or tend to focus on issues which are the results of an organization's culture instead of dealing with what culture really is.

2. Levels of Culture

Schein contends that culture can be analyzed on several levels. The first level is visible artifacts evident in the physical environment of a culture; building architecture, manner of dress, public documents, readily discernable behavior patterns, etc. (Schein, 1985). Examples might include: no reserved parking, shirt sleeves and no ties, large work areas with few partitioned offices. An entire school of cultural thought has grown around this first level of culture. Called the anthropological school this simple view of organizational culture accepts only those things that are concrete and observable in an organization as pertaining to its culture (Sathe, 1983). The level of visible artifacts may be easy to discern, but gives no concrete indications as to why a group behaves as it does (Schein, 1985). The second level of an organization's culture is the values that govern behavior. These values are hard to observe and normally must be

inferred by conducting interviews with key organizational members (Schein, 1985). However interviews normally reveal only espoused values (what members say their reasons for behavior are and what they would ideally like their reasons for behavior to be). Examples of espoused values might be: senior personnel are to be respected, watch out for your teammate, or protect the environment. Because these espoused values may only be ideals, the third level of organizational culture, basic assumptions, must be probed in order to discover why an organization behaves the way it does (Schein, 1985). Basic assumptions are old espoused values that were found to be valid over a long period, became taken for granted, and dropped out of awareness (Schein, 1985). As such, they are less open to debate regarding validity and are so powerful that any attempt to question them appears to a group member as an exhibition of ignorance (Schein, 1985). Examples of basic assumptions may be: the individual is a source of good ideas, truth is discovered through debate, watch for your teammate (Schein, 1990).

Sets of interrelated basic assumptions about the nature of the environment, mankind, and activities eventually become patterned into cultural paradigms (Schein, 1984). These patterns of assumptions meet the human need for order and consistency which means that any given paradigm will evolve so as not to contain inconsistent sets

of assumptions (Schein, 1990). The contents of the group's cultural paradigms are the foundations upon which that group's values are grounded (Schein, 1990). These values are then manifested in behaviors, behaviors which may appear irrational to the outside observer until the basic assumptions of the culture are understood.

3. Development and Modification of Basic Assumptions

The learning of solutions to problems which the group encounters is the basic process that transforms values into basic, hidden assumptions. Ordinarily, learning remains consistent with previously established cultural paradigms (Schein, 1984). There are two mechanisms for learning; either positive problem solving (in which the group tries alternate solutions until something works and keeps using the solution until it fails) or anxiety avoidance (in which the group finds a successful avoidance behavior and uses it indefinitely due to a reluctance to try new behaviors thereby risking anxiety); the more powerful and lasting of the two is anxiety avoidance (Schein, 1984).

Group founders hold a key positions in the establishment of cultural paradigms. Founders define or originate group's initial sets of basic assumptions. Founders continue to hold a central position as the culture of the organization matures by defining solutions to new situations. Once a founder leaves an organization, the new

leader that replaces the founder assumes a prominent role in defining solutions to problems but is still subject to the basic assumptions initially set in place by the founder (Schein, 1985).

Homans (1950) distinguishes between two types of new situations with which a group must cope; situations from the outside environment (which will determine the group's survival) and situations dealing with internal integration (which determine the group's ability to function as a group). Even though it is possible to distinguish between the two, they are highly interrelated - Table 2.1 summarizes the internal and external tasks (Schein, 1990). As the environment continues to change and internal affairs require management, the culture perpetually evolves and changes to meet new challenges. This is not to say that the stable, basic assumptions of a cultural paradigm will change to fit the whims of an unstable environment. Because the basic assumptions of the group are established partly for the purpose of fulfilling the human need for consistency and order, and because stability is a defense against inconsistency and confusion, deep, unconscious, basic assumptions can only change slowly (Schein, 1984).

4. Member Indoctrination

New members of an organization require indoctrination so that the culture can be passed on and new

TABLE 2.1
The External and Internal Tasks Facing All Groups
Schein (1985)

External Adaptation Tasks

Developing consensus on:

1. The core mission, functions, and primary tasks of the organization vis-a-vis its environments.
2. The specific goals to be pursued by the organization.
3. The basic means to be used in accomplishing the goals.
4. The criteria to be used in accomplishing the goals.
5. The remedial or repair strategies if goals are not achieved.

Internal Integration Tasks

Developing consensus on:

1. The common language and conceptual system to be used, including basic concepts of time and space.
2. The group boundaries and criteria for inclusion.
3. The criteria for the allocation of status, power, and authority.
4. The criteria for intimacy, friendship, and love in different work and family settings.
5. The criteria for the allocation of rewards and punishments.
6. Concepts for managing the unmanageable-ideology and religion.

members assimilated into the group. Although new members bring in new ideas and can produce cultural change (especially if they are brought in at high levels) it is unclear in the literature whether "new" elements are truly new assumptions or merely new artifacts built on old assumptions (Schein, 1984). It seems clear that introducing new artifacts is culturally less disturbing than introducing new, or changing old, assumptions.

Because culture pervades to the unconscious level of the individual group member, the learning of a culture involves more of a member's unconscious responses to situations; the older the culture and the longer a member has belonged to it, the greater the influence the culture will have on the member (Schein, 1985).

5. Culture as a Group Phenomenon

In order for a group to "own" a culture, it is necessary for it to:

1. have been together long enough to have shared significant problems,
2. have solved those problems by either relying on formerly established basic assumptions or formulating new ones, and
3. have the capacity to pass the culture on to new members.

These three requirements ensure that the group has had the opportunity to establish and test its own consensus on and commitment to a set of basic assumptions (Schein, 1984).

B. THE NEED TO ACCOUNT FOR CULTURE

From the preceding discussion, it should be clear that culture is not easily changed, but more importantly, a culture's basic assumptions are a pervasive force that affects the organization in which the culture "lives." The greater the number of shared assumptions, the more widespread and pervasive these assumptions are, and the greater the degree the assumptions are ordered or ranked in terms of importance, determines the strength of a culture and its impact on the organization (Sathe, 1983). Because an organization's culture has the potential for being either an asset or a liability, influencing organizational communication, personnel commitment, and decision making, it is important to understand a culture if any organizational changes are being contemplated (Sathe, 1983).

Dennison found evidence that an organization's culture does affect an organization's performance. He compared the level of two cultural characteristics; participative management (the linking of individual goals to the goals of the organization), and the degree of work organization, in "34 large American firms" (Dennison, 1984) from 25 different industries over five years. Dennison did not define the

term "large", but he used responses from a total of 43,747 employees in the 34 firms as evidence in his study. The level of participative management and organization of work was determined for each firm by a survey of questions indexed on a Likert scale. Once the degree of participation and organization of work was determined, these cultural indicators were compared to each firm's income investment ratio (which indicated the effective use of resources over time) and income sales ratio (which indicated general operating efficiency). Each firm's income investment ratio and income sales ratio were computed from financial information from Standard and Poor's statistical service and compared to income investment and income sales ratios of other firms in the same industry. Dennison found that companies that scored high in levels of participative management and work organization consistently had a competitive edge in income investment ratio and income sales ratio within their particular industry (Dennison, 1984).

The notion that a corporate culture can provide a competitive edge in organizational performance has led to the publication of literature (Deal and Kennedy, 1982; Peters and Waterman, 1982; Ouchi, 1981) advocating the changing of organizational cultures to give organizations a competitive business edge. The utility of changing an organization's culture will be explored in some depth in subsequent sections of this paper. Suffice it to say at

this point that an unconsidered attempt by management to rapidly change an organization's culture will, at the least be costly and difficult, and most probably be a failure. The real value in understanding culture is for the manager who, when faced with apparently irrational group behavior, can understand how group consensus on basic assumptions is more powerful than a conflict of values or inconsistent behavior. Knowledge of an organization's basic assumptions can help a manager anticipate trouble-spots and do a more effective job of planning and controlling.

Because culture exerts itself most noticeably when unconscious, taken-for-granted assumptions are violated (Wilkins, 1983) the introduction of any far-reaching change strategy, that has the potential for changing a paradigm of assumptions, should assess a group's basic assumptions before changes are introduced. Any resistance to the change may then be anticipated and a plan for dealing with specific areas of resistance devised. Methods for implementing change and dealing with resistance to change are explained in subsequent chapters of this paper.

C. HOW TO STUDY A CULTURE

Various methodologies for assessing the basic assumptions of an organization are identified in the literature (Schein, 1985; Sathe, 1983; Wilkins, 1983; Schwartz and Davis, 1981). Other methodologies, from the

anthropological school, ignore the level of basic assumptions and advocate assessing a culture by determining its artifacts and values then attempting to change those artifacts and values for the purpose of achieving a competitive advantage in the work place. This second series of methodologies, exemplified by Deal and Kennedy (1982) does not provide complete information for the manager interested in estimating an organization's reaction to a change strategy. Therefore, this paper will explore only those methodologies which seek to assess an organization's basic assumptions.

Uncovering or assessing cultural assumptions presents three major problems. The first problem is that people may not speak directly of assumptions (assumptions are by definition unconscious) but rather imply them through examples (Wilkins, 1983) (e.g., "If he keeps up that attitude, he won't make it here," or "What makes you think you can question the CEO in public?"). Extensive data collection and exploration of the myriad of cultural artifacts and value-laden statements must be conducted in order to accurately understand the content of basic assumptions that give rise to a culture's overt manifestations. The second major problem that a cultural assessment must deal with is that some assumptions contradict overtly stated norms or values and people are reluctant to admit such contradictory values (Wilkins,

1983). For example, a specific organizational assumption, such as winning at all costs, may be in direct conflict with the American social norm of giving assistance to the weak; it may be hard for a member to admit adherence to the contradictory values. The third problem is that the diversity and size of an organization may cause subcultures to form. An assessment conducted on an organizational subculture does not necessarily reflect the assumptions of other organizational subcultures and may affect the validity of the assessment. If the assessment is directed at the wrong subculture, the assumptions identified by the assessment may not apply to the subculture of actual interest (Wilkins, 1983). Application of any one of the following assessment methodologies must account for these problems.

1. Schein's Methodology

A detailed methodology for conducting a cultural assessment, taking into account all phases of an assessment from initial contact with an unfamiliar organizational culture to recommendations for reporting results to management, is presented by Schein. He takes great care to explain that this methodology does not employ "magic questions" but seeks to expose the investigator to the culture in a natural way. In general, the process involves a team composed of an expert outsider and a knowledgeable

insider working together through iterative interviews to determine the content of an organization's basic assumptions. The methodology is composed of ten steps and is presented here in a generalized form; Schein provides specific interview and analysis techniques (Schein, 1985).

a. Step 1. Entry and Focus on Surprises

Initially experiencing a culture will present the outsider with some unexpected behaviors. These surprises should be noted as they may be symptoms or artifacts of basic assumptions.

b. Step 2. Systematic Observation and Checking

The surprise events must be observed repeatedly in order to indicate true assumptions instead of being merely random events. The observation of all events must therefore be systematized and recorded accurately.

c. Step 3. Locating a Motivated Insider

In order to understand what is going on in the organization, the outsider requires the partnership of a motivated, analytically competent insider. Often the best insider is the one that has requested, or is interested in, the process.

d. Step 4. Revealing Surprises and Hunches

With the insider-outsider relationship established, the outsider can reveal his or her

observations, questions, and theories about the culture to the insider. The insider must be ready to hear what may sound like judgmental observations and be able to discuss those observations in a nondefensive manner.

• **Step 5. Joint Exploration to Find Explanation**

An initial exploration results in joint agreement over what the basic assumptions seem to be. During this initial exploration it is necessary to cover all the culture's problems of internal and external adaptation (see Table 2.1) as well as all of the general underlying assumptions around which cultural paradigms form (Table 2.2) to ensure all aspects of the culture are covered. The seven underlying dimensions of an organizational culture in Table 2.2 were chosen by Schein based on typological studies of Southwest United States cultures (Kluckhohn and Strodtbeck, 1961) and dimensions which Schein considered necessary through his experience in understanding corporate cultures (Schein, 1985). Applying concrete observations to these dimensions and asking the related questions serves to define the unconscious, basic assumptions. The outsider assumes the role of a social psychologist interviewer helping the insider bring out the deep assumptions of which the insider is unconscious.

TABLE 2.2
Some Underlying Dimensions of Organizational Culture
Schein (1985)

Dimension of Cultural Paradigms

- D1. The organization's relationship to its environment
- D2. The nature of human activity
- D3. The nature of reality and truth
- D4. The nature of time
- D5. The nature of human nature
- D6. The nature of human relationships
- D7. Homogeneity vs. diversity

Questions to be Answered

- D1. Does the organization perceive itself to be dominant, submissive, harmonizing, searching out a niche?
- D2. Is the "correct" way for humans to behave to be dominant/pro-active, harmonizing, or passive/fatalistic?
- D3. How do we define what is true and what is not true; and how is truth ultimately determined both in the physical and social world? By pragmatic test, reliance on wisdom, or social consensus?
- D4. What is our basic orientation in terms of past, present, and future, and what kinds of time units are most relevant for the conduct of daily affairs?
- D5. Are humans basically good, neutral, or evil, and is human nature perfectible or fixed?
- D6. What is the "correct" way for people to relate to each other, to distribute power and affection? Is life competitive or cooperative? Is the best way to organize society on the basis of individualism or groupism? Is the best authority system autocratic/participative?
- D7. Is the group best off if it is highly diverse or if it is highly homogeneous, and should individuals in a group be encouraged to innovate or conform?

f. Step 6. Formalizing Hypotheses

The assumptions that result from Step 5 are still only hunches about the organization's culture. They must be formalized into hypotheses and agreement between the insider and outsider be reached on valid tests of the hypotheses. Tests could include expected behaviors that will be observed if an assumption holds, or operational values that could be derived from the assumption.

g. Step 7. Systematic Checking and Consolidation

Evidence to accept or reject the hypotheses is now collected. Collection techniques involve formal interviews, questionnaires, document content analysis, systematic observation and other techniques for gathering social data.

h. Step 8. Pushing to the Level of Assumptions

This is generally one of the most difficult steps in any cultural assessment, for it is now that the basic assumptions are deciphered from the confirmed hypotheses. This is accomplished by attempting to state clearly what assumption is operating within each confirmed hypothesis. Only when the outsider can correctly predict insider reaction to circumstances based on the predicted assumptions can the outsider be sure that the assumptions are correctly identified.

i. Step 9. Perpetual Recalibration

Two sources for recalibration include new data and new insider participation. New data must be treated in the same iterative manner as previously discussed. Other insiders can add valuable insights, but they must possess personal and analytical skills in order to comprehend the assumptions and not become defensive or embarrassed while discussing them.

j. Step 10. Formal Written Description

The analysis is tied together by articulating all the assumptions in writing and showing how they relate to each other to form the cultural paradigms. An important consideration is to whom and for what reasons the analysis should be released. Unguided disclosure within and outside the organization could yield unpredictable results.

2. Sathe's Methodology

Sathe (1983) proposes a method of cultural diagnosis which identifies important shared understandings (what Schein refers to as basic assumptions) from shared things, shared sayings, shared doings, and shared feelings (what Schein refers to as artifacts and values) (see Figure 2.1) (Sathe, 1983). Each important shared understanding in Figure 2.1 is inferred from one or more of the shared things, sayings, doings, and feelings (the observable manifestations) of the culture. Although a somewhat

Shared Things

- ST1. Shirt sleeves.
- ST2. One-company town.
- ST3. Open offices.

Shared Sayings

- SS1. "Get out there" to understand the customer.
(Belief in travel)
- SS2. "We cannot rely on systems" to meet customer needs. (Highly responsive customer service)
- SS3. "We don't stand on rank." (No parking privileges)

Shared Doings

- SD1. Participate in lots of meetings.
- SD2. Make sure organization is detailed-oriented to provide quality customer service.
- SD3. Engage in personal relationships and communications.
- SD4. Rally to meet customer needs in a crisis.
- SD5. Expedite jobs to deliver highly responsive service.
- SD6. Maintain close relationship with union.

Shared Feeling

- SF1. The company is good to me.
- SF2. We like this place.
- SF3. We care about this company because it cares about us as individuals.

Important Shared Understandings

1. Provide highly responsive, quality customer service (SS1, SS2, SD2, SD5).
2. Get things done well and quickly ("expediting") (SS1, SD1, SD4, SD5).
3. Operating informally (ST1, SS3, SD3, SD6).
4. Perceive company as part of the family (ST2, SD6, SF1, SF2, SF3).
5. Encourage constructive disagreement (ST3, SD1).

Figure 2.1
Inferring Important Shared Understanding From Shared Things,
Shared Sayings, Shared Doing, and Shared Feelings
Sathe (1983)

different list may be defined for any given culture, the important point is to distill the long list of manifestations to a shorter list of shared understandings (Sathe, 1983). This methodology differs in detail from Schein's methodology, but is similar in that observable manifestations are used to determine unconscious assumptions.

3. Wilkins' Methodology

Wilkins focuses on two general areas when performing a cultural assessment: implied work assumptions and implied reward/punishment assumptions (Wilkins, 1983). Implied work assumptions include assumptions about work "ends" (goals that should be accomplished by a culture's work) and work "means" (how work goals are to be accomplished). Implied reward assumptions include the degree to which individual interests are served and the degree to which people are treated equitably (Wilkins, 1983). Wilkins interprets assumptions within these two general areas as sets of explicit social contracts (defined by procedures or regulations) and implicit social contracts (not formally defined) within the organization. In Schein's terminology, the explicit contracts are defined as values while the implicit contracts are assumptions. Wilkins' focus on assumptions as implied contracts between personnel may provide an advantage for the cultural assessment that is

particularly designed to discover the responsibilities that members of a culture are expected to assume.

4. Schwartz and Davis' Methodology

Schwartz and Davis propose that a cultural assessment be done by describing the way tasks are handled in the context of key relationships (Figure 2.2) (Schwartz and Davis, 1981). Their purpose for accomplishing a cultural assumptions assessment is to determine if a specific strategic change proposal will be culturally suited to a given organization; a cultural fit is necessary for the change to be successful (Schwartz and Davis, 1981). Relating organizational tasks and organizational member relationships, they say, establishes a framework for thinking through the relationship between characteristics of the organizational culture and the proposed changes in tasks and relationships which are required to ensure the success of the proposed strategy. The cultural fit of the proposed change can then be assessed. Figure 2.2 is a worksheet that can be used to organize the assessment. Each organizational task (i.e., communicating) is related to the various levels of relationships (i.e., companywide) to determine how the organization accomplishes the given task (i.e., communicating). Once all tasks have been evaluated, and a statement of how each task is performed within the various relationships is developed, a cultural summary considering

both relationships and tasks is determined. Figure 2.3 presents an example of a simplified cultural assessment. The Relationships-Culture Summary is obtained by adding across the rows of Figure 2.2. The Tasks-Culture Summary is obtained by adding down the columns of Figure 2.2. Once broken down in this dual perspective, cultural assumptions are identified as pertaining to tasks, relationships, or both and resistance to change may be anticipated from a more specific area.

TASKS	RELATIONSHIPS			
	Company wide	Boss-subordinate	Peer	Inter department
Innovating	_____	_____	_____	_____
Decision Making	_____	_____	_____	_____
Communicate	_____	_____	_____	_____
Organize	_____	_____	_____	_____
Monitoring	_____	_____	_____	_____
Appraising & Rewarding	_____	_____	_____	_____

Figure 2.2
Corporate Culture Matrix
Schwartz and Davis (1981)

RELATIONSHIPS**CULTURAL SUMMARY**

Companywide	Preserve your autonomy. Allow area managers to run the business as long as they meet the profit budget.
Boss-subordinate	Avoid confrontations. Smooth over disagreements. Support the boss.
Peer	Guard information; it is power. Be a gentleman or lady.
Interdepartment	Protect your department's bottom line. Form alliances around specific issues. Guard your turf.

TASKS**CULTURAL SUMMARY**

Innovating	Consider it risky. Be a quick second.
Decision Making	Handle each deal on its own merits. Gain consensus. Require many sign-offs. Involve the right people. Seize the opportunity.
Communicating	Withhold information to control adversaries. Avoid confrontations. Be a gentleman or lady.
Organizing	Centralize power. Be autocratic.
Monitoring	Meet short-term profit goals.
Appraising and rewarding	Reward the faithful. Best bankers as managers. Seek safe jobs.

Figure 2.3
Summary of Cultural Risk Assessment
(international banking division)
Schwartz and Davis (1981)

5. Army Corps of Engineers Framework

A cultural analysis of the U.S. Army Corps of Engineers (USACE) was conducted by the Engineer Studies Center of the USACE in order to assess the assumptions of USACE and determine if these assumptions were detracting from USACE effectiveness in a changing environment. The Engineering Studies Center used an analytical framework composed of what it defined as basic features common to every culture. The framework included the basic cultural features of identity, environment, operations, membership, and performance criteria (see Appendix B) (Engineering Studies Center of the USACE, 1987). Any self analysis such as this must be done with extreme care; the unconscious nature of basic cultural assumptions could lead to missing or misinterpreting certain assumptions. The assessment methodologies described previously dealt with the problem of unconscious assumptions by requiring unbiased outsider participation as a prerequisite for a cultural assessment. In view of the evidence in the literature, the success of any self analysis may be questioned.

D. USING A CULTURAL ASSESSMENT

Once a culture has been assessed, how the cultural data are used is dependent upon the needs of the client. Perhaps a client is assessing the organizational culture to determine how well the organizational culture fits its

environment, as was the case in the USACE study; perhaps a change in organizational operating procedures has been mandated and a set of new procedures or an implementation scheme with the best cultural "fit" is to be chosen.

Wilkins suggests that cultural assessments are perhaps best used for posing the right questions than for providing clear answers. The wise manager will use an assessment to gain a perspective on where to begin looking for answers (Wilkins, 1983).

III. ORGANIZATIONAL CHANGE

In studying organizational change it is important to understand what change is, the relationship change has to the organization and the possible impacts culture may have on organizational change. An accepted definition of change is presented using the Lewin model. Next innovation is defined as a subset of change and the implications of innovative change. Then Tichy's theory of interrelated cycles of change is presented. The chapter ends with a definition of resistance to change and how to deal with resistance to change.

A. DEFINING LEWIN'S MODEL OF CHANGE

According to Lewin (1947) the general theory of change consists of three phases:

1. unfreezing,
2. moving, and
3. refreezing.

It is the process of going through these three phases that change takes place.

Unfreezing, according to Lewin (1947) and reemphasized by Zand and Sorensen (1975), is the process of getting support and receptivity of the organization for the change

in the distribution and balance of social forces. According to Schein (1964) this occurs by means of:

1. disconfirmation,
2. psychological support, and occasionally,
3. guilt anxiety.

Disconfirmation is the feedback of ineffectiveness that can be improved with a reasonable amount of effort. Zand and Sorensen (1975) suggest this feedback may vary in source, form, and method of transmittal, for example, (a) objective measurements of productive output showing that the intended level of production was not achieved, (b) social comparison measured in either qualitative or subjective means showing that one's performance is inferior to someone else's performance, (c) information from meaningful others, such as, superior, peers, or subordinates, that one's intended outcome is not being attained, (d) criticism from meaningful others stressing that one's behavior is unacceptable compared to the accepted ideal behavior. According to Zand and Sorensen (1975) psychological support provides confidence that change is possible and that one has the physical and mental resources to surmount the problems associated with the up coming change. Guilt anxiety, according to Schein (1964), increases the feelings of shame and embarrassment about one's behavior in order to cause a change.

Moving is altering the driving and resistant forces of the change. According to Lewin (1947) this will consequently shift the equilibrium of the driving and resisting forces to a different and new level. Zand and Sorensen (1975) suggests that this is concerned with understanding and thinking about the problem, collecting information about the relevant sources, pinpointing or developing alternative solutions, and choosing the course of action. For example, a company would collect all relevant information concerning a desired change. Then the company would decide using standard company policy what solution is most appropriate. Once the plan of attack is decided, the company would proceed to implement the plan for change. This process is known as moving.

Refreezing (Lewin, 1947; Zand and Sorensen, 1975) is gaining a new stable social equilibrium within the organization, by reinforcing the new accepted distribution of driving and resistant forces. Schein (1964), suggests this occurs through confirmation, psychological support, and heightened confidence. Confirmation is feedback that performance is effective. It may come from one of three sources:

1. objective measurements, from others that verify a new level of effectiveness has been achieved,

2. social comparison showing that performance has equalled or exceeded that of another social unit, and
3. one's own perception and interpretations of the new level of effectiveness.

Psychological support is an emotional climate that leads one to feel satisfaction and pleasure with the new behavior and level of effectiveness. Heightened confidence is demonstrated by transferring monitoring and control of the new behavior to the one being changed and encouraging others to adopt the new behavior following his advice and guidance (Zand and Sorensen, 1975). The Lewin model, unfreezing, moving and refreezing, describes the process of a given organizational change within any organization.

Zand and Sorensen (1975) found that projects that had a predominate level of favorable forces in the three phases: unfreezing, moving, and unfreezing were more successful, which suggest successful change would tend to follow the Lewin model. The change efforts studied were management science related projects (Zand and Sorensen analyzed the inputs from 154 questioners they sent out to project managers). However, Zand and Sorensen (1975) stated that their findings are relevant and generalizable to change efforts in other areas of study. Appendix C, shows forces that are favorable and unfavorable on each of the three phases of Lewin's model of change, based on their research.

B. INNOVATION

An important subset of the type of changes, that can take place within an organization, is innovation. Thompson (1965), summarized by Pierce and Delbecq (1977), defines innovation as "...the generation, acceptance and implementation of a new process, products, or services for the first time within an organization setting."

Carroll (1967) views innovation as a social process of organizational adaptation. Pierce and Delbecq (1977) suggest, organizational innovation represents a major change in the structure and/or procedures, or an operating system, which require a major shift in behavior.

According to Shepard (1967), organizational innovation then can be thought of as an organizational act of doing something that it had not known how to do in the past.

Thompson's (1967) model suggests that there are three phases in implementing innovation:

1. initiation,
2. adoption, and
3. implementation.

Pierce and Delbecq (1977) suggest that initiation of an idea or proposal will cause some type of change to take place within an organization. Adoption of an idea or proposal is the acceptance of the idea or proposal by the appropriate organization decision makers, who have committed the required resources to the change process. Implementation is

the establishment of the adopted idea or proposal within the organization. This model was used by Pierce and Delbecq (1977) to determine the factors that favor or hinders organizational innovation. Pierce and Delbecq (1977) found that there are three general types of variables that facilitate innovation:

1. structural variables consisting of differentiation, professionalism, decentralization, and formulation,
2. contextual variables consisting of environmental uncertainty, size, and age, and
3. stand alone variables which are attitudes and values, which are dependent on the individuals within the organization.

Pierce and Delbecq (1977) suggest that higher levels of the following variables favor or positively affect organizational innovation:

1. professionalism,
2. decentralization,
3. environmental uncertainty,
4. large organizations,
5. inter-organizational interdependence,
6. job satisfaction and job involvement,
7. performance dissatisfaction,
8. intrinsic motivation, and
9. values of strategic decision makers.

Where higher levels of the following variables hinder or negatively affect organizational innovation: formalization, stratification, and age (the older the organization).

During adopting and implementing an innovation within an organization a more formalized and bureaucratic organization had a higher success rate in implementing the innovative change, due to the formality of the chain of command according to Pierce and Delbecq (1977).

C. TICHY'S THREE ORGANIZATIONAL CYCLES

Tichy (1983) argues that organizations do not follow predictable stages of development such as childhood, adolescence, and adulthood. He suggests organizations have three interrelated cycles. These cycles are based on the dynamic of social systems surviving and making adjustments in various contexts. The three cycles are technical, political, and cultural.

According to Tichy (1983) the first dilemma is the technical design problem. The organization faces production problems; social and technical resources must be arranged so that the organization produces some desired output. The second dilemma is political, the problem of allocating power and resources. This is the power struggle between managers within a organization that will ultimately decide who will acquire the power and resources from within a organization. The third dilemma is the ideological and cultural mix

problem. Organizations are, in part, held together by the sharing of specific major beliefs by its members. Hence, the organization must determine what values need to be held by what people. Since organizations are dynamic none of these problems are ever solved and the cycles go through a series of peaks and valleys depending on the uncertainty within in a given cycle, as shown in Figure 3.1. The cycles are interrelated and the combination of many internal and external factors lead to the need for an organizational change.

According to Tichy (1980) technical uncertainty is related to production issues. When a manager within an organization does not have enough information to make decisions the uncertainty is high. Rapid changes in the environment, complex tasks, and highly independent tasks are the major contributors to high technical uncertainty. Political uncertainty is related to who has the power to issue rewards and decide what the organizations goals will be. The political cycle peaks when uncertainty is high. Cultural uncertainty is related to the values and ideology differences of the organization members.

Tichy (1980) argues that organizational uncertainty is triggered by two actions. The first is events that are external and independent of the cycles, technical, political, and culture. The second is triggered within one

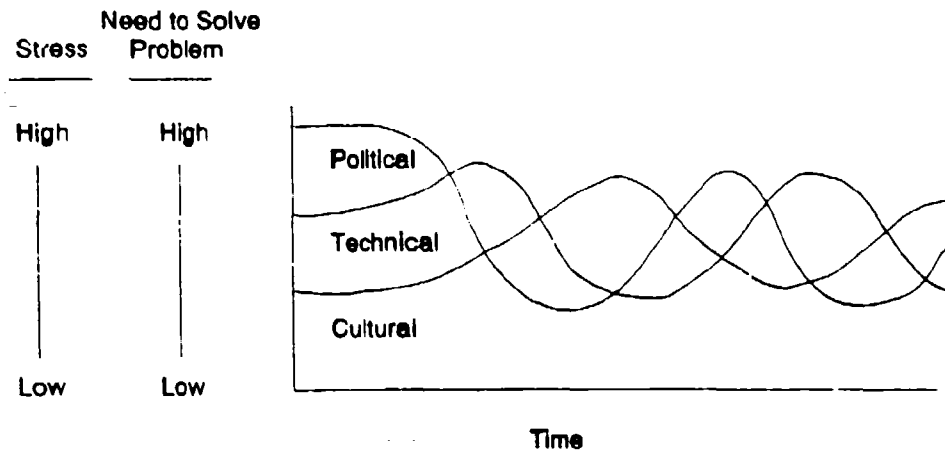


Figure 3.1
Organizational Cycles
Tichy (1980)

of the cycles itself and may or may not trigger the other two cycles.

Tichy's (1980) five suggested areas that are external and independent of the cycles that may trigger change are:

1. environmental change that lead to increased complexity and unpredictability,
2. technological changes that have the potential for new products or services and/or new methodologies for producing existing products and services,
3. shifts in the goals of the organization due to the agreement among the organizational members,

4. shifts in the means of getting the work done in the organization due to the agreement among the organizational members, and
5. changes in people who differ in some significant way from existing members, such as, women and minorities brought into white, male dominated organizations.

As shown in Figure 3.2 environmental changes will trigger changes in the technical, political and cultural cycles. Uncertainty in the environment causes high levels of stress and a simultaneous adjustment in all three cycles to cope with the stress. Technological changes will usually only impact the technological cycle, whereas the shift in goals and methods, the way of doing business, in organizations will impact the political cycle. For example, the invention of air bags outside of a given company will cause the given company to try to invent their own air bags. A second example is that the Japanese way of doing business may cause a company to try to copy the Japanese techniques. Changes in people will impact the culture cycle, because this deals with personal and organization values; a shift in policy to hire people from a different age group could lead to a shift in organizational values.

The second set of triggers, are internal within the cycles themselves according to Tichy (1980). The cycles are dialectical in nature and cause counteractions in one another. For example, a substantial technical change, often

Need for Change in the Following Areas:

Triggers for Change	Technical	Political	Cultural
Environmental Changes			
Technological Changes			
Shifts in Agreement Over Goals			
Shifts in Agreement Over Methods			
Changes in People			

Figure 3.2
Triggering the Change Process
Tichy (1980)

triggers a political shift, because various individuals careers and power bases have been altered. This will in turn alter the cultural cycle, by allowing the member's values and norms to change to fit with the changed technical and political environment.

Our research apparently indicates that when implementing a change one needs to realize that a change is more complex than it appears on the surface. It may have an impact that could reverberate throughout the organization. Tichy (1983) insists that when a change is being made one should understand how it will impact the overall organization.

D. REASONS FOR RESISTANCE TO CHANGE

Lorsch (1976) argues that one of the common problems when initiating a organizational change is human resistance to the change. Lawrence (1969) suggests resistance to change can take on many forms, for example, reduction in output, request of transfer, strikes, increase number of walkouts, and various pseudo-logical reasons why the initiated change will not work. McMurry (1947) indicates honest and loyal workers and executives will sometimes lie, misrepresent, and engage in outright sabotage of the new procedures. He also suggests even innovations which are obviously advantageous are not welcomed with open arms. An example, is the frequent reaction of white employees to the introduction of blacks into the work force.

The above are the symptoms of resistance to change, but it is more important to understand the underlying reasons why employees may resist change. McMurry (1947) and Kotter (1979) argue fear is a reason for employees to resist change. It is fear of not being able to learn the new skills or behavior that are now required of them. In simple terms, this is the fear of the unknown. The employees are resisting, because they are unsure of what new skills or behavior will be required. Drucker (1954) has pointed out that the major threat to organizational change is the inability of changing one's attitudes and behaviors. McMurry (1947) suggests fear is deep seated, and perhaps could even be an unconscious reaction.

Politics and power struggles are another source of resistance to change (Zaleznik and Manfred, 1975; Miles, 1978, and Kotter, 1979). People resist organizational change because they see that they are going to lose something of personal value. Resistance of this type is called political because people are only concerned about their own interests not that of the whole organization. According to Kotter (1979) and Schein (1965) political behavior sometimes takes the form of two or more armed camps publicly fighting it out. They also suggest resistance is usually much more subtle. In many cases, it occurs completely under the surface of public exchange.

Argyris (1970) suggests people resist change due to misunderstanding and a lack of trust. Such situations, often occur when people are unable to conceive the full intentions of the change or when trust is lacking in the change initiator employee relationship (Kotter, 1979). Kotter (1979) suggests that, not many organizations can claim there is a high level of trust between employees and managers. This is why a high level of misunderstanding or lack of trust can lead to resistance.

Different assessments of the situation is another common reason people resist organizational change (Kotter, 1979). The analysis of the initiator differs from the those who will have to make the change. Kotter (1979) argues that, individuals who must make the change typically see more costs than benefits resulting from the change not only for themselves, but for the company as a whole. Kotter also suggest that those who initiate change assume that individuals who will be affected by the change have the same basic facts as they do. When in reality those who are affected by the change do not have the same facts at all.

Other reasons for resistance of organizational change are discussed by Duncan (1977) and supported by Kotter (1979). They include: saving face, peer group pressure, and supervisor's resistant attitude. Resistance to organizational change can be caused by one or a combination of any of the above reasons. It also appears that employees

do not resist technical change in and of itself, but rather to social and human considerations supported by arguments by Lawrence (1954).

E. TACTICS TO DEAL WITH RESISTANCE TO CHANGE

1. Kotter's Tactics

Kotter (1979) suggests there are several tactics for dealing with resistance to change. They include: education and communication, participation, facilitation and support, negotiation, co-optation, manipulation, and coercion. He also suggests that a manager will use a combination of two or more of these tactics to reduce the resistance that may be experienced. The use of one tactic alone may not be enough accomplish a given change.

Some of the tactics (i.e., manipulation and coercion) as reviewed by Kotter could raise ethical questions. The purpose of this paper is to present his information on tactics in an amoral manner, without making valued judgement.

Kotter (1979) argues that communication and education is the most commonly used tactic in combating resistance to change. The tactic is used to pass information to people, spelling out the reason for the change. Education and communication can be ideal when resistance is based on inadequate or inaccurate information and analysis,

especially if the initiators need the resistor's help in implementing the change.

The participation tactic is the use of possible resisters in the design and implementation phases of a change. As Kotter (1979) points out, participation is a rational choice of tactics when change initiators believe they do not have all the information they need to design and implement a change. When commitment is needed for a change this is a good tactic as discussed by Marrow, Bowers, and Seashore (1967).

Facilitation and support is another tactic when dealing with resistance. "As a tactic, it might include providing training in new skills, giving employees time off after a demanding period, or simply listening and providing emotional support." (Kotter, 1979) This tactic is best suited for organizational changes that require major adjustments.

Another tactic is negotiation. Kotter (1979) suggests this tactic involves buying out active or potential resisters. This tactic is best suited for those situations where someone is going to lose something due to the organizational change and has the power to become a major resistor. Nierenberg (1974) also suggests negotiations is a very helpful way in dealing with resisters.

According to Kotter (1979) co-optation, the placement of desirable individuals in a suitable role within the change

process, as a tactic can take place on one of two levels. Either on an individual or group level. The individual level involves giving the individual a desirable role in the design or implementation phase of the change. The group level involves giving one of the leaders of the group a major role in the design and implementation phase. This can be easier or cheaper to implement than negotiation and/or participation under certain circumstances, according to Kotter (1979).

In this context manipulation is defined as the covert attempts of the organizational change initiators to get resistors to accept the change. Kotter (1979) suggests manipulation can work and be used successfully, particularly when all other tactics are not feasible or have failed.

The last tactic is coercion. Coercion is the enforcement of change upon employees to accept the given change. Explicitly or implicitly threatening them with the loss of jobs, or promotion possibilities, or raises, or whatever else they control according to Kotter (1979). He also suggests, coercion has the advantage of overcoming resistance very quickly, however this could be a very risky tactic, because unless the organization is use to this kind of approach employees may sabotage or counter the change with work stoppages, strikes, etc...

2. Using a Change Agent

Lawrence (1969) suggests the best way to deal with resistance is through the use of a change agent. A change agent is someone that the people of a organization can trust and with whom they can share their concerns. It also is someone that upper management has the same feelings. There are five things a change agent must do to accomplish a successful organizational change according to Lawrence (1969):

1. See the big picture. (Understand what is for the best of the organization.)
2. Use understandable terms that the work force understands as well as upper management.
3. Look for and cope with resistance.
4. Use real participation, based on respect. (Not just lip service.)
5. Top management must manage the change agent as the change agent must manage operators. (The change agent needs to know that top management is supporting what he is doing.)

Lawrence's (1969) approach is basically using the combination of Kotter's (1979) tactics of education and communication, participation, and facilitation and support.

By understanding what change is and the reasons for resisting change, it is possible to use a combination of tactics to reduce resistance and achieve the desired change result.

IV. CHANGE STRATEGIES

A. APPROPRIATE CHANGE STRATEGY

To determine the appropriate change strategy, one needs to take into account the complex set of trade-offs among structure, systems, people, and culture (Schwartz and Davis 1981). The key to any successful change is the ability of an organization to read its own culture and use it to implement the desired change. Schwartz and Davis (1981) suggest that in any organization undertaking a major strategic change, success depends on the proper combination of organizational structure, management systems, and people with the culture to produce the desired behavior. Since culture is one of the major elements in determining the course a strategic change may take, strategic change must take into account the culture, within which the change will take place. Approaches that run counter to the cultural norms will encounter resistance (Schwartz and Davis, 1981).

In the literature there are two theories of viewing organizational culture and developing a strategic change strategy. As categorized by Gilbert and Roberts (1984), they are instrumental view and navigational view of organizational culture.

1. Instrumental View

The assumption of the instrumental view of organizational culture is culture is an instrument, a collection of techniques in general management's hands.

Deal and Kennedy (1984), suggest levers such as: symbols, rites and rituals, heroes, and values, can be used to shape the culture to implement managements strategic change strategies. This strategy of pulling levers is based on the premise that to make a strategic change one would pull a lever within the culture to implement the change. In essence this suggests that culture must change before a strategic change can take place.

Spellman (1988) builds on the ideas of Deal and Kennedy (1984) and suggests seven methods in shaping a culture for organizational change:

1. creation of a vision,
2. communication of the vision and the values that go along with that vision,
3. socialization of new organizational members,
4. role modeling by the organization's leaders,
5. use of the reward system to reinforce the desired values,
6. symbolic management, and
7. organization rites and rituals.

a. Creation of a Vision

The creation of a vision is the first step in developing the desired culture. According to Pettigrew (1979) visions are not just the goals and purpose of the organization. They also include the system of beliefs and language which gives the organization its texture. The vision will have an implied sacredness that will also define roles, activities, challenges, and purpose of all members. In doing this a new wanted culture is defined for the organization. A leader must employ the skills of visionary, orator, and inspirational leader when initiating a vision for the organization (Spellman, 1988). Hickman and Silva (1984) and Spellman (1988) suggest that for a leader to establish a vision for an organization the leader must be able to see the future wanted state from a set of facts, figures, hopes, dreams, dangers, and opportunities.

b. Communication of the Vision

Communication of the vision can be done through either explicit or implicit forms of communication. The explicit form of communication is done through the use of formal meetings, written documents and memorandums, and any other formal media approach (Spellman, 1988). Implicit forms of communication include Deal and Kennedy's (1984) use of the cultural network, rites, rituals, and rewards. Schein (1985) argues the best way of communicating a desired

cultural change is based on the manager's focus of attention. It is not so much what forms of communication are used, (i.e., explicit or implicit) but the way they are used to reinforce, measure, or control desired cultural shifts.

c. Socialization of New Members

Socializing new members into the organization is used primarily to develop and maintain the desired culture. As emphasized by Schein (1984) culture stabilizes the external and internal environment for the organization. It also must be taught to new members. Culture cannot serve its purpose and function if new members were allowed to present their own perceptions, language, thinking patterns, and rules and interaction. The culture must be perceived as proper and valid, thus it must be taught to all new members of the organization. As suggested by Spellman (1988), for an individual to be committed to the organization and buy into its value system, the organization needs to show concern for the new member's needs. An organization that instills a strong, consistent set of implicit knowledge, is effectively establishing a common law to supplement its statutory laws. This is all best done during the initial socialization of the new members, which can be anywhere from a few days to a couple of months depending on the organization (Pascale, 1985).

d. Role Modeling by Leaders

Role modeling by leaders is a powerful tool in developing a new culture or changing one's culture. Schein (1985) suggests a wanted culture shift can be achieved when leaders demonstrate the desired values, not in what is written down or inferred from designs and procedures.

Silverzweig and Allen (1976), go as far as to suggest it is not even what managers or leaders actually do, but what it is perceived that they value. Beyer and Trice (1987) suggest managers and leaders must be aware of their actions and the implications of the actions on the organizational culture. They should also modify their actions if required to get the desired culture.

e. Use of Reward System

The use of rewards can help shape the culture according to Tichy and Ulrich (1984) and Baker (1980). They suggest the use of rewards as reinforcement by organizational leaders can achieve the desired strategic change. Positive reinforcement is a very effective tool in changing an organization's culture in that it informs and encourages the employees of an organization to pursue the activities wanted by the organization. Thus unconsciously changing the values and norms of the organization and in the long run changing the culture to accept the strategic change. Schein (1985) suggests the rewards for positive and

negative behavior provides the evidence about what the underlying assumptions are.

f. Symbolic Management

The use of symbols to communicate the organizational culture is a very effective tool. It is done through the use of myths, stories, metaphors, heroes, and mottoes. The shapers of organizational culture use these to shape the values and norms of an organization (Deal and Kennedy, 1982). Kotter (1982) suggests that managers and leaders of organizations, that were successful, used symbols indirectly to influence the culture to achieve strategic change. Etzioni (1964) suggests there are three types of control in organizations: physical, material, and symbolic. He further suggests that symbolism is the most effective tool when setting up a shared set of values and norms among the members of an organization. However, within bureaucracies symbolic management may have a less of a role due to the need of a bureaucracy to depend on a set of norms, rules and regulations to function effectively.

g. Rites and Rituals

Rites and rituals is the last method for shaping and changing an organizations culture. According to Beyer and Trice (1987) and Deal and Kennedy (1982) rites and rituals include award ceremonies, meetings, going away parties, office luncheons, and other functions. The purpose

of rites and rituals is to communicate the values and norms of the organization to its members. According to Spellman (1988) rites and rituals cut across all other methods of shaping organizational culture and are effective tools in communicating the organization's vision.

The seven methods of changing organizational culture to improve the success of a strategic change are best used in various forms of combination depending on the present culture of the organization. According to Spellman (1988), "The leader's challenge, then, is to use organizational culture and the 'art' of management to develop a vibrant, healthy organization that is governed by a set of shared meanings and values."

2. Navigational View

Navigational view of organizational culture, is a speculative argument that culture cannot be changed before a strategic change can take place (Gilbert and Roberts, 1984). Navigational view suggests strategic change will change the organizational culture in the long run. Cultural changes are a product of organizational strategic change. The best that a manager can expect to do is manage around the culture by cajoling, persuading, channeling, nudging, and try to guide the organizational culture in the desired direction.

According to Schwartz and Davis (1981) organizational change strategies that run counter to an

existing culture are at high risk of failure. They suggest that it is better to manage around the culture than to try and change it. They stated that if one tries to change a culture it will take too long and the change strategy will never get off the ground. They also suggest that there is a way to determine the amount of risk a change strategy will encounter by using a matrix approach. By getting a clear vision of the strategic change and measuring the strategy against the importance to the strategy and level of culture compatibility one can determine how to manage around the culture. (Matrix shown in Figure 4.1.)

According to Schwartz and Davis (1981) when using the matrix in Figure 4.1 in determining the importance of each organizational approach to strategy they asked two questions, "(1) What specific behavior is the organizational approach designed to encourage?" and "(2) How is this behavior linked to critical success factors?" To determine the strategies compatibility with the culture they asked the following questions: "How much change is involved in key tasks and relationships? How adaptable is the culture? How skilled is the management?" After determining the answers to the above questions a manager should be able to determine how important the strategy is to the organization and the level of compatibility with the organization's culture. By plotting the importance of the strategy and compatibility with culture on the matrix a manager should be able to

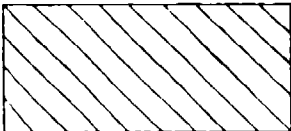
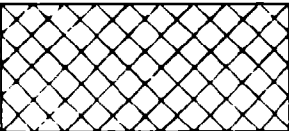
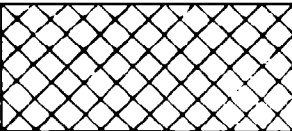
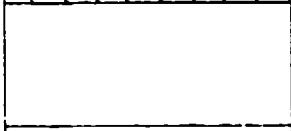
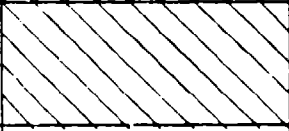
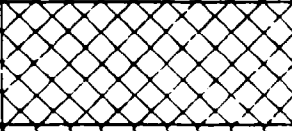
determine how risky a new strategy is. Even though it is unclear in their article on how to measure results of asking these questions, Schwartz and Davis suggests by using these questions and the matrix, managers should be able to determine where the greatest resistance is and adjust the strategic change plan to accomplish a higher success rate.

Schwartz and Davis (1981) speculate that there are four strategies possible when taking culture into account:

1. ignore culture,
2. manage around the culture by changing the implementation plan,
3. try to change the culture to fit the strategy, and
4. change the strategy to fit the culture.

They suggest that seldom can culture be ignored, it is very difficult to change culture prior to making a strategic change, and it is very difficult to determine what the organizations culture really is. They further suggest managing around culture is the easiest and most successful way of implementing a strategic change. By using the risk assessment strategy one is more likely to be successful in implementing a change, because the strategy is taking into account the underlying culture and working the strategy around the culture.

Importance to Strategy

High			
Medium			
Low			
	High	Medium	Low

Level of Cultural Compatibility

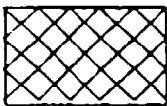
		
Unacceptable Risk	Manageable Risk	Negligible Risk

Figure 4.1
Assessing Cultural Risk
Schwartz and Davis (19881)

Gilbert and Roberts (1984) argue that the navigational approach has three integrated activities:

1. build coalitions of key personnel to support the new values and norms wanted by the new change strategy,
2. the change process should be a forum open to the major personnel asking for their participation, and
3. create a new structure to serve and sustain the new change strategy.

The strategy can be done in four steps (Schwartz and Davis, 1981):

1. identify the culture and sub-cultures (which cannot be 100 percent accurately identified),
2. re-identify the culture in terms of managers' tasks and relationships,
3. assess the cultural risk to the strategic plan, and
4. focus on the high risk area to come up with the appropriate strategic plan.

The navigational view approach assumes that it is difficult to actually identify the true culture of an organization and that it is too long of a process to change a culture prior to implementing a strategic change. Their point of view is that it is better to implement a strategic change working around the culture than to try and change the culture prior to any strategic change.

V. RELATING CHANGE AND RESISTANCE TO SYSTEM IMPLEMENTATION

This section is based on literature which directly addresses the issues of change and resistance to change as they apply specifically to information systems implementation. Issues covered in this chapter include:

1. an explanation of the change approach to implementation,
2. conditions favoring the use of the change approach to implementation,
3. employee involvement,
4. communication,
5. studies which reinforce the need for user involvement,
6. reducing resistance through employee education,
7. countering resistance that arise from the interaction of personnel and systems,
8. countering resistance that arise from political sources, and
9. guidelines for improving employee acceptance of a large-scale, public sector information system implementation.

A. THE CHANGE APPROACH TO IMPLEMENTATION

Technical implementation of an information system involves a set of interrelated activities referred to by Zmud and Cox (1979) as the traditional approach to systems development. This phased approach can be broken down into steps: initiation, preliminary design, detailed design, development, conversion (from the old to the new system), and evaluation phases (Zmud and Cox, 1979).

In the late 1970s and early 1980s organizational issues were recognized as having a significant impact on the information system implementation process; researchers began studying information system implementation as an organizational change process and a technique for implementing information systems as a process of organizational change was described (Zmud and Cox, 1979). The organizational change approach to systems implementation was designed to account not only for the technical issues stressed in the traditional approach, but also non-technical characteristics of the organization which impact implementation.

One way of contrasting the change approach and the traditional approach is to think in terms of the emphasis which the two approaches place on the different implementation phases. While the traditional approach emphasizes the middle phases (technical design and development) the change approach emphasizes the early phases

(initiation and preliminary design) and late phases (conversion to the new system and evaluation) (Zmud and Cox, 1979).

Major areas of study in the change approach concentrate on employee involvement in the implementation effort (users and managers), employee resistance to implementation, and ways to reduce employee resistance (Zmud and Cox, 1979).

B. CONDITIONS FAVORING THE CHANGE APPROACH TO IMPLEMENTATION

Zmud and Cox (1979) identified the change approach as particularly necessary when: the activity involved in the proposed implementation is poorly defined (e.g., increasing vertical information flow in a corporation as opposed to a well-defined activity such as automating transaction processing); the proposed system interfaces with other organizational automatic data processing systems; substantial, long-term organizational change is expected to result from the implementation. System implementations that favor use of the traditional approach involve systems that: automate a well-defined procedure; are independent of other organizational systems; require little organizational change (Zmud and Cox, 1979). Although one may be hard pressed to think of any information system that meets all the criteria necessary to favor the strict use of only the traditional approach, consider that even the traditional approach does

not completely ignore organizational characteristics and also that the use of the change approach may be thought of in terms of degrees on a continuum; the greater the expected impact on the organization, the more valuable the use of the change approach. The use of the change approach to implement a system, when major change in the organization is anticipated, is consistent with Markus's (1983) axiom that the implementation of an information systems by itself is insufficient for successfully introducing a significant change into an organization. Should large scale change be required, Markus (1983) advises first making an assessment of the organization based on organizational change techniques (such as a cultural assessment), followed by a change in the organization or organizational procedures, then implementing an information system that is consistent with the changes. It seems logical however, that any large-scale change in an organization which depends on an information system(s) will require changing the information system(s). The argument for either first changing the organization or coming up with an appropriate information system implementation to suit that change is in danger of becoming circular. We favor considering the information system implementation as an integral part of the change from the beginning.

C. **EMPLOYEE INVOLVEMENT**

Employee involvement is an integral part of the change approach to implementation and the literature explores user involvement from multiple perspectives . These perspectives are presented in the following discussion.

1. **Involvement by Employee Level and Development Phase**

The degree and type of involvement by various organizational members in an implementation effort is shown by Edstrom (1977) and Zmud and Cox (1979) to vary as a function of both the hierarchical level of the specific member and the phase of development.

The members Edstrom studied included the user, the user's functional manager, the system design specialist, and the design specialist's manager. He conducted interviews with the system development managers of sixteen companies and determined from them the amount of participation of the various personnel during system implementation. He then considered the amount of inputs by these organizational members and the phase during which the inputs were made. He then compared the number of inputs and the phase during which the inputs were made to the success of implementation (as perceived by the systems development managers). This allowed him to make predictions as to which members should make inputs at what stage for the implementation to have the highest chance for success.

Edstrom found that the user is needed in the early phases, especially in determining the scope of the system and "must be directly involved with the actual design of the system not just the overall characteristics" (Edstrom, 1977). The functional manager and system development manager contribute most during the initiation phase (by determining the overall characteristics of the system). The system specialist's input can prove counterproductive if it includes the determination of information needs in the initiation phase; therefore specialists' input should be limited to the design and development phases (Edstrom, 1977).

Zmud and Cox (1979) broadened Edstrom's classifications of employees to include: top management (authority over all organization personnel and resources); functional management (authority in the area in which the system will be implemented); operating personnel and management (actual users of the system); systems analyst (system expert most closely associated with the project); systems personnel (other systems experts associated with the project). They also broke Edstrom's idea of "inputs" into: consultation (answering questions or giving advice); influence (choosing from among design alternatives); commitment (accepting a system as an organizational obligation); responsibility (assuming primary organizational obligation for a system). This greater number of

organizational players and more detailed consideration of employee inputs allowed for a much more detailed analysis than the one made by Edstrom.

Table 5.1 shows all prescribed involvements for the various participants, but several overall conclusions from Table 5.1 are highlighted by Zmud and Cox (1979):

1. top management's direct role is to develop a sense of commitment among all participants, especially during initial phases,
2. functional managers assume responsibility for coordinating all developmental activities, but have a relatively smaller role during technical phases,
3. users (operating personnel and managers) make their greatest contribution during design and conversion phases, and
4. system analysts and system personnel are responsible for technical tasks.

Generally, these findings are in agreement with Edstrom's conclusions.

TABLE 5.1
Role Prescriptions for Implementation Participants
Zmud and Cox (1979)

Implement- ation Stage	Top Management	Functional Manager	Operating Managers	Operating Personnel	System Analyst	System Personnel
Entire Project	CM	R	CM	I	CM	CM
Initiation	I	R	I	CN	I	CN
Strategic Design	I	R	CM	I	CM	CN
Technical Design		I	I	CN	R	CM
Develop		I	I	CN	R	CM
Conversion	CN	R	CM	I	CM	I
Evaluation	I	R	CM	CN	CN	CN

R - Responsibility; CM - Commitment; I - Influence; and CN - Consulting.

2. Communication

The change approach to implementation depends upon the acceptance of change through the involvement of organization members and development of a sense of commitment between all participants (Zmud and Cox, 1979), and effective communication is at the core of this dependency.

Edstrom (1977) found that influence on the development process was insufficient to correlate with a high degree of system success without effective communication between participants; this was particularly true during the system design and conversion phases (Edstrom, 1977). Edstrom (1977) hypothesized that communication barriers are particularly severe during these phases due to the conceptualization differences between technical personnel (systems experts) and operating personnel and the requirement for close interaction between these two groups during these stages.

DeBrabander and Edstrom (1977) propose that the techno-operational conceptual mismatch can be partly overcome by formalizing communication and interaction during the design phase. They argue that formalized communication decreases conceptual asymmetries, fosters mutual understanding, and is appropriate for the design phase since this phase is an exercise in working out the details of what has already been agreed upon in earlier phases (DeBrabander

and Edstrom, 1977). If communication is formalized at the design phase, operating personnel must be given full advantage of initiation phase communications to ensure that their input is completely understood. If not, their effective participation on the project is threatened, which then threatens overall project success.

3. Other Studies of User Involvement

For the most part, other studies of user involvement reinforce the notion that user involvement has a positive, even vital impact on the development process (Robey and Farrow, 1982; Baroudi, Olson, and Ives, 1986; Ginzberg, 1981). However, Baronas and Louis (1988) argue that the vital user issue during implementation is not based on the necessity of user inputs, but rather on users' perception of lost control of their environment during changeover to the new system.

a. Robey and Farrow (1982)

In a study of 130 U.S. and European information system users, Robey and Farrow (1982) found that participation in system development led to a perception of influence, regardless of the phase of development, on the part of users. They used a constructive conflict model (in which direct conflict between group members with incompatible goals is encouraged and used to solve complex, multi-variable problems) to explain the positive outcomes of

user participation interactions. They also noted that participation was only perceived as effective if users were allowed to exert their influence through both conflict generation and resolution (Robey and Farrow, 1982). In other words, to be effective, user participation must be perceived by users as having an impact on the final product.

b. Baroudi, Olson, and Ives (1986)

Baroudi, Olson, and Ives (1986) conducted a study of 200 U.S. information system users and established that user involvement led to greater system usage and user satisfaction with data (greater system usage and increased data satisfaction are assumed to equate with a more successful system). Ives and Olson (1984) also argued that user involvement can be viewed as a special case of participative decision making (in which employees help in making decisions that will directly affect them) and therefore leads to increased user acceptance of a system. As such, user involvement is necessary in order to reduce resistance and improve acceptance of the changes that system implementation brings.

c. Baronas and Louis (1988)

Baronas and Louis (1988) argued that Baroudi, Ives, and Olson did not, in either of the aforementioned studies, present a theoretically substantiated reason for why user involvement works. Unable to find any theories

regarding user involvement in the literature, they theorized that implementation success was not due to user involvement with the implementation effort, but rather to the increased perception of control on behalf of the users that involvement provided. This led them to propose that implementation success can be achieved as effectively by enhancing the perception of user control through symbolic involvement during conversion to the new system (Baronas and Louis, 1988). They proposed providing the symbolic sense of control by:

1. allowing changes to be realistically anticipated,
2. encouraging discussions about the differences between the old and new systems among affected workers and implementors,
3. minimizing surprises by keeping workers informed,
4. assisting in coping with surprises when they arise, and
5. allowing workers to choose and make decisions related to the implementation schedule.

Their research involved a treatment group that was provided with such control-enhancing considerations and a control group that was not provided any of the considerations. The results showed that treatment group members more satisfied with the new system than the control group (the control group was so dissatisfied with the new system that they preferred the old system) and managers of

the treatment group were much happier with the implementation team as well as the implementation schedule (Baronas and Louis, 1988). Because user involvement was obviously not required to produce a satisfactory product, the theory of enhancing perceived user control of system implementation offers an implementation alternative if user participation in development is either not practical or not desired. It should be noted, however, that the subjects of this study were data entry clerks; the same control perception tactics may not work as effectively on personnel who depend on information systems as decision making instruments. Also, germane to the entire subject of perception control is the ethical question of "disguised user involvement." In this study, it is not unreasonable to assume that the culture in which the subject data entry clerks operated may have been characterized by management manipulation and any control over the new system implementation would be a welcomed change. Cultures or subcultures which are not characterized by manipulative management practices may be less fertile ground for the symbolic involvement approach.

d. Ginzberg (1981)

Ginzberg (1981) identified generic implementation issues which consistently reoccur throughout the development cycle by surveying 35 users of 27 different information

systems. The survey consisted of one question regarding level of satisfaction with the system (he used this as a basis for a statement of system success) and 71 questions related to the implementation of the system. He found three issues to be critical to the success of an information system implementation: commitment to the project (by both users and managers), commitment to change (the willingness of the organization as a whole to accommodate the changes brought on by the new system), extent of project definition and planning (specifying the need for the new system, identifying project impacts and training requirements, and defining roles of project team members) (Ginzberg, 1981). Because these three issues first surface in the early stages of an implementation effort, (Ginzberg, 1981) the study tends to lend more credence to the user involvement argument than it does to the perceived control argument.

D. RESISTANCE TO SYSTEM IMPLEMENTATION

The involvement of employees at various hierarchical levels during various implementation phases plays a vital part in the development process by serving to reduce resistance to the implementation (Edstrom, 1977). However, before employees are willing and able to contribute to an implementation effort they must understand why the system is needed and how the new system is going to affect them (Zmud, 1979). Therefore, education is an important tool for

reducing user resistance, as well as for mobilizing user involvement. Employee education may not serve to sufficiently reduce all sources of resistance, particularly the political sources (Keen, 1981) and the personnel-technology interaction sources (Markus, 1983). Accordingly, these two sources of resistance are considered in separate subsections. Also, guidelines for dealing with resistance in a large-scale public-sector project are presented (Daniel, 1976).

1. Employee Education

In order for employees to participate effectively in an implementation effort they must first understand why the new system is being introduced and how they can expect the project to affect them (Zmud and Cox, 1979). Failure to provide this information eventually leads to resistance to involvement with the project (Dickson and Powers, 1973). Zmud and Cox (1979) provide an educational framework that considers six training program areas (overview of the information system; training in the functional area the system will serve; technical system training; project management concepts; system impact on users; procedures for conversion to the new system) that should be provided to specific hierarchical positions in the organization (Table 5.1). Training in these areas allows employees to participate more effectively in the appropriate

implementation activities (as presented in Table 5.2) through their understanding of the need for and the effects of the new system. To gain maximum benefit from an education program however, the entire process must go one step beyond a program of formal education.

The aim of such formal education is to provide a common ground by which participants will be able to learn from one another through open exchange of suggestions, inquiries, and criticisms. Many valuable design and conversion insights arise only after participants get beneath the surface relationships among an information system and the organizational activities being served. If such a synergistic exchange of knowledge and experience does not occur, it is unlikely the full benefits ... will be realized (Zmud and Cox, 1979).

2. Interactive Resistance

As with any change strategy, the implementation of an information system may cause resistance (Markus, 1983). Resistance is particularly likely if the system, no matter how well designed, has characteristics which do not fit the characteristics of the organization's culture; Markus (1983) terms this phenomenon "interactive resistance". Markus (1983) defines three types of resistance factors that may be encountered during an implementation effort: factors internal to a group (e.g., a group resists changes that threaten the group), factors related to the system itself (e.g., systems that are not user-friendly or technically correct may be resisted), and factors that are a result of the interaction of the system characteristics internal group

TABLE 5.2
Educational Requirements for Implementation Participants
Zmud and Cox (1979)

Prior To:	Top Management	Functional Manager	Operating Managers	Operating Personnel	System Analyst	System Personnel
Initiation	O					
Strategic Design		T,M	O,T,M	O	F,T	O,F
Technical Design			P	P	T,M	T
Develop					T	T
Conversion	C		C	C		
Evaluation						

O - overview of information system; F - exposure to functional area;

T - technical (EDP) training; M - project management; P - personal relationship with IS;

C - conversion plan and conversion impact.

factors (e.g., systems that centralize control of data in a decentralized organization may be resisted) (Markus, 1983). The concept of interactive resistance is in line with the organizational change maxim of matching the change to fit the organization's culture. Markus explains:

New information systems...may structure patterns of interaction that are at odds with the prevailing culture. In this light, systems can be viewed as a vehicle for creating organizational change. The greater the implied change, the greater the resistance. (Markus, 1983)

Interactive resistance accounts for what Markus (1983) considers the unlikelihood of successfully introducing large-scale change only through the introduction of an information system (see section V. B.). Interactive resistance can result from either a socio-technical interaction (the redistribution of tasks that occurs due to the new system) or political interaction (the redistribution of power that occurs due to the new system).

Markus tested the interactive theory in a case study involving the implementation of a system that offered reasons for resistance that could be explained by all the sources for resistance (internal, system, and interactive). She found that after the internal (personnel) factor was accounted for (by the introduction of a new manager in the resisting division, who had originally been one of the system designers) and the system factors were removed (by fixing the systems original technical deficiencies) the political source remained and so did resistance to the system (Markus, 1983). It was not until the organization was formally reorganized and the source of interactive political resistance removed, that resistance to the system

was reduced sufficiently to allow the implementation effort to be termed a success (Markus, 1983).

Markus (1983) lists certain tactics that are effective in dealing with interactive resistance: allow management to select the personnel who will use the new system; train and educate users; gain user commitment to the outcome (by user participation in the design process); gain manager support (they must encourage user compliance with the new system); change the organization to conform to the new system (Markus, 1983). Specific methodologies for implementing these tactics were left unspecified.

The most important implication of the interaction theory is that the best prescription for an implementation strategy and for the specific design content of a system will follow from a thorough diagnosis of the organizational setting in which the system will be used. (Markus, 1983)

She further elaborates on the "diagnosis of the organizational setting" as a social or political analysis of the organization; what was referred to in Section II as a cultural analysis.

3. Political

Keen (1981) identifies three strategic sources of resistance: social inertia (the tendency of an organization to remain at status quo); pluralism (the existence of multiple actors that have conflicting goals, values, and priorities); counter-implementation (the efforts by

organizational actors to eliminate or reduce the effectiveness of a given system). The sources of resistance identified by Keen not only account for Markus's interactive resistance (the conflict of tasks or positions brought about by an information system implementation can be understood as an aspect of pluralism) but also identify different sources of resistance which may be directly attributable to a system implementation (i.e., counter-implementation) or not directly attributable (i.e., social inertia). He advocates dealing with all these issues strategically by using political efforts; "getting commitment, or building support, or creating momentum for change" (Keen, 1981).

Instead of viewing the three sources of resistance as faults to be suppressed, Keen accepts them as characteristics of any organization that may actually benefit the organization in the long run.

Many innovations are dumb ideas. Others threaten the interests of individuals and groups by intruding on their territory, limiting their autonomy, reducing their influence, or adding to their workload. While we all may try to act in the corporate interest, we often have very different definitions of exactly what that is (Keen, 1981).

Although no formal strategic political model for managing change is suggested by Keen, he does advocate the use of the following outline for action:

1. a senior manager (termed a "fixer" by Keen) must head the implementation effort and have full

authority and resources to negotiate with those who will be affected by the system,

2. a steering committee must be actively involved in any issues related to the control of data,
3. substantial effort should be spent in the predesign stages to make system objectives operationally oriented and allow the project to be broken into clear phases, and
4. systems staff cannot dismiss organizational and political issues as irrelevant or not their responsibility, but be able to credibly operate in the manager's world.

System implementation is political as well as technical in nature (Keen, 1981). For this reason, the political processes of getting commitment, building support, and creating momentum for change are an inevitable part of an information system development effort.

VI. RECOMMENDATIONS

A. SOURCES OF RESISTANCE TO CIM

There is an expectation that CIM will be resisted for numerous reasons. The first of these reasons is CIM is an innovation as described in Chapter III. CIM is an innovation, because it is the first attempt by The Office of the Secretary of Defense (OSD) to standardize and centralize administrative data processing procedures among the different agencies within DoD.

Sources of potential resistance as discussed in Chapters IV and V, should be examined by CIM management because the potential for these types of resistance exists within the CIM functional areas. For example, system implementations will be resisted if the systems are technically insufficient. Another example of resistance is the interaction of people and systems. The CIM initiative will result in an organizational redistribution of power. The redistribution of power may result in political resistance. Social inertia may also occur, because people tend to avoid major strategic changes regardless of the prior planning and implementation strategies pursued. Pluralism may be evident despite the authoritarian chain of command within DoD. The biggest potential for political resistance is

counterimplementation (in this case end user system development, which sidesteps the CIM implemented systems). Since DoD agencies have been developing their own administrative data processing systems for so long, a pool of information system expertise exists in all DoD agencies. This pool may develop alternate systems that meet individual agency requirements not met by CIM. The agencies will appear to be using the systems as set up by CIM, however, they will be using "home grown" systems at a level not visible to the OSD.

As discussed in Chapter III organizations that are formalized and bureaucratic have a higher success rate in implementing innovative change. Therefore despite any anticipated resistance, CIM has a higher potential for success due to the formalized bureaucratic structure of DoD.

The CIM initiative is an innovative change that involves more than a MIS implementation; it also redefines basic standards, procedures and agency interactions within DoD. Therefore, CIM initiative must establish new procedures and standards prior to implementing a "best of breed" (the evaluation of existing computer systems within the different functional areas and choosing the system that best accomplishes the mission of the functional area) or new software/hardware implementations.

B. IMPLEMENTATION APPROACH

Considering expected resistance, it is recommended that CIM take a four phase implementation approach.

1. Phase One

This phase includes:

- a. the creation, establishment and communication of the vision (the outcome) desired by CIM,
- b. the reorganization of the functional areas under OSD control, and
- c. the implementation of "the best of breed"/interim system.

The establishment of a vision indicates a need for strong leadership at the highest level within the CIM organization; and due to the new emerging subcultures strong leadership will also be required at the functional group level. Strong effective leadership is vital not only for the creation of the vision as discussed by Hickman and Silva (1984), but also due to the role the leader will play in the formation of cultural paradigms of the newly emerging functional area subcultures (Schein, 1985). The vision must include more than just project goals and purposes, as suggested by Pettigrew (1979), but also take into account CIM's overall objectives.

Being able to effectively communicate the vision to the agencies within DoD is paramount. The implementation

hinges not only on the creation of the vision, but equally on the ability of CIM to clearly communicate the vision throughout DoD, thereby reducing resistance (Schein, 1985). Schein (1985) also suggests top management (i.e., admirals and generals responsible for each functional area) must understand the purpose and support the vision of CIM. Without their support CIM faces resistance from the top echelon which will filter down throughout an entire DoD agency.

To further reduce resistance CIM management must identify a change agent, who is committed to the CIM initiative, within each functional area for each DoD agency. This change agent needs to be senior enough to have the authority to implement policy and procedural changes throughout their agency. The change agent should also be an expert in the functional area to which they are assigned. As discussed by Lawrence (1969) the change agent provides each agency with a "trusted agent" who shares their concerns and will ensure that an agency's individual requirements are considered. Ginzberg (1981) identified three issues that recur throughout an implementation life cycle: commitment to the project, organizational commitment to change, and project definition and planning. A change agent's role is to ensure that these recurring issues are dealt with effectively.

In determining the standard procedures and the "best of breed" system for each functional area, CIM should disregard a cultural assessment. Despite the potential benefits of conducting a cultural assessment prior to any large-scale organizational change, the size and numerous subcultures within DoD dictate that an assessment will require months if not years to complete. If CIM management were to conduct a large scale cultural assessment, the social inertia and the political resistance within DoD could drag out the CIM initiative until the change in governmental leadership made CIM passe. The formalized structure of DoD will allow CIM to ignore the culture initially, but an increased amount of resistance should be anticipated. (Schwartz and Davis, 1981). However, the additional resistance will be reduced by the communication efforts of the change agent. The change agents role is to keep their particular DoD agency informed of progress and how the implementation of the new procedures and the "best of breed" system relates to the overall vision of the CIM initiative.

2. Phase Two

This phase starts after the standard procedures and the "best of breed" are implemented and functional. This phase is used to determine the different DoD agency's system requirements in a culturally familiar environment. It will ensure that requirements that are neglected due the "best of

breed" approach are not ignored during the design and implementation of the final ultimate system for each functional area. In order for CIM to discriminate between legitimate needs versus culturally biased desires of each DoD agency, a cultural assessment of each agencies' applicable functional area is needed.

The change agents for each agency within their own functional areas are given the authority to compile that agency's system requirements in whatever style is culturally acceptable to that agency. This will allow for vital user participation in determining system requirements and establishes the change agent as the central figure for change in that agency. It is the responsibility of the change agent to use the guidelines set down by Lawrence (1969). The change agent also needs to communicate to and educate agency users and personnel so they understand their roles in the development of the ultimate system (Zmud and Cox, 1979). CIM should publish a format for the submission of each agency's functional areas requirements list. The change agent should be given a time limit set by CIM to accomplish this requirements list (e.g., one year). The cultural assessment CIM management conducts needs to be done during the same time frame that the change agents are conducting and determining their requirements list.

3. Phase Three

This phase starts when a functional areas' requirements are determined by the individual change agents within their own DoD agency and CIM management has completed the cultural assessment of the different DoD agencies for that functional area. The purpose of this phase is to have the different change agents meet together and determine what the DoD wide requirements are for the ultimate system in their functional area.

CIM management must supply a chairman who has the authority to make final policy and requirement decisions as described by Lawrence (1969). Keen (1981) further suggests that this chairman has full authority and resources to negotiate requirements with the various change agents within the functional area. This chairman needs to be well acquainted with the cultural assessments of each agency. This should allow that individual to determine when change agents are presenting their requirements as needs when they are actually culturally biased wants.

The change agents during this phase need to communicate the results of these proceedings back to their respective DoD agencies as a check to ensure that all requirements are fully considered.

This process is culturally compatible in DoD, because it mimics the Planning, Programming, & Budget System (PPBS). The PPBS is a process wherein the individual

agencies determine their needs. These needs are then passed to the OSD level where they are scrutinized and final decisions are made on what will be submitted in a particular funding request.

4. Phase Four

The purpose of this phase is to implement the ultimate system in the various agencies. This assumes that the system has been built using standard software and hardware production techniques. The resistance to the implementation of the ultimate system in this phase should be less than the resistance experienced in phase one, because of the cultural assessments, as suggested by Schwartz and Davis (1981), and considerations of the individual DoD agencies' requirements carried out in phases two and three.

The role of the change agent continues to be vital during this phase as suggested by Lawrence (1969). As part of their role the change agents must give users as much latitude as possible in determining and controlling the implementation schedule as discussed by Baronas and Louis (1988). This user participation will ensure maximum acceptability and use of the new ultimate system.

During the implementation of the ultimate system it must be determined to whom functional area system supervisors will report. If their immediate supervisor is

within their respective agency, the potential for counterimplementation is increased. If their immediate supervisor is within a unified higher authority (such as OSD) then the potential for conflict, due to the occurrence of unanticipated future requirements, exists between an agency and CIM. The advantages and disadvantages of centralized versus decentralized command structure must be considered by CIM and is an appropriate area for further research.

Resistance to the CIM initiative is highly likely and some of this resistance will be due to the cultural characteristics of the various DoD agencies. The literature indicates that any organizational change, including an information systems implementation, will have the greatest level of success if consideration for an organization's cultural characteristics is integrated into the implementation plan. For CIM to maximize the effectiveness and efficiency of DoD information systems, the various subcultures of DoD agencies must be understood, and this understanding must be applied to any implementation plan. By following the above recommendations for an implementation structure, resistance to CIM may possibly be reduced to a manageable level.

APPENDIX A

The CIM initiative in DoD is intended to counter insufficiencies in DoD ADP acquisition and management procedures as presented in the DMR. CIM's purpose is to eliminate redundancy, implement management efficiencies, and develop common data requirements for similar functions throughout DoD.

A CIM office was established on October 17, 1989 under the DoD Deputy Comptroller for Information Resource Management (DC(IRM)). Subsequently, CIM was moved from IRM to Command, Control, Communications, and Intelligence (C3I) effectively broadening CIM's scope to include all DoD administrative information systems. Under this new arrangement, the head of CIM reports directly to the Secretary of Defense or his deputy.

Implementation of CIM was accomplished through the establishment of two groups, divided by the aspects of the CIM implementation strategy each would coordinate. The Executive Level Group (ELG) was charged with developing an overall information strategy for DoD. The group consists of nine members with diverse information system management backgrounds; some from the civilian sector, others from DoD. To execute the overall strategy, eight (as of January 31, 1991) functional work groups oversee the work within their

respective functional area (eg. civilian payroll, civilian personnel, contract payment, financial operations, government furnished material, material management, medical, and warehousing). The functional work groups are manned by senior information system personnel from each service and DoD agency whose task is to standardize all information processing systems in a given functional area across all DoD agencies. The expectation is that CIM will eventually produce a standardized system for every administrative functional area in DoD, across agency and service boundaries.

The methodology of a functional area work group is to establish a single requirements design for its area of responsibility. This is accomplished through a phased approach. Phase 1 is the production of a functional area vision, including statements of mission, scope, policy, and guiding principles for the next ten year period. The emphasis is on establishing a unified and standardized strategy and information system that will apply equally well to all DOD agencies. Phase 2 is a functional business plan (including requirements, actions, and milestones) for implementing the information systems that will support the Phase 1 vision. Phase 3 assesses the contribution of information systems currently in use toward the accomplishment of the Phase 1 vision. This will support the

transition from the current information systems to the standardized systems envisioned in Phase 1.

The reduction in redundant systems which CIM will bring about is expected to produce a major cost savings for DoD. The annual DoD ADP budget of \$9 billion was targeted for reduction by DoD, in order to fund CIM. A total of \$3.5 billion worth of cuts were planned for the DoD ADP budget through 1995; CIM was funded for \$1 billion through 1995. Savings were predicted to come from the DoD's diversion of funds, originally intended for development of new systems and upgrade of old systems, to conversion of existing systems to the CIM initiative. These CIM systems were expected to further increase savings by reducing operations and maintenance costs.

CIM faces several areas of difficulty as it attempts to standardize information system operations that have long operated independently. These problems include (but may not be limited to):

1. parochialism/turf fighting - long standing interservice rivalries and pride of ownership must be put aside by all agencies in order to work toward a long range vision,
2. external influences - functional group members operate in a highly political environment; service influence will be difficult to ignore since all members expect to eventually return to their own service,

3. leadership - due to the often limited tenure of military officers and political appointees, coherent leadership may present a problem,
4. interim strategies - while the ultimate vision system is being developed, interim systems must be implemented; while an initial decision to provisionally implement the "best of breed" in each functional area (that system deemed best by the functional group) has been made, this decision could lead to degraded operational capabilities for services not familiar with the chosen system.

All information within this appendix was compiled from Atwood (1989) and Leong-Hong (1990).

APPENDIX B

Analytical Framework:

1. **Identity.** Every organization must have a stated purpose for its existence. The purpose that an organization uses to justify its existence may aim at a ultimate goal, or be an ongoing function that the organization performs into perpetuity.

2. **Environment.** An organization's culture should have a concept of the environmental situation in which it will have to operate. The environment consists of the external forces (resources, superiors, allies, adversaries) that have an impact on the organization.

3. **Operations.** The culture must define the process by which the organization accomplishes its aims. This includes an understanding of the individual tasks required for the organization to operate, and the structural configuration of its work units.

4. **Membership.** Culture also guides the selection of an organization's members. Each organization must decide what type of background entering members require, and the amount of indoctrination needed once members are accepted to the organization.

5. Criteria. Finally, an organization's culture must define the operational criteria for success or failure. Every organization must have some measures of its performance (revenue, customers served, election wins) in accomplishing the organization's goals.
(Engineer Studies Center, 1987)

APPENDIX C

Forces in Unfreezing, Moving, and Refreezing as presented by Zand and Sorensen (1975):

Unfreezing

Favorable:

1. Top and unit managers felt the problem was important to company.
2. Top managers became involved.
3. Unit managers recognized a need for change.
4. Top managers initiated the study.
5. Top and unit managers were open, candid.
6. Unit managers revised some of their assumptions.

Unfavorable:

1. Unit managers could not state their problems clearly.
2. Top managers felt the problem was too big.
3. Unit managers did not recognize the need for change.
4. Unit managers felt threatened by the project.
5. Unit managers resented the study.
6. Unit managers lacked confidence in the management scientists.
7. Unit managers felt they could do the study alone.

Moving

Favorable:

1. Unit managers and management scientists gathered data jointly.
2. Relevant data were accessible, available.
3. New alternatives were devised.
4. Unit managers reviewed and evaluated alternatives.
5. Top managers were advised of options.
6. Top managers helped develop a solution.
7. Proposals were improved sequentially.

Unfavorable:

1. Management scientists could not educate the unit managers.
2. Needed data were not made available.
3. Unit managers did not help develop a solution.
4. Unit managers did not understand the solution of the management scientists.
5. Management scientists felt the study was concluded too quickly.

Refreezing

Favorable:

1. Unit managers tried the solution.
2. Utilization showed the superiority of the new solution.
3. Management scientists initiated positive feedback after the early use
4. Solution was widely accepted after initial success.
5. Unit managers were satisfied.
6. Solution was used in other areas.
7. The change improved the performance of the unit.

Unfavorable:

1. Management scientists did not try to support new managerial behavior after the solution was used.
2. Management scientists did not try to reestablish stability after the solution was used.
3. Results were difficult to measure.
4. Standards for evaluating results were lacking.
5. Top management ignored the solution recommended by the management scientists.
6. Solution incompatible with the needs and resources of the unit.
7. Top managers did not encourage other units to use the solution.

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