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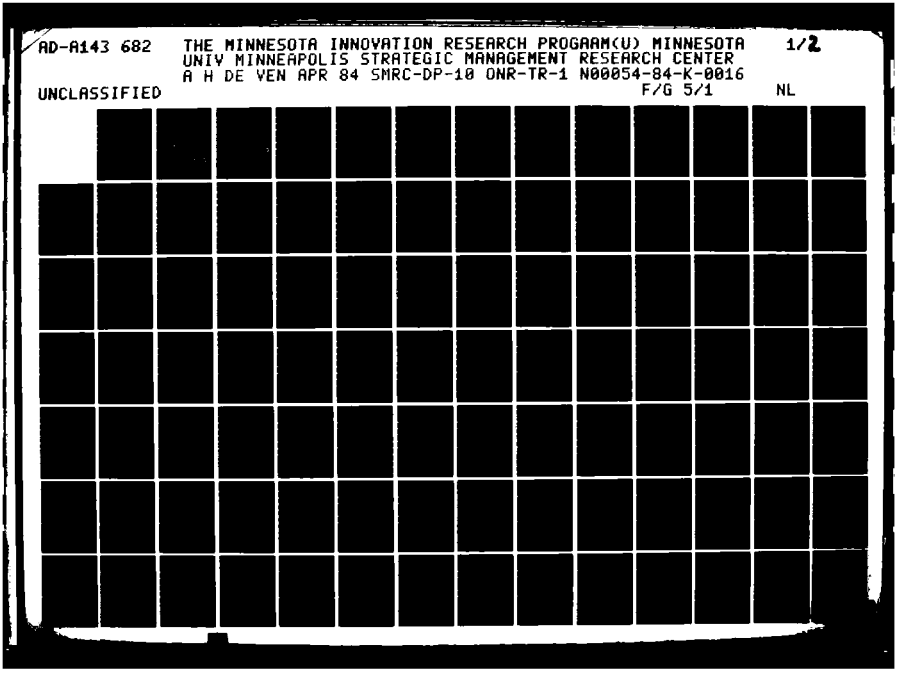

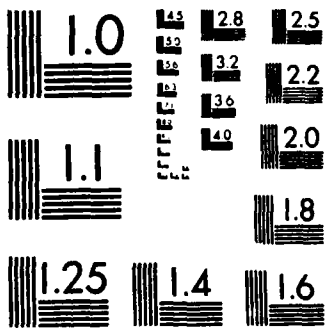

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THE MINNESOTA INNOVATION RESEARCH PROGRAM

by

Andrew H. Van de Ven and Associates

THE STRATEGIC MANAGEMENT RESEARCH CENTER

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THE MINNESOTA INNOVATION RESEARCH PROGRAM

by

Andrew H. Van de Ven and Associates

Discussion Paper #10
April, 1984
Strategic Management Research Center
University of Minnesota

This paper describes the launching of a major research program on the management of innovation by researchers in the Strategic Management Research Center at the University of Minnesota. Andrew Van de Ven is principal investigator of this research program and 3M Professor of Human Systems Management in the School of Management. The research is supported in part by a major grant from the Organizational Effectiveness Research Programs, Office of Naval Research (Code 4420E), under Contract No. N00014-84-K-0016.

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This paper describes the common and unique research frameworks of ten related longitudinal studies that are being launched to study the management of innovation in areas of agriculture, computer hardware and software, public school systems, financial services, government systems contracting, industrial products, health care, human resources management, and joint ventures between public and private organizations.

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THE MINNESOTA INNOVATION RESEARCH PROGRAM

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THE MINNESOTA INNOVATION RESEARCH PROGRAM
April 1984

Andrew H. Van de Ven and Associates
The University of Minnesota

Introduction

This report describes the launching of a series of innovation studies on the management of innovation by researchers in the Strategic Management Research Center at the University of Minnesota. The research program is longitudinal (1983 to 1986 and beyond), and is supported by a major grant from the Office of Naval Research and other sources. The research program presently consists of ten related studies on a wide variety of significant innovations in the areas of agriculture, computer hardware and software, public school systems, financial services, government contracting and procurement, industrial products, health care, human resources management, and joint ventures between public and private organizations.

In each of these areas innovations are being studied by different research teams (consisting of faculty and doctoral students) who are now meeting regularly to develop a common research framework that will be used in all the studies. The next section of this report provides a preliminary outline of the research framework that is emerging from these ongoing group discussions. Figure 1 illustrates the framework.

Flexibility is also built into the program to permit each research team to investigate questions and issues unique to the particular circumstances of each innovation. Summaries of the unique questions, approaches, and contributions of each innovation study by the

research teams are attached to this report. Of course, these project summaries are tentative and preliminary. However, a review of these summaries will quickly show that each innovation study, by itself, can stand alone and represents a significant longitudinal research effort. Moreover, each study distinguishes itself by addressing novel and important questions on the management of innovation.

Three key questions will be examined in all the innovation studies:

1. How do innovations develop over time? We wish to study the life cycle of innovative ideas over time -- including their inception, development, testing, adoption, and diffusion stages.

2. What organizational arrangements facilitate and inhibit innovations over time? As much as possible, we wish to compare different organizational settings for innovation: new business startups, corporate sponsorship of new businesses, joint ventures, mergers and acquisitions, and internal corporate entrepreneurship.

3. What individual, group, organizational and environmental factors influence the innovation process and success over time? In other words, we believe it is important to take multiple organizational levels into account to understand the process of innovation over time.

Answers to these questions can have significant impact on theory and practice. We know of no study that has rigorously and systematically examined these questions over time. As a result, we know very little about the intended and unintended consequences of a variety of theories and prescriptions that have been offered to address these questions. Practically, our meetings with over 60 chief executive officers of public and private organizations during the past two years have emphasized the critical importance of these questions to managing organizational innovation (Van de Ven, 1982).

Three overlapping stages will be undertaken to launch the innovation studies. Depending on the innovation, the time periods indicated below will vary for these stages.

RESEARCH FRAMEWORK FOR STUDYING INNOVATIONS OVER TIME

EVENTS OVER TIME

Innovation Ideas
- Content of ideas
- Dimensions of ideas

People Involved
- Innovation team
- Stakeholders

Transactions
- Negotiations
- Agreements
- Administration

Context/Setting
- Institution/Industry
- Organization/Subunit

Effort
- Activities
- Time and money spent

Performance
- Success

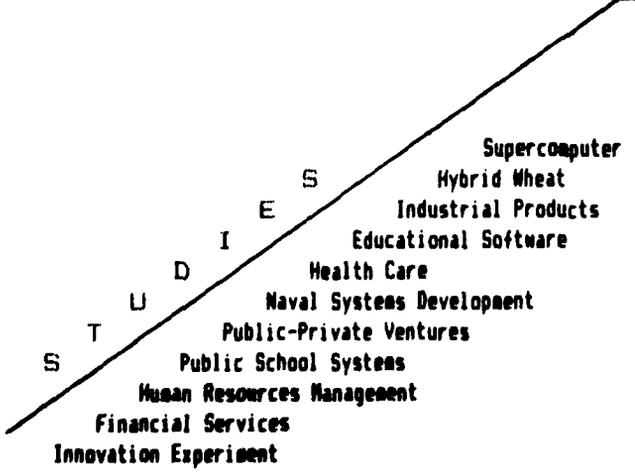
BASELINE INFORMATION

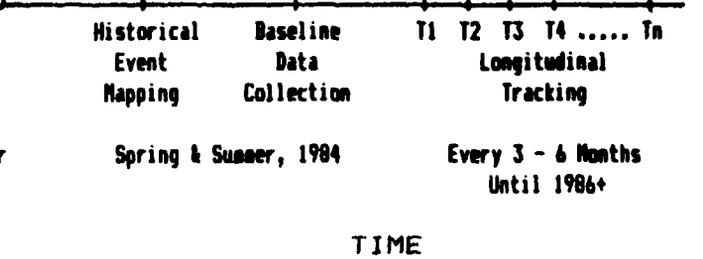
Institutional Level
- Cultural endowments
- Resource endowments

Industry Level
- Structure
- Conduct

Organizational Level
- Strategy
- Structure and form
- Practices

Innovation Unit
- Composition
- Practices
- Performance





1. From January to April 1984 pilot studies are being conducted to become familiar with each kind of innovation, to obtain access to specific sites to study the innovation, and to search for additional funding (beyond that provided by the ONR grant) as may be needed to conduct each longitudinal study.

2. During spring and summer 1984, case histories and baseline data will be obtained on each innovation. The case histories will provide a clear understanding of the backgrounds leading up to the present longitudinal studies of the innovations. The baseline information will provide an appreciation of the broader institutional setting in which the innovation takes place. Information will rely on published data, interviews with key informants, and organizational records to be made available to the researchers.

3. The longitudinal tracking of the innovations will begin as soon as it has become clear what specific aspects of each innovation should be studied over time and access to organizational sites has been obtained. Specific data collection instruments will be devised during spring 1984. These instruments will consist of on-site observations, interviews, questionnaires, and records to study the innovations as they develop over the next three (or more) years. Depending on the innovation, data collection will occur every 6 - 9 months.

Confidentiality of all information obtained will be maintained, and no individual or organization will be identified in any report unless explicit written permission is granted by those individuals or firms. An action research model will be used in the research, in which members of participating organizations involved in the research have input in the design, conduct, and feedback of the research as it progresses over the years. Local and national expert review panels will also be used each year to evaluate and redirect the innovation research studies. The research will be disseminated through research monographs, scientific working papers, journal articles, and presentations at professional and scientific conferences.

COMMON RESEARCH FRAMEWORK FOR INNOVATION STUDIES

Three principle criteria guided the innovation research group throughout its discussions to develop a common framework: simplicity, significance, and generality.

1. The common framework must be simple and parsimonious so that all can understand it easily and so that it allows room for each study team to examine questions and issues unique to their innovation studies.

2. The common framework should represent a conceptual advance to an understanding of the management of innovation.

3. The common framework should generalize as much as possible across the diverse innovations being studied so that we leverage opportunities for learning and insight from each study.

We believe that these criteria can be achieved in a common framework that is centered on five basic concepts: ideas, people, transactions, context, and event. In a nutshell, the framework suggests that the process of innovation is essentially the evo[illegible] of innovative ideas which are carried by people who are engaged in [illegible]ansactions with others within an institutional context. Signficant changes in these factors (ideas, people, transactions, or context) represent an event. A careful mapping of events over time is the central common task for all studies in the innovation research program.

These core concepts in the framework will be defined below, as well as preliminary propositions that link these concepts over time. Appendix 1 outlines specific questions that will be used to develop measurement instruments during spring 1984.

Innovation Ideas

An innovation is a new idea, which may be a recombination of old ideas, a scheme that challenges the present order, a formula, or a unique approach which is perceived as new by the individuals involved

(Zaltman, Duncan, and Holbek, 1973; Rogers, 1982). If the idea is perceived to be new by the people involved, it is an "innovation" to them, even though it may appear to others to be an "imitation" of something that exists elsewhere.

Included in this definition are both technical innovations (new technologies, products, and services) and administrative innovations (new procedures, policies, and organizational forms). Because we subscribe to a systems view, technical and administrative innovations are expected to be closely interrelated and co-produced. Daft and Becker (1978) and others have emphasized keeping technical and administrative innovations distinct. We disagree -- making such distinctions often results in a fragmented classification of the innovation process. A major objective of the research is to understand the close connection between technical and administrative dimensions of innovations.

Kimberly (1981) rightly points out that a positive bias pervades the study of innovation. Innovation is often viewed as a good thing because the new idea must be useful -- profitable, constructive, or able to solve a problem. New ideas that are not perceived as useful are not called innovations; they are usually called mistakes. The problem, however, is that the usefulness of an idea can often only be determined after the fact.

Since we are observing the process of innovation over time it will not be possible to determine at the outset if we are tracking ideas that are "innovative" or "mistakes." While this will require deferring judgments of innovation success until the consequences of new ideas become manifest, the longitudinal research design should minimize the

positive (or negative) bias of the researchers because the "jury is not in" on the innovations being studied.

People: The Innovation Team and Stakeholders

It is often said that an innovative idea without a champion gets no where. People develop, carry, react to, and modify ideas. People apply different skills, energy levels and frames of reference (interpretive schemas) to ideas as a result of their backgrounds, experiences, and activities that occupy their attention. People with the central task of developing the innovation constitute the innovation team, whereas those who influence or are affected by the innovation are stakeholders.

People are connected to ideas over time through a social-political process of pushing and riding their ideas into good currency, much like Donald Schon (1971) describes for the emergence of public policies. Figure 2 illustrates the process.

Schon states that what characteristically precipitates change in public policy is a disruptive event which threatens the social system and sets up a demand for new ideas that will explain, diagnose, or remedy the crisis. Invention is an act of appreciation, which is a complex perceptual process that melds together judgments of reality and judgments of value. A new appreciation is made as an anomaly, problem, or opportunity is recognized. Once a problem is appreciated, ideas gestating in peripheral areas begin to surface to the mainstream as a result of the efforts of people who supply the energy necessary to raise the ideas over the threshold of public consciousness. As these ideas surface networks of individuals, stakeholders, and the communication media or grapevine gravitate to and galvanize around the new ideas.

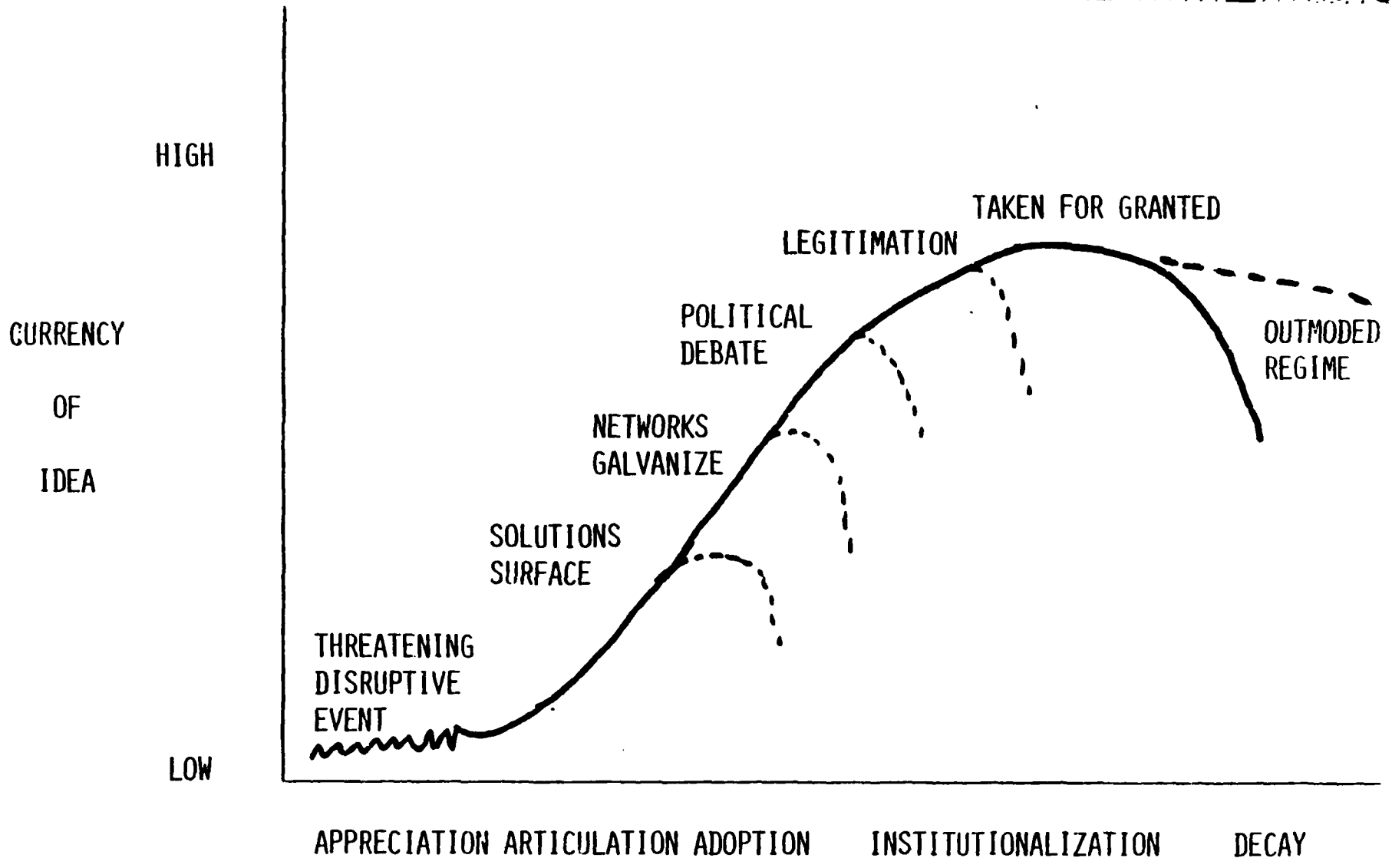


Figure 2. MANAGING LIFE CYCLE OF IDEAS IN GOOD CURRENCY
SOURCE: DONALD SCHON, "BEYOND THE STABLE STATE" (NY:NORTON, 1971)

They, in turn, exert their own influence on the ideas by further developing and articulating them and providing them with a catchy slogan that provides them with emotional meaning and energy.

However, Schon indicates that at this stage the ideas do not become potent enough to change policy unless they become an issue for political debate and unless they are used to gain influence and resources. The debate turns not only on the merits of the ideas proposed to address the problems, but also on who is using the ideas as vehicles to gain power. When individuals or stakeholders push or ride ideas, they also seek to establish their own dominance. As the ideas are taken up by people who are or have become powerful, this in turn, gives the ideas legitimacy and gives them power to change institutions. After this, the ideas that win out are implemented and become institutionalized -- they become part of the conceptual structure of the social system and appear, in retrospect, obvious. However, the idea remains institutionalized for only as long as it continues to address critical problems and as long as the regime remains in power.

Schon's description of the stages by which ideas come into good currency is instructive in its focus on the social-political dynamics in the innovation process over time. The description emphasizes the centrality of ideas as the rallying point around which collective action mobilizes -- organizational structures emerge and are modified by these ideas. Moreover, it is the central focus on ideas that provides the vehicle for otherwise isolated, disconnected, or competitive individuals and stakeholders to come together and contribute their unique frames of reference to the innovation process. Schon (1971:141) states that these stages characteristically describe the features of the process involved

in the emergence of ideas into good currency, "regardless of their content or conditions from which they spring."

However, there are also some basic limitations to the process that lead to inertia and premature abandonment of some ideas. First is the basic human problem of the management of attention. Human beings and their organizations are mostly designed to focus on, harvest, and protect existing practices rather than to pave new directions. This is because people have the basic physiological limitations of not being able to handle complexity, of unconsciously adapting to gradually changing conditions, of conforming to group and organizational norms, and of focusing on repetitive activities (Van de Ven and Hudson, 1984). One of the key questions in the management of innovation therefore becomes how to trigger the action thresholds of individuals to appreciate and pay attention to new ideas, needs and opportunities.

A related problem is how individuals become attached to and invest effort in the development of innovative ideas. There tends to be a short-term problem orientation and a facade of demonstrating progress. Even if problems are not being solved, the appearance of progress requires moving on to the next batch of problems, thus inducing premature abandonment of innovative ideas. Thus, "old questions are not answered -- they only go out of fashion" (Schon, 1971:142). Furthermore, given the inability to escape the interdependence of problems, old problems are relabeled as new problems. As a result, and as observed by Cohen, March and Olsen (1972), decision makers have the feeling they are always working on the same problems in somewhat different contexts, but mostly without results.

A third limitation of the process is that the inventory of ideas in

good currency is seldom adequate to the situation because ideas are often slow to come into good currency. Through the time-consuming transformation process of becoming good currency, they no longer accurately reflect the state of affairs. Decreasing the time lag and distortions in idea representation are critical challenges in managing innovative ideas.

Transactions

Transactions are "deals" or exchanges which tie people together within an institutional framework (which is context). John R. Commons (1951), the originator of the concept, argued that transactions are the fundamental building blocks of economic and social relationships. He emphasized that transactions are dynamic and go through three temporal stages: negotiations, agreements, and administration.

The negotiations stage highlights the strategies and choice behavior of parties as they select, approach, and avoid alternative parties and as they persuade, argue, and haggle terms of a relationship.

In the agreement (or commitment) stage the "wills of the parties meet" by agreeing (whether formally for informally) to the terms of the relationship and the working rules or procedures of action. It is here where structural arrangements are set to organize the transaction -- be they informal work groups, joint ventures, new business startups, acquisitions, or sub-contractual arrangments.

Finally, in the administrative stage the rules and procedures are carried into effect. It is in this stage where misunderstandings, conflicts, and changing expectations of a relationship often occur -- resulting in renegotiation, mutual adaptation, litigation, or termination of the relationship. Those transactions that endure over time become institutionalized -- meaning that the parties involved

unconsciously begin to take the terms of the agreement for granted. Only when significant precedents occur do the parties involved reflect and reconstruct in memory the initial, but now hazy, terms of the originally negotiated transaction.

Management of the innovation process can be viewed as managing bundles of transactions over time. These bundles include (1) both collegial relationships among peers and hierarchical relationships among supervisors and subordinates who are engaged in the development of the innovation idea, (2) proposals and commitments to obtain funding and allocate resources to the innovation and its subcomponents, and (3) quid pro quo arrangements with other individuals, units and organizations to subcontract, co-venture, or otherwise undertake various activities needed to develop the innovation.

More specifically, Commons (1951) suggests that these bundles of relationships will consist of three kinds of transactions: bargaining, managerial, and rationing transactions. More recent work by Ouchi (1981) suggests a fourth clan-like kind of transaction. For the purposes of our innovation study, these transactions are defined as follows:

1. Bargaining transactions deal with the transfer of ownership of ideas in a market -- be it within or outside the firm.

2. Clan transactions pertain to relationships among peers that are based on trust, good will and professional norms of conduct.

3. Managerial transactions occur between parties who stand in a relationship of superior and subordinate -- the superior having the right to hire and fire, and the subordinate the right to serve or quit.

4. Rationing transactions pertain to resource allocations among inferiors by command of a higher institutional authority -- be it a higher level of management within a firm, industry regulations, or societal norms or laws.

Williamson (1975) and Ouchi (1981) provide a starting point for developing propositions regarding when these different kinds of transactions will be used to manage the innovation process. They argue that managerial and clan transactions as opposed to bargaining transactions will be the most efficient forms when the innovation idea requires unique, extensive physical and human investments over time, complements existing strategies and resources, is highly complex to understand, has great potential for opportunism (deceit, fraud, and stealing), and has few potential adopters or users. When an innovation is perceived over time as being less complex, relatively low in developmental cost, and marketable in a relatively short period of time, the most efficient mechanism will be to develop the innovation through bargaining transactions.

However, the selection of certain kinds of transactions is always conditioned by the range of past experiences and current situations to which decision makers have been exposed. Therefore, decision makers have a conservative bias toward the organizational arrangements that they have experienced. In addition, most innovations do not follow a simple linear progression through the stages of negotiations, agreements, and execution (as outlined above). The more novel and complex the innovative idea, the more often trial-and-error cycles of renegotiation, recommitment, and readministration of transactions will occur.

Connections Between Transactions and Organizations

There is an important connection between transactions and institutions. Transactions are the micro elements of macro organizational arrangements. Specifically, bargaining, managerial,

clan, and rationing transactions, respectively, are the basic elements of markets, hierarchies (organizations), tribes, and the state. Given this connection, we will examine how transactions in the development of innovations are aggregated into organizational arrangements.

Specifically, several of the innovation studies will attempt to compare five basic organizational arrangements in which innovations are typically developed:

1. New business startups by independent entrepreneurs
2. Corporate sponsorship of new businesses
3. Joint, interorganizational ventures
4. Acquisitions and mergers, and
5. Internal corporate innovation.

These five organizational arrangements significantly expand our repertoire of alternative settings for managing innovations. By comparing these alternatives over time, the research will focus on three key questions:

1. Which of these organizational arrangements are most appropriate for different kinds of innovations, and at what stages in the process?

2. Within each organizational setting, what are the critical factors over time that facilitate and inhibit different kinds of innovations?

3. How do the organizational arrangements strategically interrelate and complement each other? That is, under what conditions and at what stage does shifting an innovation from one organizational setting to another help or hinder the innovation process? When and for what kind of innovations is it advantageous to defer basic research investment and first-mover advantages to others, and to enter at a later stage of development through a merger or acquisition?

It is premature to suggest systematic answers to these questions. However, a few key propositions will demonstrate the approach that will be taken by the research team. First, innovations that are undertaken

within hierarchies, as compared with those in market-like arrangements, will tend to follow a more orderly progression of activities through sequential phases because a larger number of reviews are normally required to obtain continued approval of innovations within organizations than an independent entrepreneur would care to undertake. Ironically, due to the fact that entrepreneurs in new business startups must face the "market test" more quickly and hierarchical administrative reviews are an inferior substitute for market tests, error detection and correction (including terminations) will occur more quickly for innovations developed in market-like arrangements than those developed within hierarchies.

The Context of Innovations

Context is the setting or institutional order in which innovative ideas are developed and transacted among people. Innovation is not the enterprise of a single entrepreneur. Instead, it is a network-building effort that centers on the creation, adoption, and sustained implementation of a set of ideas among people who, through transactions, become sufficiently committed to these ideas to transform them into "good currency" (as discussed above). Thus, the management of innovation requires attention to both individual and collective action -- and the institutional infrastructure in which they occur. Furthermore, different levels of analysis are needed to understand the structure of options and constraints on innovative behavior.

Specifically, four levels of context of an innovation will be examined: the broad institutional/industry environment, organizational strategy and structure, organizational practices related to innovation, and characteristics of the innovation team. These areas represent

different layers of encompassing institutional settings for an innovation.

1. Institutional/industry context includes the broad cultural and resource endowments that society provides, including laws, government regulations, distributions of knowledge and resources, and the structure of the industry in which the innovation is located. It is well known that an innovation does not exist in a vacuum and that an organization's internal structure and practices are in great measure a reflection of the amount of support it can draw from its larger community. Collective action among organizations within a community becomes critical in the long run to create the social, economic, and political infrastructure a community needs to sustain its members. A population and industry level of analysis is therefore needed to understand the societal demographic characteristics that facilitate and inhibit innovation.

2. Organization strategy and structure context refers to the policies and arrangements in the overall institution in which the innovation is located. Here we will examine how the innovation "fits" with the overall strategy of the organization, and how the size, structure, and systems of the organization affect the development of the innovation over time.

3. Organizational practices focus on the organization's culture, climate, and practices that may facilitate or inhibit innovation. Much of the current popular literature on innovative organizations has focused on these practices. This longitudinal research will provide a unique opportunity to examine the consequences over time of alternative organizational practices that are believed to influence innovation.

4. The innovation team, as indicated above, includes the individuals directly involved in developing the innovation. The relevant characteristics of the innovation team to be studied include its composition, leadership, group norms, time allocation, conflict resolution, individual roles, and levels of energy.

Study of these contextual factors will permit systematic comparison of innovations in different institutional settings. Furthermore, when examined over time they will provide information on how organizational factors at different levels of analysis influence innovation success. Although all key propositions cannot be developed here, we conclude by outlining the basic proposition on the factors likely to lead to successful internal corporate innovation.

Successful internal corporate innovation is largely a function of the following:

1. Clear tension or need for change within an economic climate that can sustain innovation.

2. A corporate culture that emphasizes innovativeness and entrepreneurship as central to its institutional norms.

3. A structure that internally imitates the market in the creation and adoption phases (in terms of personnel incentives, competition, duplication, and decentralization with accountability), and imitates the traditional hierarchy in the sustained implementation phase of innovations.

4. A process that encourages expression of ideas, flexibility, closeness to customers, and early market testing.

5. Open, accessible, and intense communication networks with customers, the scientific or expert community, and internal marketing, production, and R&D departments.

6. Individual role models to support entrepreneurs, innovation sponsors, and orchestrators.

7. The commitment of resources (money, people, and management attention) to long-term research programs.

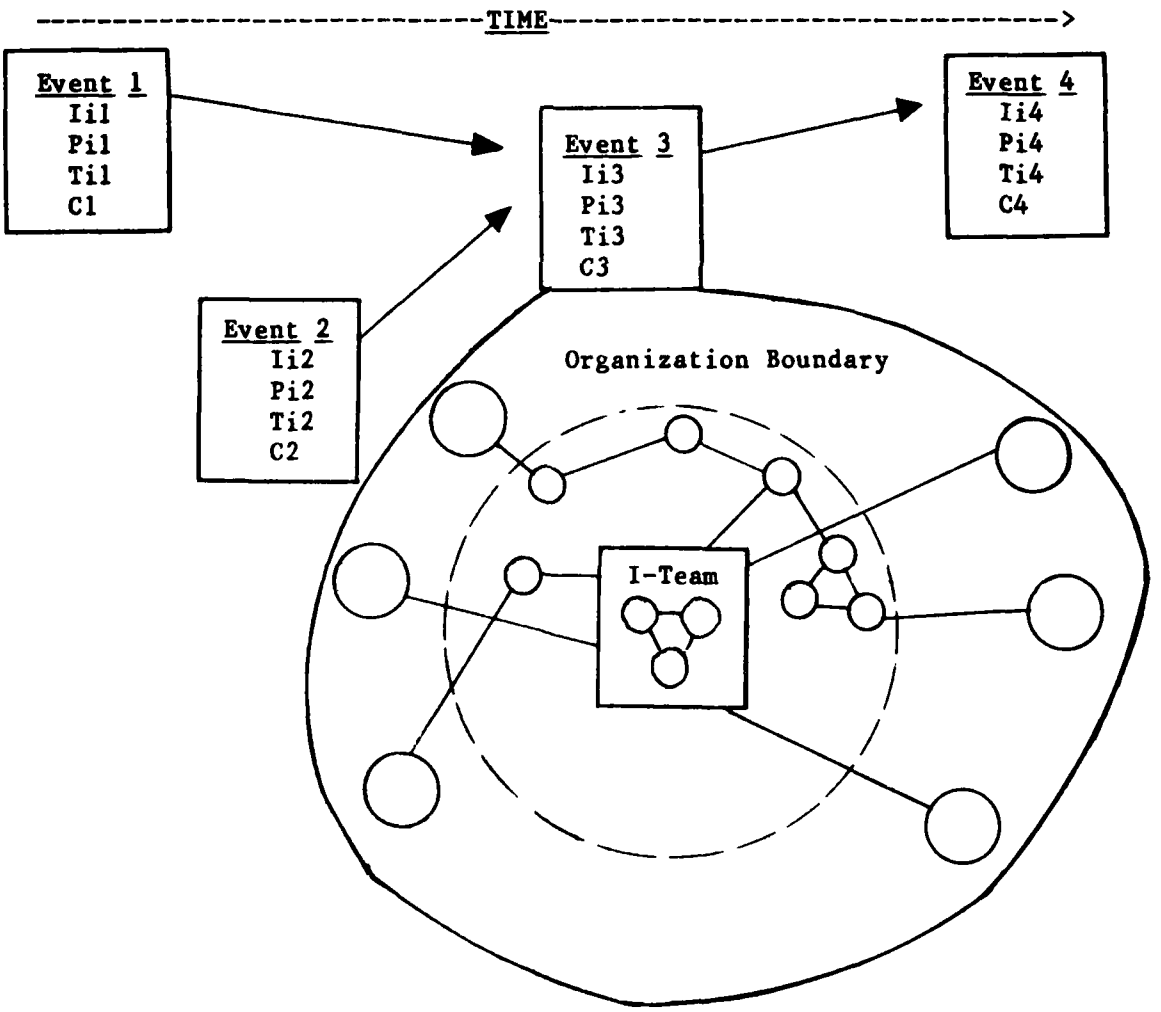
This proposition reflects much of the current speculation about innovative organizations as reflected in Peters and Waterman (1982) and Kanter (1983). Whether the proposition is valid requires systematic longitudinal study.

Innovation Events

The above core concepts in the research framework are brought together with the overall concept of event, which is a period in the evolution of an innovation where a significant change occurs in either the innovation idea, people, transaction, or context. Thus, an event is a composite temporal concept referring to periods when significant changes occur in the constellation of ideas, people, transactions, and context.

In short, our objective is to study the evolution of innovative ideas which are carried by people who are engaged in transactions with others within an institutional context. Significant changes in these factors (ideas, people, transactions, or context) represent an event. A systematic mapping of events over time is the central common task for all studies in the innovation research program. This task is illustrated in Figure 3.

Figure 3. Historical Map of Events of an Innovation Over Time



While a careful mapping of events in an innovation's history will provide a useful comparative-statistics framework for examining many questions and propositions outlined in previous sections, the major dynamic problem to be addressed in this research is the management of transitions between events. Some of the most significant barriers to innovation deal with problems of making transitions between different developmental phases of an innovation, and of integrating the diverse kinds of expertise, resources, and functions that are needed to transform an innovative idea into a reality.

For example, a new product may have been designed and tested, but runs into problems when placed into production because R&D and engineering overlooked a design flaw. Alternatively, the development of a major system may be ready for production, but subcontractors of subcomponents may not be able to deliver on schedule or there may be material defects in vendors' parts. Typical problems might include: lack of communication or misunderstandings between scientific, engineering, manufacturing, and marketing departments, vendors and customers on the nature or status of the innovation; unexpected delays and errors in certain developmental stages that complicate further errors and rework in subsequent stages; incompatible organizational funding, control, and reward policies; and, ultimately, significant cost over-runs and delayed introductions into the market.

Our discussions with managers indicate that these problems are pervasive across product, process, and administrative innovation efforts. Indeed, the development of more effective arrangements for transitioning innovations over time across functional, resource, and organizational boundaries may be the most critical challenge in the management of innovation.

Transitions management is not a discrete event but a process for integrating all the relevant functions, organizational units, and resources needed to manage an innovation from beginning to end. It requires a significant departure from traditional approaches to the management of innovation.

Traditionally, the innovation process was viewed as a sequence of separable stages (e.g., design, production, and marketing) linked by relatively minor transitions to make adjustments between stages. With transitions management, the innovation process consists of iterations of inseparable stages (or functions) linked by a major ongoing transition process. Whereas the mechanical metaphor of an assembly line of stages characterized earlier views of innovation, now the biological metaphor of a hologram -- where the whole is placed into each of the parts -- more accurately portrays the transitions management view of innovation. Finally, while innovation was traditionally viewed as an addition to existing arrangements, now in a world of scarcity innovations are more realistically viewed as often resulting in eliminations, replacements, or transformations of existing arrangements. Transitioning people, organizational units, and investments from existing arrangements toward these new results create a host of major challenges in the management of innovation.

Conclusion

This report has outlined a program of research that we think is novel in its broad strategic orientation to the management of innovation and can make important contributions to both theory and practice. Our knowledge of innovation and entrepreneurship is exceedingly narrow -- usually focusing on one kind of organizational

arrangement for innovation (e.g., internal innovation or new business startups), or one stage of the innovation process (e.g.,the diffusion stage), or one kind of innovation (e.g., high technology). What is needed is a broader-gaged perspective that strategically examines a variety of innovations in alternative organizational settings across levels of analysis and over time.

One of the major strengths of the research program is that it includes a wide variety of innovations, each of which will adopt the common framework described above as part of its research design. Not only does such diversity permit tests of the generality of a given theory, it maximizes the potential for both generating and interpreting new theories on the management of innovation.

An important strategy in designing the research program has been to encourage the research teams to develop multiple perspectives for interpreting the historical event maps of innovations, each of which are developed by following a standardized set of common procedures across studies. It is premature to know what new and unanticipated insights will develop from each innovation study. However, as the attached descriptions of the innovation studies show, several novel approaches will be used to interpret the event maps in the studies. Again, we believe that it is from a diversity of perspectives and interpretive schemes among the research teams that creativity and learning can be maximized.

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APPENDIX 1: QUESTIONS TO BE MEASURED IN THE RESEARCH

LONGITUDINAL MAPPING OF INNOVATION EVENTS OVER TIME

The basic questions for obtaining an event mapping of an innovation are listed below. While the wording of the question during the historical baseline versus the longitudinal data collection periods will shift from passive to active, their substance will be the same.

Identifying the key events in the history of an innovation will require considerable judgment for each research team. Once the events are identified, then we can begin to flesh out their components in terms of ideas, people, transactions, and contexts.

1. What are the key turning points or events in the evolution of the innovation since its beginning or the last time we talked?

2. Describe the event(s). What triggered the event? What happened or took place? Probe for:

   a. Changes in the innovation idea

   b. Changes in the people involved

   c. Changes in the transactions or deals that were made

   d. Changes in the environment, organization, or innovation group

3. Indicate the dates that each event occurred.

4. Who was involved in the event? Name the members of the innovation team and the key stakeholders. For each, get:

   a. Biographical, background, and positional data

   b. Report of activities or behavior each person performed in the event

   c. Time, energy, and degree of involvement in the event

   d. Interaction pattern and communication frequency with others during the event

   e. Power/dependence relationship to others

   f. Stake in the innovation -- interests and commitment

As stated above, an innovation is a new idea. To understand the idea is to understand the frame of reference (or interpretive schema) that key people (the innovation team and stakeholders) have about the content and strategy of the innovation at a particular point in time. Thus, the next set of questions are proposed:

5. How was the innovation idea perceived during the event? Ask the following questions of each key person:

   a. What does the innovation idea consist of? Where did it come from? In what ways is it new or an imitation? Is it being developed elsewhere?

   b. How is the innovative idea related to the strategy or other priorities of the organization? How interdependent is it with the other activities of the firm?

   c. To what degree is the idea perceived to be complex, compatible with existing arrangements, costly, require unique human and physical resources, and proprietary or secretive to prevent pirating?

   d. In what ways did the idea change from the last event? Did the event add to, complement, delete, replace, leverage, or transform the earlier version of the idea?

   e. What are the arguments for and against the idea? What problems or stumbling blocks are being encountered with the idea -- technical, social, political, resources?

   f. What will count (criteria) to judge success or failure of the idea? To what degree is/will the idea be a success?

As stated above, a transaction is an exchange or "deal" among two or more parties within an institutional order. For analytical purposes these transactions can be examined over time in terms of stages of negotiation, agreement, and administration.

6. What are the key transactions or deals that were made during the event?

   a. What does the transaction consist of? Obtain perceptions of parties on the transaction uncertainty, complexity, uniqueness of resource use, potential for opportunism, and compatibility with the innovation, other transactions, and the organization.

   b. How was the transaction negotiated? What parties were involved? What factors or alternatives were taken into consideration in the negotiations? What was at stake for each party entering the transaction.

c. What agreements or terms were established among the parties? What kind of transaction was agreed to: bargaining, managerial, rationing, or clan? What organizational forms were created and agreed to by the parties?

d. Describe how the agreement is being carried out. To what degree do the parties perceive the transaction to be satisfying, equitable, productive, and worthwhile?

e. What conflicts or problems are being experienced with the relationship? How are these conflicts or problems being handled?

BASELINE/HISTORICAL ANALYSIS OF INNOVATION

To initiate a study of innovation, it is important to construct a careful history of the innovation to date and to obtain a baseline understanding of the institutional context in which the innovation is taking place.

A history of the innovation will require identifying each of the major events (as defined above) in the innovation's life to date, and asking an abbreviated set of questions (to be determined later) from those proposed above for the dynamic analysis.

Four areas are proposed for understanding the institutional context or setting of the innovation: industry/institutional analysis, organizational strategy and structure, organizational practices related to innovation, and characteristics of the innovation team. These areas represent different layers of encompassing institutional settings for an innovation, and are important for examining our basic proposition that innovation is not just an individual enterprise but a collective achievement.

Since most of these contextual areas are relatively enduring over time, they only need to be measured once. Repeated longitudinal measurements only need to determine if and what changes have occurred in these areas since the last data collection period.

Industry/Institutional Analysis Questions

A. Describe the cultural and resource endowments at the industry/institutional levels for the innovating organization (IO). Specifically, identify and describe the effects of:

1. The relevant social and professional institutions, norms, laws, and regulations.

2. The relevant political and economic institutions, government bodies, political parties, trade associations, etc.

B. Describe the structure of the relevant industry of the IO.

1. In what industry does this innovation compete? Identify this industry's chief product lines, complementary products, and substitute products.

2. What are the major technologies of production and distribution of this industry? Describe the logistics, cost structure, economies of scale, value-added assembly process, and labor pool (skills, cost, and sources).

3. Who are the main suppliers (vendors) and buyers (customers) of products (by segments) in this industry? What is the bargaining power or market share of each?

4. How are products marketed and sold in this industry? Describe how the market is segmented by products and firms, the distribution channels used, and the marketing and advertising practices used to enter new products into these distribution channels.

5. Who are the major competitors in this industry? Describe their share of market by major products, and distinctive competencies in technology, distribution, marketing, and services.

6. What is the industry's growth rate? What are the major determinants of this growth or decline? Describe the trend and elasticity of demand for products/services in this industry.

7. What innovations (new products, processes or services) are emerging in the industry? How does the specific innovation of the IO relate to these innovations emerging in the industry?

8. What are the relationships and effects of the firm's performance in other industries on the IO's performance in this industry? Do profits or losses in other segments of the enterprise influence resource allocations or goals set for the innovation unit?

9. Describe the IO's performance in the industry within which the innovation is located.

<u>Organizational Strategy and Structure Questions</u>

C. How has the strategy of the organization evolved over time?

1. Describe the stated and implicit strategy of the firm.

2. How is this strategy formulated and implemented?

3. How does the innovation "fit" with the firm's overall strategy? How important is the innovation to the firm's overall strategy?

D. Briefly describe the historical evolution of the IO's structure.

1. Describe the firm's age, historical milestones, critical leaders and structure over time.

2. What is the structural complexity, and organizational form of the IO? Develop a detailed organization chart. Describe its division of labor, resource allocations among levels and divisions, and control/coordination systems.

3. Describe the size (number of employees) and demographics of organizational members, and the systems used to select, train, promote, and terminate personnel.

Organizational Practices Related to Innovation

A. What is the IO's culture/climate for innovation?

1. Is there a clearly stated set of values and guiding principles regarding innovation? Describe them. How widely shared are they throughout the IO?

2. How supportive is IO's top management to new ideas? How much time and attention do top managers spend on encouraging and talking about new ideas with organizational participants? What kinds of special rewards does the IO provide for innovation? How many people received these rewards and what was the total budget for these rewards last year?

3. Ask IO personnel to tell a typical story about innovation in the IO. Are innovators the heros, villains, or victims in these stories?

B. Overall process ideas gain currency and the shape of the IO's idea funnel.

1. In general, where do new ideas originate in the IO? How do they originate? How and when do they tend to come to people's attention. Describe the process used to entertain, review, debate, and authorize effort to new ideas.

2. What special mechanisms exist to facilitate surfacing of new ideas? How many people in the IO are explicitly solicited for new ideas through these mechanisms? How much does the IO encourage its members to interact with peers outside the organization at meetings, conferences, etc.? Describe the internal communication network used to entertain new ideas.

3. Ask IO participants to roughly approximate the proportion of suggested ideas that are acknowledged, of acknowledged ideas that are seriously studied and discussed, and how many of those ideas are acted upon.

C. IO coordination and control practices related to innovation.

1. How is individual and group performance evaluated? What is the relative emphasis given to individual versus group performance? What criteria are emphasized in these appraisal systems?

2. What is the relative emphasis placed on administrative reviews versus market tests of innovations as they develop? Describe the number, timing, and depth of administrative reviews of innovations.

3. How many alternative sources are there for obtaining funding to develop an innovative idea? What financial and accounting procedures are used to track expenditures for innovation?

4. How are mistakes and failures handled? What processes are used to learn from mistakes. Are there any mechanisms in the evaluation process for switching from single- to double-loop learning?

Characteristics of the Innovation Team

A. Composition of the Innovation Team over time.

1. Track the age, backgrounds, demographics, competencies and periods of involvement of members of the innovation team.

2. Measure heterogeneity of orientations, priorities, and attitudes of members regarding the innovation idea.

3. Examine group norms, conformity pressures, and cohesiveness.

4. Examine leadership behavior in the group, and the power and discretion exercised by group members.

B. Practices of the Innovation Team over time.

1. Measure time allocation, tasks performed, and communication patterns among team members and with other stakeholders.

2. Measure frequency and nature of conflicts encountered, and how they are managed and resolved.

3. Examine the levels of energy, motivation, and determination of group members to the innovation idea.

STRATEGIC MANAGEMENT RESEARCH CENTER
UNIVERSITY OF MINNESOTA

Supercomputer Development Study

Andrew H. Van de Ven
R. Edward Freeman
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Over the course of the next three years U.S. supercomputer manufacturers' research and development expenditures may well exceed $150 million in their efforts to produce the next generation (Class VII) of large scale computers. The development of Class VII machines poses several technical challenges. The next generation hardware will likely involve some form of multiple processor architecture, and require the timely implementation of leading-edge electronic component technologies. As many as four to sixteen central processors will be linked together in an attempt to attain processing speeds in excess of 1,000 MFLOPS.

The success of current supercomputer development projects will also pose several managerial challenges. The management of innovation is an important concern of many industry executives. Managers are frequently faced with making critical decisions today about where the market for supercomputers will be five or more years from now; and there is good reason to suspect this market will be highly competitive. The very survival of some manufacturers will hinge on how well current development projects are managed.

In discussions with supercomputer industry executives over the past several months, SMRC researchers have compiled a preliminary list of prominent issues concerning the management of innovation. In the course of our investigation we intend to track these (and other) issues and provide feedback to executives regarding their organization's efforts to effectively manage the process of innovation.

Issues Concerning Management in the Development of Class VII Supercomputers

(1) How does organization structure enhance or hinder development activities?

The supercomputer industry provides researchers with a unique opportunity to study how distinctly different organizational forms relate to innovation. The industry is composed of an interesting combination of organization arrangements: a well-established firm pursuing multiple development projects; a start-up firm sponsored by a large corporation from which it was spun-off; a new entrant into the industry that has undergone a transition from being a manufacturer of analog computers to one of supercomputers; and several large, highly integrated computer and electronics manufacturers.

(2) How will growing competitive rivalry within the industry affect development activities?

There are seven manufacturers, including three foreign firms, that are recognized competitors in the supercomputer industry. Six of these firms are now involved in projects to develop the next generation supercomputer well before the end of this decade. SMRC investigators will seek to understand the affect of competitive pricing and marketing strategies on decisions pertaining to development efforts.

(3) How will the rapid growth of the industry affect development activites?

Many industry observers project significant growth in the demand for supercomputers as commercial users enter the marketplace. How will commercial demands affect decisions regarding the future development of supercomputers?

(3) How will federal and state government interaction with the supercomputer industry affect development activities?

Agencies of the federal government have continously played a role in the development of supercomputers. In recent months government and industry officials have begun to reassess the role of government in light of the changing competitive environment. The SMRC project team will seek to understand how the policies adopted by government affect the industry in general, and the development activities conducted at each firm, in particular.

(4) How will in-house component development versus vendor procurement of leading-edge components relate to the overall development effort?

Implementation of leading-edge component technology has become a critical factor in the current development projects. While some firms will rely on parts supplied by semiconductor manufacturers, other firms have, or are currently developing, in-house component capability. Managing the transition from component-level development to systems-level development will be a challenge in both cases.

(5) Is the "small group" approach the key to successful development projects?

There are many theories concerning the management of innovation within organization. Among supercomputer firms there is a commonly held belief that success depends on maintaining an organizational environment that fosters the interaction of small groups of individuals pursuing their ideas unconstrained by bureaucracy. One firm has made strident efforts to maintain a small group environment in the face of the continued growth of the organization. Yet another firm was spun-off from a larger organization for precisely this reason. SMRC researcher seek to gain a more robust understanding of small group management and how it affects innovation.

It is helpful to think of the development of a supercomputers as a bundle of interrelated innovative efforts, as opposed to a single, discrete innovation. Therefore, the research team has begun to more closely examine which sub-innovation(s) will be the most appropriate to track over the course of the study. The longitudinal tracking of chip-level development is one consideration.

In the coming months SMRC investigators will continue to update and refine this set of issues. The SMRC is committed to closely examining and tracking over time those issues which are of some practical relevance and concern of the study's participants. In an effort to expand our vision and set forth clear guidance for the study, we are in the process of inviting the participation of distinguished individuals from government agencies, the national laboratories, academia, and industry, to serve on a panel to oversee our project. By welcoming the input of individuals involved in each of the various constituencies connected to the supercomputer industry we are confident the study will be of lasting value to those interested in the study and management of innovation.

The Development of Hybrid Wheat: A Case of Biological Innovations

by

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Hybrid varieties have been developed in many crops, including corn, rice, barley, sorghum, tomato, cotton and wheat. Hybrid corn represents some of the earlier work done with hybrid breeding which was introduced in the late 1920's. Hybrid sorghum was introduced soon after hybrid corn. It was not until the 1960's that any other successful achievements in hybrid research were made. In 1963, due to the discovery of the cytoplasmic-male sterility gene (C.M.S.) and the observation of hybrid heterosis, intensified efforts towards hybrid wheat development evolved. Although hybrid wheat development still continues, it is only last year, with the demonstration of high yields by Cargill, Inc.'s hybrid variety, Bounty, that a wave of optimism for the success of hybrid wheat has been revived. Much of the work in 1970's proved to be non-successes due to biological or organizational problems. Because of the numerous amount of resources devoted to hybrid wheat development, the variety of institutions that worked with hybrid wheat research, and the recent success of Bounty, hybrid wheat seems to be an interesting innovation to study. The purpose of this research is to focus on the research and development, marketing, and diffusion phases of hybrid wheat over the past twenty years. Data will be collected from reviewing the literature and interviewing representatives from various institutions that have worked with hybrid wheat development. Comparisons will also be drawn to the work done in hybrid corn.

The research completed thus far has included identifying institutions involved with hybrid wheat development and making or finding specific contacts within these institutions. The institutions identified represent a spectrum of infrastructural organizations, including public and private institutions. Public institutions that have done some hybrid wheat development include Purdue University, the University of Minnesota, Texas A&M, Washington State, North Dakota State, the University of Nebraska, Kansas State, and others. Contacts at each institution, with the exception of Purdue University and Kansas State, have been initiated. The research done by these public institutions focused primarily on basic research although some applied work has also been done. The involvement of public institutions with this research occurred more at the beginning of hybrid wheat development. Since the 1970's the private institutions have been doing the majority of hybrid wheat development.

Cargill, Inc., Pioneer, Monsanto, DeKalb, Northrup King, Funk, Rohm and Haas and Shell are the major private seed or chemical companies that have been or are currently working on hybrid wheat devleopment. These companies differ in their organizational structures, their techniques used for hybrid wheat development, and their progression rates. Research is mainly applied in nature. Again, contacts have been made with some of these companies.

Some meetings have already been conducted with these contacts at the public and private institutions. The purpose of these meetings was to either gain information in order to lay a better ground for future interviews or to initiate contact for further interviewing.

Some main pieces of information concerning the research and

development of hybrid wheat given at these meetings are summarized in the following points: 1) Hybrid wheat research has switched from being done by private institutions to being done by public institutions. This switch is accompanied by a change from basic to applied research. The influence of the Plant Protection Act of 1970 towards this change should be examined. 2) Evident cases of successes and failures exist, providing examples to be used for comparisons. 3) The technological advances and problems in the biology of hybrid wheat and some problem areas in marketing hybrid wheat have been realized. 4) Possible future changes in institutional research objectives and cropping patterns may be expected. Better questions and direction to be raised concerning this research can be done as a consequence of gaining this knowledge.

Over the spring and summer, contacts will be continued to be made and expanded at the aforementioned institutions. The expansion comprises carrying out a series of interviews in order to acquire data on the research and development, marketing, diffusion phases of hybrid wheat. A complete literature review focusing on the research and development of hybrid wheat will also be completed this spring quarter. Comparisons will be made to hybrid corn in this review. From this information assessments can be made concerning what factors influenced the success or failure of the hybrid wheat innovation in different research settings, and how hybrid wheat research has changed and continues to change at the public and private institution level.

INDUSTRIAL PRODUCTS INNOVATION STUDY

Stuart Albert, Todd Hostager, Bill Roering, and Andy Van de Ven

Within the overall common framework of the innovation research program, this study will examine the development of new technologies that are intended to result either in new processes for producing products or services or in market introductions of new commercial products. At the present time, the research team has obtained access to and begun to study six specific new technologies: a disappearing ink, heat-resistant ceramic fibers, plasmapheresis, an ear implant for the deaf, replication tooling devices, and space manufacturing. Negotiations are presently under way in organizations to study the development of several other technologies.

Like the other studies in the innovation research program, the study will be conducted in three stages. First, we will write case histories by June 1984 in order to map the key events in the development of the innovations to date. Second, during summer 1984 we will obtain baseline data on the relevant environmental, industrial, and organizational settings in which the innovations are being developed. The historical event mapping and baseline data will provide the background for the third stage, which will track the development of the innovations over the next three plus years until they are implemented or enter the market.

The study will focus on the management of part-whole relations in the development of innovations over time. There are two aspects of this focus. First, given that different disciplines, resources, and organizational boundaries must be crossed and applied in the development of an innovation from beginning to end, how does one integrate these different parts in the proper amounts and proper times to successfully develop a whole innovation? A study of transitions management, as

described in the overall program description, will be a central focus in this study.

A related issue in the management of part-whole relations is the connection between events (as defined in the introductory section) in the temporal evolution of an innovation. Here each temporal event is viewed as a part of the whole time period covered to develop an innovation from beginning to end. How are events connected over time? How does an innovation connect the past with future states of affairs? Stuart Albert has developed a TRACE relations framework for the study of innovation.

T R A C E is an acronym for a set of hypothetical relations between the past and the future, or between the present state of affairs and some hypothetical different future that represents an innovation. Essentially, the past can be related to the future in at least five different ways. While TRACE is a convenient mnemonic, it is best to summarize the logic of the TRACE model by considering the relationships in a different order, A, E, R, C, T. An innovation can link the future with the past or present state of affairs in five basic ways:

Addition, the future is related to the past by simply being an addition to what already exists.

Eliminate, the future is created by deleting a part of the present; the innovation is to eliminate something that already exists.

Replace, the innovation results from replacing something from the present with something new -- it is a composite of eliminate and addition relations.

Compliment, the innovation neither adds to the existing status quo, nor is it formed by eliminating or replacing some part of it -- the relationship of the past and future is complimentary.

Transform, a situation where the innovation transforms the past into a totally new and unanticipated state of affairs.

Quite clearly, whether an innovation complements, replaces, adds,

eliminates, or transforms part or all of the past is a matter of judgment, which may differ depending upon the observer and may change over time as the lens of history more sharply defines the nature of the observed discontinuity (or continuity in the case of addition and complimentary relations). Furthermore, across temporal events, the innovation may consist of different permutations of T R A C E -- it may begin with A and end with T relations. By examining relations among historical events in the development of innovations, we hope to generate a new theory of the temporal dynamics of innovation.

The TRACE model makes certain predictions about the success of innovations. The innovations that should have the greatest possibility of success should be those generated by:

1. A and C relations (since it is easiest if one does not have to eliminate something or transform it in order to be successful). However, C innovations are probably less interesting. Hence, the motivation for change is probably small, but the resistance is also probably small.

2. It is presently unclear whether R or E innovations should be more difficult, but clearly anything involving delete design is usually very difficult (see Albert, 1983).

3. T innovations should be the most difficult since they are the most revolutionary, unless the environment is such that anything less would be perceived as a failure.

So basically the rank order of success probability of innovations is expected to be: A - C - R - R - E - and T.

STATUS REPORT
New Courseware Company Study

Jeanne Buckeye
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One of the more challenging strategic problems in management is how to create new organizations. Technological, competitive, financial, marketing, risk, and other demands often move organizations to expand the existing enterprise, rather than set up entirely new businesses. Why and how management chooses one of these alternatives, and what makes their efforts successful or unsuccessful are interesting, and eminently pragmatic questions. The phenomenon becomes even more interesting when an organization sets out to sponsor the creation of a whole new industry comprised of many organizations which might competively serve the larger firm.

This courseware study will investigate how one firm, Control Data Corporation (CDC), encouraged the creation and development of courseware providers in three different modes: (1) by developing internal corporate departments to produce courseware; (2) by extensively or (3) moderately sponsoring new businesses to do the job. A fourth type of firm, totally independent of CDC, arose entirely from traditional market forces. The development of new enterprises and industries can be viewed as innovations, particularly when they come about as a result of a larger firm's strategic planning choices.

Four key questions will be addressed in this research:

1. How do new industries develop?

2. How can sponsors stimulate the development of innovative organizations?

3. How do organizational creation, development, and innovativeness vary under internal organizations, sponsored companies, and market-created companies?

4. How do critical events (problems and opportunities) and transactions vary in internal organizations, sponsored companies, and market-created companies?

We are not aware of any previous studies which address these questions, and certainly no previous study has considered these issues on a longitudinal basis. In our opinion this is a critical oversight. Most new industries have resulted from atomistic market forces and the will of entrepreneurs. In many instances the industries evolve only after considerable personal and organizational losses, as evidenced by the high (about 75% over six years) failure rate for new oranizations. In addition, new support industries often emerge slowly, inhibiting the growth of other industries. Corporate sponsorship provides a mechanism for encouraging and accelerating new industry formation, yet sponsorship of multiple firms in a new industry rarely occurs and it raises questions and problems which may not respond to traditional management practices.

Two main objectives of this study are (1) to identify the special problems and opportunities which occur under corporate sponsorship, and (2) to identify successful managerial responses

to them. For example, in the CDC case, the sponsor and the affiliated organizations both perform essentially the same services. This requires management to find ways to keep competition to a level which allows for growth in the affiliated companies, yet encourages both the internal units and the affiliated companies to be innovative and stay on the cutting edge of software development.

STUDY DESIGN

This study will include four types of organizations: the sponsoring organization and its internal courseware development units; extensively sponsored affiliated companies; moderately sponsored affiliated companies; and totally independent courseware firms.

Control Data Corporation designs, develops, and markets educational software for home, school, and business training. As part of its overall corporate strategy, CDC also wishes to accelerate and provide direction for the creation of a new industry of courseware companies. These courseware companies provide educational software which operates on CDC mainframe and microcomputers, as well as on microcomputers manufactured by competing hardware firms.

All sponsored firms receive technical and small business training, advice, and the chance to participate in an ongoing vendor relationship in which CDC provides a minimum level of courseware contract support. About one-half of the firms also receive equity and debt financing support from CDC. The indepen-

dent firms developed without CDC's assistance and operate wholly outside CDC's influence. They provide courseware for companies other than CDC.

The affiliated companies are located in the Twin Cities, Illinois, Pennsylvania, and Massachusetts. Twelve of the companies to be included in this project participated in an earlier study of courseware companies. That study served as a pilot study to this project. A large bank of baseline data collected for the pilot study will be available for the current study as well. Participants in the first study have enthusiastically greeted requests for continued participation. Currently, the study design calls for examining the following types of organizations:

Type of Organization	Number of Organizations
CDC Internal Courseware Units	3-4
Vendor Companies	6
Equity Companies	6
Independent Companies	6

Data will be collected through interviews with company principals and questionnaires administered to company principals and employees. Some financial and performance measures will be collected from public sources, such as Dun and Bradstreet.

Quantitative and qualitative data will be used to prepare case histories for each company. Each history will contain similar information: a map of critical events -- or threats, opportunities, and major changes -- which affected the firm's progress; a record of significant transactions or deals; a

description of the evolution of one or more of the firm's innovative ideas; and a record of the people involved. Quantitative data and evaluations will be used to construct a data base unique to the courseware study, but which will also contribute to the comprehensive Innovation Project data base.

FINANCIAL INDUSTRY INNOVATION PROJECT

by Ian Maitland, Robert S. Goodman, and Ed Freeman

We propose to examine the strategic innovations undertaken by a stratified sample of financial institutions--primarily banks--in response to the prospect and then the fact of deregulation. Until recently the banking industry has been regulated along four primary dimensions--geography, prices of inputs or outputs, range of products and services, and entry (see Table 1).

Table 1

PRIMARY DIMENSIONS OF BANKING REGULATION

DIMENSION	BANKING REGULATION	EFFECT OF REGULATION
Geography	McFadden Act	Limits on interstate banking.
	Douglas Amendment to Bank Holding Company Act	Bar on bank holding company acquiring bank outside its own state unless expressly allowed by laws of other states.
Price of input or output	Regulation Q	Restrictions on interest payments on savings accounts; disallowance of interest payments on demand deposit accounts.
	Usury laws	Restriction on interest charged by banks.
Range of products/services	Glass-Steagall Act	Prohibition on banks underwriting securities.
	Bank Holding Co. Act	Prohibition on banking control of non-banking business.
Entry	Federal Reserve Act	
	Banking Act of 1933	

A combination of technological change, deregulation, and aggressive exploitation of loopholes in existing regulations have dismantled or gravely weakened these barriers. Now that the barriers that have prevented the flow of underlying economic activity have been lifted, the structure of the industry will move rapidly to its more natural equilibrium. Survival, let alone prosperity, in this new environment requires that an institution (1) accurately anticipate the new structure of the financial services industry, (2) correctly evaluate its own strengths and weaknesses in the new environment, and (3) be able to capitalize on its strengths and eliminate its weaknesses. Each institution's planning is complicated by the fact that it is in a relation of strategic interdependence with other institutions, and thus its task is to adapt not to an objective environment but to an environment created and recreated by the strategic decisions of potential rivals.

Impact of Deregulation: The McKinsey Model

Bleeke and Goodrich of McKinsey have proposed a model of the impact of deregulation based on the experience of five recently deregulated industries: securities brokerage, business terminal equipment (telephone systems for offices), airlines, trucking, and railroads. Following deregulation, according to their model, industry economics generally deteriorate. Strong firms expand into formerly protected markets and accelerate new product introductions. Simultaneously new suppliers enter the market with low-cost options. As a result of this activity:

(1) Weak firms become weaker, but strong firms do not become stronger as protection is removed (e.g. Braniff).

(2) The previously most profitable products come under severe price pressure as competition heats up (e.g., prices drop more sharply on high-load, long-haul routes).

(3) Products become unbundled with the proliferation of new complex product/service trade-offs. Where before there was a narrow range of variation between suppliers in terms of price and service, there is now a broad trade-off.

(4) An industry profit squeeze forces rapid cost-cutting, especially staff reductions. Established firms find they have substantial cost disadvantages relative to new entrants.

(5) Capital requirements increase at the same time as access to capital markets is reduced.

McKinsey's Patterns for Success

Bleeke and Goodrich identify three generic strategies for successful adaptation to the deregulated environment (see Table 2).

Table 2

PATTERNS FOR SUCCESS

Type	Description	Industry	Examples
1	National distribution company with full line of differentiated products and emphasis on attractive service/price trade-offs	Brokerage	Merrill Lynch
		Airlines	Delta Airlines
		Trucking	Consolidated Freightways
		Railroads	Burlington Northern
		BTE*	Western Electric
2	Low-cost producer--often a new entrant following deregulation	Brokerage	Charles Schwab
		Airlines	Midway Air
		Trucking	Overnite Transportation
		Railroads	None
		BTE*	Oki
3	Specialty firm with strong customer loyalty and specialized service targeted toward an attractive customer group	Brokerage	Goldman Sachs
		Airlines	Air Wisconsin
		Trucking	Ryder Systems
		Railroads	Santa Fe
		BTE*	Northern Telecom

*Business terminal equipment.

Table 3

SUCCESSFUL FIRMS EMERGING FROM DEREGULATION CONSISTENTLY FOLLOW ONE OF THREE DISTINCT PATTERNS

Patterns for success	Firm characteristics				
	Product design	Operations	Marketing	Pricing	Sales
NATIONAL DISTRIBUTION COMPANIES	Steady flow of innovative products	Integrated national operations	Strong marketing function	Major, rapid adjustments to align prices and	Broad, national distribution network
	Product/ service unbundling	Well-developed information on costs	Product and image advertising		
LOW-COST PRODUCERS	Narrow, simple line	Line-driven: low staff	Advertising emphasizing price	Deep price discounts	Targeting toward price-sensitive segment
		Strong cost control orientation			Streamlined distribution system
		Minimal systems			
SPECIALTY FIRMS	Focus on products or markets which are difficult to unbundle		Information advertising	Increasing emphasis on fees for services	Targeted toward non-price-sensitive segment

They postulate that failure to adopt one of these three competitive strategies will put a firm at a serious disadvantage in a deregulated environment (see Table 3). This will be so because the entry of new low-cost producers (Type 2 firms) will remove a large portion of the customer base from existing firms. As Table 3 demonstrates, successful existing firms will usually be faced with two options:

(1) to expand as a broadly-based firm offering a wide variety of products over a large geographic area or (2) to contract its full-service orientation and to compete aggressively in a somewhat narrower product or customer segment of the market. Firms that do not adjust to deregulation and fail to reposition themselves are likely to find themselves weakened by three types of competitors: Type 2 low-cost firms will attract price-sensitive customers; Type 1 national firms will draw customers who want a broad range of products; and Type 3 specialty firms will siphon off specific segments of the market, usually segments with a high customer service preference.

Research Questions

Using Bleeke-Goodrich as a grid or framework, we propose to analyze the major innovations instituted by a stratified sample of banks (and perhaps related institutions such as brokerage houses, investment banks, etc.) in order to try to identify their underlying strategies. Over a period of time, to be determined, we intend to monitor (1) the implementation of the strategy and (2) the economic success of the bank/institution. Where the bank/institution is outperformed by its industry, we expect to find one of several conditions: (1) There was a poor fit between the bank's initial resources and the strategy selected; (2) the strategy was poorly executed; or (3) the strategy did not fit into one of the three strategic options described by Bleeke-Goodrich.

Research Design

Our research program falls into two parts:

(1) A detailed case study of strategy formulation and implementation at one or more Twin Cities institutions.

(2) A longitudinal study of a stratified sample of institutions.

Part 1 will help us to sharpen the hypotheses to be tested in part 2; it will also provide valuable empirical material to enrich the analysis.

Part 2 will permit us to test hypotheses regarding the goodness of fit between the three generic strategies and the deregulated environment. A preliminary list of the institutions may be found in appendix A.

Research Procedures

Part 1 of the project will involve interviews with key decision-makers at the case sites. By means of these interviews we hope to reconstruct the strategic planning process at the case site (bank), the translation of the plan into specific "innovations," e.g., in the following areas:

(1) The range and mix of products and services offered by the bank

(2) Its organizational structure

(3) The geographical scope of its operations

(4) The technologies it employs

(5) Its customer mix

(6) Its sources of funds

(7) Its relationships with other organizations.

In part 2, we will rely on data in the public domain (10K

reports, annual reports, newspaper and periodical articles, and financial industry databases). Case studies will be prepared and regularly updated for the institutions in the sample.

Status of Research

Annual reports and other documentary material have been reviewed in detail and access to the case bank for the purpose of interviewing has been negotiated. Preliminary case studies have been prepared of the strategies of the sample of institutions to be studied in part 2.

Implications and Contributions

The proposed study will deepen our understanding of the inter-relationship between banks' competitive strengths/weaknesses, their competitive environments, and strategic choice. It will shed light on the process by which innovations can be oriented and channelled according to a larger strategic concept, i.e., how innovations can be generated that "fit" with the strategic plan.

Managing Transition in Naval Systems Development

Andy Van de Ven
Roger Schroeder
Gary Scudder
Steve Orth
Gary Seiler

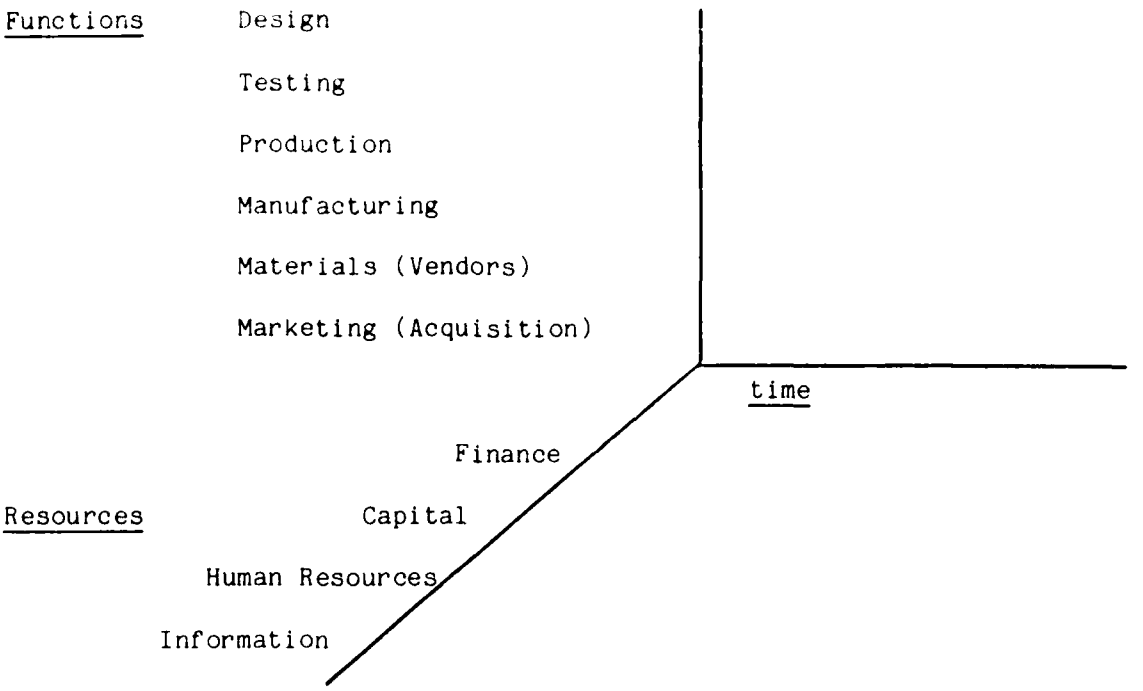
This study focuses on the management of transisiton, i.e., the management of innovation can be viewed as the management of transition across functional, organizational, and resource boundaries, as well as over time. In order to achieve this transition, many innovations, both technological and process, may be required. Therefore, transistion management is not a discrete event but a process for integrating all the relevant functions and resources needed to develop innovations from beginning to end.

Traditionally, the innovation process was viewed as a sequence of separable stages (e.g., design, production, and marketing) linked by relatively minor transistions to make adjustments between stages. With transition management, the innovation process consists of iterations of inseparable stages (or functions) linked by a major ongoing transition process. Whereas the mechanical metaphor of an assembly line of stages characterized earlier views of innovation, now the biological metaphor of a hologram -- where the whole is placed into each of the parts -- more accurately portrays the transitions managment view of innovation. Finally, while innovation was traditionally viewed as an addition to existing arrangements, now in a world of scarcity, innovations are more realistically viewed as often resulting in eliminations, replacements, or transformations of existing arrangements. Transitioning people,

organizations, and investments from existing arrangements toward these new results create a host of major challenges in the management of innovation.

The figure shown below summarizes the transitions management theme as it is currently viewed for a local defense contractor.

ILLUSTRATION OF TRANSITIONS MANAGEMENT



This figure illustrates that several functions must be integrated, over time, to successfully adopt a major innovation. Some of the functions themselves represent innovations in the areas of manufacturing, marketing, and materials management. These functions need resources in the proper amounts, at the appropriate time, if transition is to occur. These resources include finance, capital, human resources, and information.

There are many hypotheses (propositions) which are of potential interest in this study. A partial listing is shown below.

1. In new business startups there are less people and less structures effecting transitions. As a result, transition is faster with less use of resources to overcome, but there exists a greater risk of technical or commercial failure.

2. Organizations which are "action-oriented" and keep things simple have greater success in this process.

3. The transitions management process is not smooth. There is much cycling and restarts are required.

4. Product champions, skunk works and simple organizational forms help the success of transitions.

5. Team approaches facilitate transitions in large organizations.

6. Reward systems do not drive innovations or by themselves, improve transistion.

7. A culture for change is critical in facilitating transitions.

8. External actors have a great effect on the transition process e.g., where they can bring great pressure to bear.

9. Prototyping provides the greatest benefits for more complex products and leads to a more stable product design.

10. In some organizations, the barriers to transition are perceived to be so great that many innovations are stifled.

11. The accelerators/barriers change as ideas progress through various phases during the transition process.

At the present time, access has been obtained to conduct this longitudinal study in a major Navy defense contractor. The contractor is engaged in the development of a major weapons systems that includes innovations in six major components of Transitions Management: (1) design to production transition of the new systems, (2) factory automation, (3) Just-in-time vendors' supply of materials, (4) marketing the new system, (5) human resources development, and (6) development of corporate culture.

Other organizations have been identified for possible inclusion in this study. The transitions management theme also pervades most of the organizations in other studies in the common framework.

These organizations will be studied using a combination of structured interviews and detailed questionnaires. After individual histories have been developed, each site will be resurveyed every six months to measure how transition management unfolds over time. In addition, close contact will be maintained with these organizations in interim periods in order that observations of key events might occur on a timely basis.

This study should contribute to the understanding of innovation management in several ways. First, since this study is longitudinal (3 years +), there is an opportunity to develop (and possibly test) some theories about the interaction of functional areas and resources, as well as about the timing of these interactions. For example, timing may prove to be the most critical factor in successful transitions. Second, transitions management may require differing amounts of resources in different organizational structures. Many other implications of these studies can be developed in conjuction with the previously defined hypotheses.

PUBLIC/PRIVATE/NON-PROFIT JOINT VENTURES

By John M. Bryson, Paula J. King and William Roering

Project Description

1. The purpose of this project is to study joint ventures that cross public/for-profit and/or non-profit boundaries. The cross-sector joint venture is itself the innovation being studied. We feel that such joint ventures will become increasingly common as interdependencies among sectors increase and as distinctions among public, for-profit, and non-profit sectors blur.

Unique Questions, Problems and/or Propositions

2. We are particularly interested in the factors that lead to success and failure in the initiation, management, and termination of cross-sector joint ventures. For example, we think that each sector's legal and institutional constraints will affect the chances of success for cross-sector joint ventures. We feel that some cross-sector joint ventures will be better for some purposes than for others. And we feel that changes in the legal and institutional framework of each sector, along with special skills and techniques, may be necessary to make cross-sector joint ventures more successful. We as yet cannot provide detailed elaborations of these "hunches," but will be able to do so by the end of June 1984.

As an initial starting point for our research, we are using two frameworks. The first is Van de Ven's (1976) theory of the nature, formation, and maintenance of relations among organizations. Situational, process, structural and outcome dimensions of this theory are presented in Figure 1. Assumptions and hypotheses about the formation and maintenance of relations among organizations are presented in Figure 2. The second framework is Bryson's (1984) on the role of forums, arenas, and courts in organizational design and change. The significance of the forums, arenas and courts

perspective for the joint ventures project is that each joint venture involves the creation of a new set of forums, arenas, and courts. Bryson argues that forums, arenas, and courts are what links action and structure in situations in which no one organization or institution is fully in charge. The framework is presented in Figure 3. Forums are necessary for the creation and communication of meaning, arenas are necessary for decision making and resource allocation, and courts are necessary for conflict resolution and the normative regulation of conduct. The significance of forums, arenas and courts is that they mediate the transformation of a set of potential decision, issues, conflicts and policy preferences into the set of those actually considered and the set of those that are not.

Research Design

Two pilot studies of cross-sector joint ventures have been completed. One is of Altcare, a joint venture of General Mills and the Wilder Foundation whose purpose is to develop alternatives to the institutional care for the frail elderly. The other is AHW, Corp., involving participation by the Wilder Foundation, the City of St. Paul, and the Port Authority of St. Paul. These ventures will be tracked longitudinally over the course of the study.

Additional joint ventures will be included, although exactly which ones has not been decided. During the Spring Quarter of 1984, a national survey will be undertaken to discover the extent to which cross-sector joint ventures are used, and to invite participation in the study. Our hope would be to have at least two of each type of cross-sector venture included in the study (i.e., two public/for-profit, two public/non-profit, two for-profit/non-profit, and two public/for-profit/non-profit).

Research methods will include questionnaires, interviews, on-site observation, and an analysis of archival materials.

Contributions of the Study

As we noted earlier, we feel that cross-sector joint ventures will be an increasingly common organizational form. We know of no research, however, that has systematically studied factors that lead to success and failure in the initiation, management, and termination of cross-sector joint ventures. This study, therefore, could break significant new ground in the understanding of an emerging organizational form.

In addition, it is likely that the study will propose changes in the legal and institutional framework of each sector to make cross-sector joint ventures work better. The study also is likely to outline special skills and techniques necessary to make cross-sector joint ventures work better.

SITUATIONAL FACTORS

1. *Resource Dependence*
   - Agency's need for external resources
   - Agency's need for other agencies in the environment
2. *Commitment To Problem Issue or Opportunity*
   - Perceived commitment to resolve environmental needs or realize opportunities
3. *Awareness*
   - Knowledge of environmental needs, problems, or opportunities
   - Knowledge of services and goals of other agencies
   - Personal acquaintance of agency representatives
4. *Consensus*
   - Agreement among agencies on solutions to environmental needs or problems
   - Agreement on services and goals among agencies
   - Conflict on means and ends
5. *Domain Similarity*
   - Sameness of goals, services, staff skills, and clients of agencies

PROCESS DIMENSIONS

1. *Intensity of Resource Flows*
   - Amount of resource flows among agencies
2. *Intensity of Information Flows*
   - Frequency of communications among agencies

STRUCTURAL DIMENSIONS

1. *Formalization of IR*
   - Of inter-agency agreements
   - Of inter-agency contacts
2. *Centralization of IR*
   - Extent inter-agency committee decisions are binding upon members
3. *Complexity of IR*
   - Number of agencies in IR
   - Number of projects and tasks undertaken by IR

OUTCOME DIMENSIONS

1. *Perceived Effectiveness*
   - Extent agencies carry out commitments and believe relationships are worthwhile, equitable, productive, and satisfying

FIGURE 1. Dimensions in Model on Formation and Maintenance of IRs.

Source: Andrew H. Van de Ven (1976) On the Nature, Formation, and Maintenance of Relations among Organizations, Academy of Management Review, Vol. 1, No. 4.

ASSUMPTIONS

A. Organizations strain to maintain their autonomy.
B. Organizational needs for resources and/or commitment to an external problem or opportunity are the compelling reasons for IR emergence.
C. Resource dependence or problem commitment, awareness, and consensus among parties are necessary conditions for IR emergence.
D. Organizations maximize gains and minimize losses in becoming involved in IRs.
E. Increases in the size of an IR and in the amount of resource flows between agencies increases problems of integration and pattern maintenance.
F. IRs emerge incrementally and grow with successful previous encounters at coordination.

HYPOTHESES IN RESOURCE DEPENDENCE MODEL

1. The greater the resource dependence, the greater the frequency of inter-agency communications.
2. The greater the frequency of inter-agency communications, the greater the awareness of other agencies and the greater the consensus among parties.

HYPOTHESES IN SYSTEM CHANGE MODEL

3. The greater the frequency of inter-agency communications, the greater the awareness and commitment to environmental problems or opportunities.
4. The greater the commitment to environmental problems or opportunities, the greater the consensus among agencies.

HYPOTHESES ON EMERGENCE AND STRUCTURE OF INTER-AGENCY RELATIONSHIPS

5. The intensity of an IR is a function of resource dependence, awareness, issue commitment, and consensus.
6. There is a concave (∧shaped) relationship between domain similarity and the intensity of an IR.
7. The greater the number of agencies in an IR, the greater the formalization and centralization of the IR.
8. The greater the resource intensity of an IR, the greater the formalization and centralization of the IR.
9. The greater the perceived effectiveness of an IR at time 0, the greater the interdependence, and issue commitment among the agencies at time 1, over time periods 0, 1, 2, ... n.

FIGURE 2. Assumptions and Hypotheses about the Emergence and Functioning of Inter-Agency Relationships.

Source: Andrew H. Van de Ven (1976) On the Nature, Formation, and Maintenance of Relations among Organizations, Academy of Management Review, Vol. 1, No. 4.

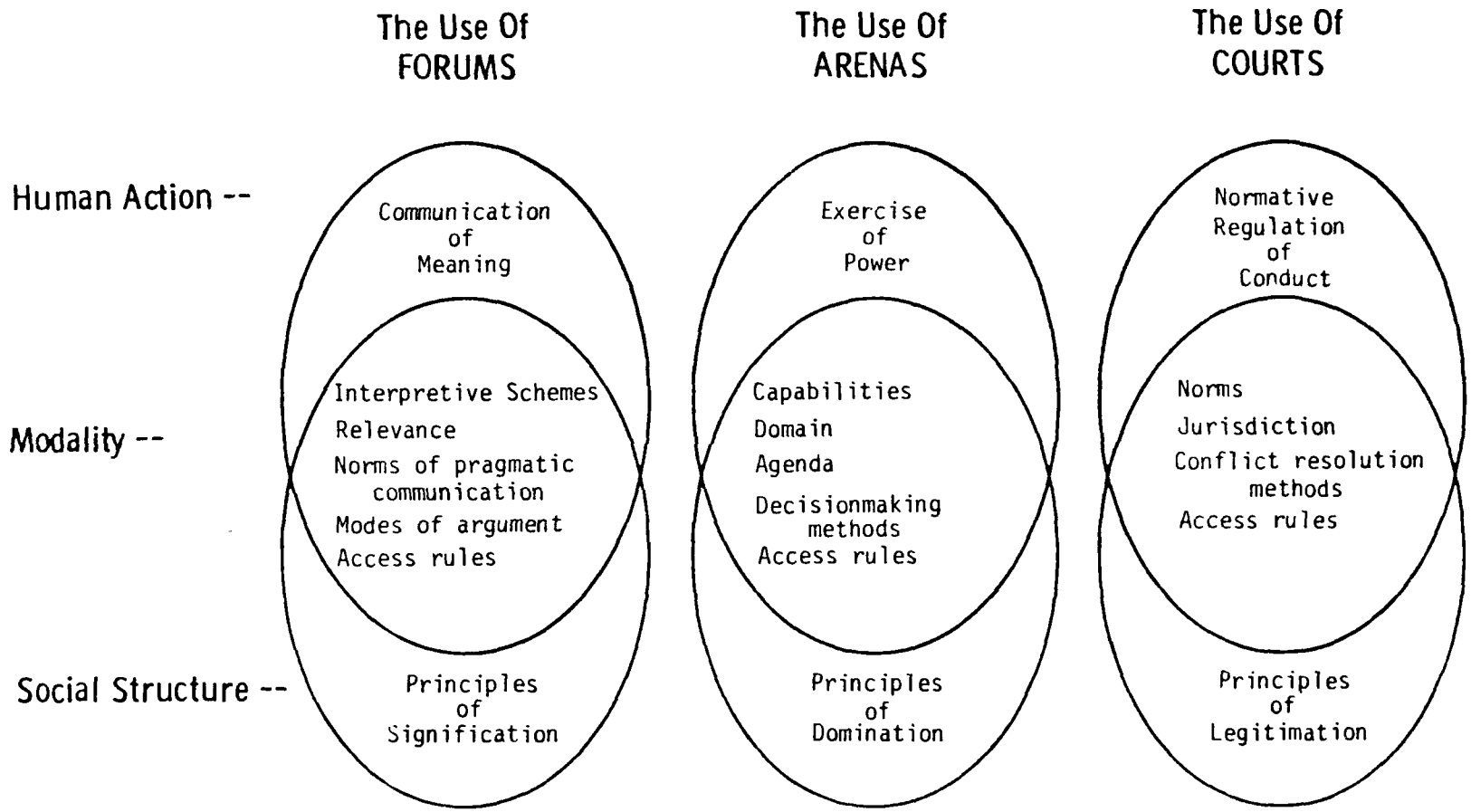


Figure 3. The Triple Three-Dimensional View of Power

Source: John M. Bryson (1984), The Role of Forums, Arenas and Courts in Organizational Design and Change, University of Minnesota, Strategic Management Research Center, Discussion Paper #6.

Public School Innovation Study

by Nancy Roberts, John Mauriel, Dan Gilbert, Barbara Edwards

THE INNOVATION

The innovation we are researching is a new participatory process that was developed in a school district seeking to enlist and include the key stakeholders in the district's environment for the purpose of building a constituency to support important changes in the school system. This new participatory process originally was employed to make major cuts in the district's budget during a period of retrenchment in the the State's economy.

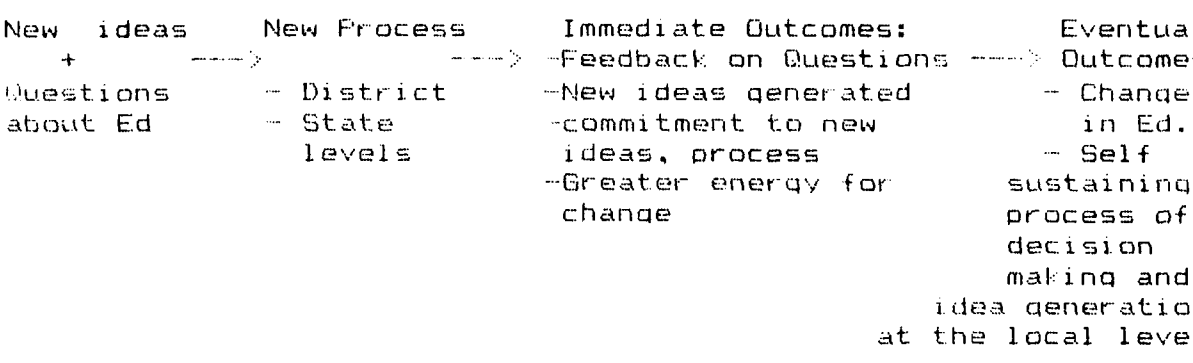
The process is new in its scope, its design, and its intensity. Its scope is wide in that multiple stakeholders in the school district's environment, who previously had not been included, were brought into the budget reduction process. Parents, community members, teachers, and students were given active roles in this process. The process was designed to facilitate large numbers of people, to incorporate their suggestions in the formal decision making apparatus of the district, and to encourage their future involvement in the schools. The intensity of the process was also notable. The level of participation was unusually high for district. Over 2,000 community members came together for one meeting to give their suggestions on how the budget should be reduced. Teachers and administrators, who often had competing perspectives on the budget, joined forces to cooperate on making recommendations for the budget reduction process. The support for the superintendent was exceptionally high from all members of the educational community. This participatory model has been subsequently institutionalized at the individual school level, in 6 of the district's 15 schools, whereby the the principal shares a set of school-governance responsibilities with that school's stakeholder representatives.

This new participatory process is now being introduced at the state level by a Department of Education. The goal is to include as many citizens and key stakeholders in the state as possible for the purpose of building a constituency that will help define and support the necessary changes in education. To our knowledge, a participative process of this magnitude and scope has not been attempted in any other school district nor in any other state. We find this a truly unique and exciting innovation.

MODEL AND SOME KEY PROPOSITIONS

The model for educational change that is being used is a simple one, and yet, if sucessful, it will have profound effects on the

way educational policy is set, administered and implemented. The model is illustrated in the following figure.



Questions that have implications for educational policy along with some new ideas that need to be tested are submitted to those stakeholders who are participating in the process. Through this participative process, feedback on new ideas is given, new ideas are suggested for possible experimentation, commitment to the ideas and process is generated, and greater "energy" to support the overall change effort is galvanized. It is anticipated that the overall outcomes for this effort will be the creation of new policies and programs, and a self sustaining process for much action, which will change the structure and system of education.

We anticipate testing a number of propositions. The following will serve as examples:

1. The greater the stakeholder participation , the greater the number of new ideas generated.

2. The greater the stakeholder participation, the greater the commitment to new ideas.

3. The greater the stakeholder participation, the higher the stakeholder energy level for change.

4. The greater the stakeholder participation, the greater the stakeholder support for the superintendent/commissioner.

5. The greater the stakeholder participation, the greater the number of changes attempted.

6. The greater the stakeholder participation, the greater the physical resources commited to support program changes.

7. The less the district's physical resources, the greater the level and intensity of stakeholder participation required to precipitate changes.

RESEARCH DESIGN

1. Field study conducted in one school district for the purpose of describing, monitoring, and evaluating the new model for participation that was developed. Data collection relied on observation, scheduled interviews, and archival records.

2. Field study conducted with the Department of Education to assess how this model is being used, modified, and implemented within the Department. Data collection relies on observation, interviews and archival records.

3. Field study with school districts to determine their involvement with the new participatory model and their success with it. A sample of 6 innovative and 6 "noninnovative" school districts will be longitudinally studied using interviews, direct observation, and archival data collection techniques. Since districts respond differentially to innovations, and districts have different levels of resources which may affect their ability to participate, districts will be selected in terms of their "innovativeness" and their level of resources. A panel of experts will be used to make this selection.

IMPLICATIONS AND CONTRIBUTIONS OF THE STUDY

In the study of innovation, how something is accomplished may be just as important as what is accomplished. This study of a new participatory process in the public schools has implications not only for educational systems, but its has implications for other bureaucratic settings that struggle with inertia and opposition to innovations and change. While participation itself is not a new idea, the scope, the design, and the level of intenstiy that this model of participation provokes is indeed revolutionary. In bureaucratic systems with large, competing stakeholder groups, it is important to develop the mechanisms to integrate stakeholders' ideas rather than allow them to cancel one another and prevent any real change from occurring. While this participatory model initially was successful on the school district level, it remains to be seen whether it can be transferred to level of a State Department of Education.

FUNDING SOURCES

The initial district level research is being supported by the Bush Foundation and the Office of Naval Research. In order to pursue the study at the State Department of Education and the districts throughout the State which are involved with the new process, additional funding is being pursued with the State Department of Education, the Federal Department of Education, and private foundations.

HUMAN RESOURCES MANAGEMENT
INNOVATION PROJECT

By: Harold L. Angle, Charles C. Manz, John Guarino, Rosemarie Orehek

PROJECT DESCRIPTION: Rather than studying "an" innovation, per se, this research investigates the ways in which organizations can create and sustain conditions such that *widespread* innovation becomes a normal part of the employment exchange. Thus, the principal focus is on how organizations' human resource management programs, processes and systems can contribute toward establishment of a high-performance, high-innovation culture.

OVERVIEW OF THE RESEARCH: The proposed research addresses two general issues:

A. How can organizations create conditions that foster widespread "spontaneous, innovative behaviors" and high levels of performance among members? A primary concern underlying this issue is the establishment and institutionalization of spontaneous, innovative behaviors as "part of the deal" (i.e., *psychological contract*) between the organization and its members. Regarding both issues, we are interested in identifying everything the organization can do to create and sustain an innovative, high-performing culture. It is suggested that one viable way that organizations can accomplish this is through the application of such "substitutes" for bureaucratic controls as *organizational commitment* and *self-management*.

B. What are some of the self-mediated controls that presently exist in organizations, which could, if properly managed, contribute to organizational performance and innovation? Of concern here is the identification and institutionalization of organizational control mechanisms that *naturally* stimulate and motivate innovation and high performance in employees.

The research will study, systematically, three primary determinants of behavior in organizations: what new members bring to the organization; what happens to them as members; and what they do in their organizational roles (i.e., an employee's own actions sometimes have strong effects on subsequent motivation). As part of the project, we would like to follow the same employees over a sufficiently extended time period as to enable the discovery of cause-and-effect relationships among organizational practices, employee attitudes and employee performance.

Key concepts We anchor this research in a small set of concepts which will provide an overall framework to guide the formulation of research hypotheses, to wit:

1. Substitutes for bureaucratic controls: In the same sense that a number of "substitutes for leadership" have been suggested, By Steve Kerr and others, there are probably several

aspects of organizations, their members and their situations which can augment, substitute for, or otherwise render unnecessary, explicit externally-imposed controls

2. Self-management: One key category of substitutes for controls is the self-management processes which naturally stimulate and motivate employees. Related concepts include social learning, personal control, intrinsic motivation, and Deci's cognitive evaluation theory.

3. Commitment processes: Commitment can be another substitute for externally-imposed controls. In the literature, the term commitment has been confounded by being used in two senses (without any obvious insight on the part of the users that this is the case):

a. *commitment to future action*: this is the type of commitment that members of participative decision-making groups are said to have toward decisions in which they share "ownership."

b. *commitment to social systems*: this is what is ordinarily meant by the term "organizational commitment." It is a psychological attachment which may include identification of self with system, internalization of the system's cultural norms and values, loyalty, and a reluctance to leave the system.

We will consider both types of commitment in this study.

4. Psychological contract: This is the relatively implicit set of exchange agreements members form with their organizations. In particular, such implicit bargains may (or may not) include the expectation that members will perform spontaneous, innovative behaviors in their organizational roles. Related concepts include self-fulfilling prophecies or the so-called Pygmalion effect, zones of indifference, and the norm of reciprocity.

5. Organizational socialization: this term describes the process by which organizations impart their norms and values and by which individuals "learn the ropes." While it recurs throughout the organizational career, it is most crucial around the time the individual first becomes a member. Related concepts include social influence processes, conformity and deviance, and modeling.

Specific research questions We can anticipate a number of research questions which would be appropriate, within the overall framework laid out above. A few examples are:

a. How can *psychological contracts* be established so that organization members: (1) consider spontaneous/innovative behaviors to be a legitimate part of their jobs, and (2) believe that the organization truly values their innovative contributions?

b. How and why do members become committed to their organizations? How can organizations stimulate the process? Should organizations do so?

c. How many meaningfully different types of commitment are there? How can we sort them out empirically? Are their underlying causes different? What different impacts on individual performance and organizational effectiveness do they exert?

d. What is the relationship between organizational commitment and innovation? Does commitment foster innovation, stifle it, or does it depend on the type of commitment?

e. What is the relationship between organizational commitment and self-management effectiveness? Is organizational commitment a necessary precondition to self-managed productivity and innovation? If not, what attitudes or predispositions can provide the basis for self-management?

f. How can self-management be stimulated and developed in organization members in a way that contributes to organizational performance and innovation?

g. What kind of control alternatives (i.e. non-bureaucratic controls) are available, which contribute to employee commitment, performance and innovation?

h. How can the balance between autonomy/self-management and structuring be optimized to maximize performance and innovation while minimizing role ambiguity and related stress?

i. What is the role of organizational career management and member development systems and practices in fostering widespread innovation?

These questions are representative, but by no means comprise an exhaustive set. Under the proper circumstances, we believe that this proposal can provide the framework for a very extensive research program.

Research setting: Initially, three organizations are participating in the research:

The first is a Fortune 500 company engaged in manufacturing in a wide variety of sectors including chemical, electronics and medical products. The company has earned a reputation as one of the best-managed and most innovative in the world and, accordingly, should serve as an ideal laboratory for the project.

The second company is also a Fortune 500 organization; one whose principal role is the development of chemical specialty products, systems and services. This organization is particularly interesting in the context of the present research because the Senior Vice President for Human Resources has undertaken to revitalize the organization's culture as follows:

1) Creation of strong subcultures within a divisional form of organization.

2) Minimization of interdependence or the need to integrate activities among the subunits.

3) Keeping the overall culture-driven principles (i.e., the "glue" which holds the many subcultures together) down to as few as feasible

4) Establishing a career-development system which provides organizational resources to individual career managers, but places the responsibility for action on individuals.

5) Recognition of the principle of self-interest in employee-organization relationships; i.e. avoiding the creation of "golden handcuffs" forms of organizational commitment, and encouraging employees to leave when it is their best interests.

6) Adherence to the principle of "control by letting go."

The third company is a large insurance brokerage, specializing in corporate insurance and financial planning. The Chief Operating Officer and Acting President of this organization has been our principal contact up to the present time. He has been instrumental in an ongoing reorganization of the company in response to what he perceives to be irreversible changes in the insurance industry. This reorganization may have far-reaching impacts on the human system in this company, and will provide an interesting contrast to the other two organizations participating in the research.

Conduct of the research There will be four phases to the project; an exploratory phase, a case-study phase, a longitudinal phase and an expanded phase (the longitudinal and expanded phases co-occur; i.e., the expanded phase will take place during the early part of the longitudinal effort). All except the "expanded" phase will be restricted to the three organizations noted above.

1. Exploratory phase: Structured interviews with key informants will help us clarify and define the scope and depth of the project. In addition, archival information and other documents will be used to help us refine our "picture" of the organization. One critical goal in this phase will be to try to identify any specific HRM innovations which can be studied over time.

2. Case-study phase: An expansion of interviews both within the organization and with other stakeholders, possibly augmented by surveys, will enable us to complete a static case study of each participating organization, and to begin longitudinal case studies of specific innovations in HRM.

3. Longitudinal phase: In this phase we will track specific innovations, over time, within the overall framework of the ONR-sponsored innovations project.

4. Expansion phase: Here we will test the ecological validity of our case-study findings by large-sample survey methods applied to a diverse set of organizations.

Project status The project is in the incipient stage in all three organizations. Initial interviews have been conducted with our principal contacts and preliminary documentation has been gathered on the three organizations. During April, 1984, we are conducting structured interviews with an expanded set of organization members.

SIGNIFICANCE OF THE RESEARCH: As suggested several years ago by Daniel Katz, organizations must motivate their members to: (1) *join and stay*, (2) perform their *assigned roles* (i.e., job descriptions) reliably, and (3) perform certain *spontaneous/ innovative behaviors* which go beyond the "letter" of their exchange relationship with their employer. As one proceeds from the first, toward the third motivational requirement, the problem becomes increasingly difficult for organizations. Nonetheless, current changes in organizations and their environments are making "motivation of the third kind" increasingly crucial, as we enter what has been termed the "postindustrial age." This research will improve our understanding of how organizations can manage this motivational requirement.

THE DEVELOPMENT OF VERTICALLY INTEGRATED HEALTH CARE SYSTEMS BY COMMUNITY NOT-FOR-PROFIT HOSPITALS: A STUDY OF INNOVATION

John Kralewski, Bright Dornblaser, and Chris Potter

This project focuses on the development of local and regional health care systems by community not-for-profit hospitals. During the past ten years there has been a pronounced consolidation of hospitals through the development of national systems with centralized ownership and/or management. Recently, however, a group of large metropolitan hospitals formed a national corporation designed to provide systems advantages to member institutions while maintaining local ownership and control. This cooperative (a for-profit corporation) was named Voluntary Hospitals of America (VHA). It is now three years old and has 50 members. Recently, VHA initiated a program to establish local vertically integrated systems around each of their member hospitals and then integrate those subsystems horizontally through the national corporate VHA office.

This study will focus on the development of these local systems. As such it will not deal as much with questions surrounding the etiology of the idea for the development of the subsystems as it will the life cycle of the idea over time. Specifically, we propose to study the following.

1. The development of the "local systems" idea by the VHA corporate office including the key actors in the formation of the idea, supportive groups, the role of consultants, and the role of the board of governors.

2. The testing and adoption phase of the idea including the selection of a hospital for testing the strategy, the problems encountered by that hospital, and the factors causing VHA to judge the idea to be good and worthy of implementation throughout the system.

3. The diffusion of this innovative strategy throughout the VHA system. This will include six case studies of the hospitals that have adopted the strategy and implemented the plan in their local areas. Factors leading to

the adoption of the idea in each hospital will be studied including the key actors, supportive groups, and those opposing the plan. We will also study the pattern of diffusion throughout the VHA system and will identify organizational factors enhancing and inhibiting this innovative idea in the member hospitals. In other words, we will attempt to answer the question "what contributes to the acceptance or rejection of this strategy at the local hospital level?"

4. The organizational arrangements among local hospitals which facilitate and inhibit implementation of the "systems" strategy and how those factors affect each stage of the systems life cycle.

5. The roles of environmental conditions, organizational structures, the governing board, administrative staff, medical staff, and department heads in facilitating or inhibiting the adoption and implementation of the system by the local member hospital.

The study will include seven sites: The VHA corporate office and six local hospitals. The hospitals will be chosen in the order in which they adopted the local systems strategy (as an alternate approach we could study three hospitals that adopted the strategy and three that did not).

This study is unique in that it will focus on highly professionalized organizations where management controls only a small part of the production process. The medical staff in these hospitals largely control the patient care process. As such, they dominate the decision making process including the allocation of resources, even though they function as independent practitioners and are not accountable to the hospital organization. Hospital administrators, therefore, must not only deal with the hospital organization in terms of developing and implementing innovations but they also must deal with the powerful medical staff organization. How this is accomplished will be a major focus on this study.

A second unique aspect of this study is that in addition to the parent hospital, several other local hospitals will be included in these "systems" initiatives. Thus, the parent hospital must deal with multiple hospital and medical staff organizations in order to establish the system.

This study will contribute to the field at several levels. As health care costs escalate, there is increased pressure on the field to improve the effectiveness and efficiency of provider organizations through scale. The nature of these organizations and especially the relationships between the hospitals and their medical staffs often make it extremely difficult to achieve those ends. This study will identify factors contributing to the success or failure of efforts to develop and manage innovative systems and as such will better equip those in leadership positions to achieve those ends. The study will also contribute to the generalized body of knowledge regarding the development and diffusion of innovation in large scale organizations and will help further elaborate a set of theories underlying innovation.

Proposed Model

As has been stated we will attempt to answer the question "What contributes to the acceptance or rejection of this strategy at the local hospital level?" We start with several assumptions, the validity of which we will be testing.

The first of these is that innovation usually means change and disruption, and ceteris p ribus, the greater the change the greater the resistance will be by organizational members (this can be readily explained and illustrated from the literature).* Innovation will be a product of forces between those supporting it, and those antagonistic to it (this is the model behind Lewin's force field analysis).

It is further assumed that the resolution of the conflict will depend on the following factors:

Formal Authority (FA)
- The authority of the proponents to force through changes (FA1), and
- The authority of opponents to block change or force through alternative proposals (FA2).

Informal Power (IP)
- The ability of the proponents (IP1) and opponents (IP2) to mobilize positive or negative sentiments among key constituencies (community, work force, or others to be identified).

Negotiation (N)
- The resources and options available to proponents to negotiate changes (N1), and to opponents to negotiate alternatives. (N2)

Contingency (C)
- Events in the organization's social or technological system, or in the environment, conducive or otherwise to change (C_{soc}, C_{tech} and C_{enviro})

*In this section it is assumed only one organization is involved. The same model applies to system building between organizations.

Quality of Innovation (QI) - The extent to which all parties recognize the inherent soundness of the proposal (although for other reasons it may not be acceptable). This will involve expected payoff, cost of implementation, and technical feasibility.

Innovativeness of staff (I) The likely innovativeness of the organization's staff based on demographic and professional characteristics.

Successful innovation is therefore seen in terms of (i) environmental factors, (ii) social factors deriving both from proponents and opponents, (iii) technological restrictions within the system, (iv) resource availability, and (v) factors relating to the innovation itself. We can express it in general terms as follows:

$$\text{Innovation} = f\ FA1 + IP1 + N1 + C + QI + I - FA2 - IP2 - N2$$

The higher factors FA1, IP1, N1, C, QI and I, the more likely it is that innovation will occur. The higher factors FA2, IP2 and N2 the less likely it is that innovation will occur.

Although measures of these factors could be generated, the model is not intended to introduce a rigorous approach which may be premature. It would be very difficult, for example, to weight the factors without data collection.

At this stage it is intended as a guide to data collection. The researchers will need to identify key dates and incidents when the proposed innovations were proposed (by whom, to whom and what other salient events may have occurred directly before or after). They will need to trace reactions and discussions, and to identify how the various constituencies heard about the proposals; how their views developed, for or against; how they were challenged or how their views were modified. The proposals themselves need to be considered,

as well as any modifications that were introduced before implementation. They will need to identify issues in the industry and local community which will have had a bearing on the proposals made . They will need to assess the actors involved, and the organizational features, social and technological, which may have facilitated or hindered implementation.

In order to obtain such information, much of which will be hist oric and subject to considerable unintentional distortion and necessarily subjective interpretation, will be extremely difficult and time consuming. It will entail access to written records of meetings, files, and any information distributed at the time. This will have to be expanded and cross-checked, by semi-structured interviews with all the key proponents and opponents involved including any no longer active in the system.

We will be attempting to analize:

(i) How innovations were presented, modified, aborted or implemented,

(ii) If there are similarities in the critical factors causing abortion or implementation,

(iii) If weighting can be ascribed to our factors identified above,

(iv) If there are critical events in the process of implementation which cause abortion,

(v) If there are identifable strategies used by proponents which help to mitigate factors which would predict lack of success.

Assumptions Behind Model

1. Organizations and systems are pluralistic, this implies
   - (i) There will not always be total consensus
   - (ii) Structures and processes are negotiated to some extent
   - (iii) There is a tendency to stasis
2. Organizations and systems need to create a structure and processes which accommodate both technological and social imperatives. Innovations threaten the balance achieved.
3. Organizations and systems are not closed. They must interact with the environment in order to ensure legitimacy, financing, staff, supplies, ideas and clients. The environment is a major influence on internal decision making, indirectly and directly. In some circumstances the environment can overpower any internal activity.
4. Resources are finite, so any significant decision will involve costs, including opportunity costs, for some or all organizational members.
5. If someone supports a change there will be some direct or indirect benefit to them, and vice versa. Where resistance is ideologically based the benefit/cost may not be obvious.
6. Individuals and groups tend to resist things they do not understand or the effects of which they do not understand. The perception of a proposal varies between individuals. This is a function of clarity of message, medium used, and various filters influencing receptors
   - How was proposal presented?
   - Was it fully understood?
   - What affected perception?
     - Individual capability
     - Prejudice
     - Conflicting messages

7. Individuals and groups are able to influence others through a variety of formal and informal processes. There will be alliances and shifts of alliances within the organization or system, and spanning the organizational-environmental boundary. This will be a function of:

   - The distribution of authority
   - The distribution of resources
   - Changes in the costs and benefits perceived by parties
   - Personal qualities and techniques of interested parties in promoting their preferred options

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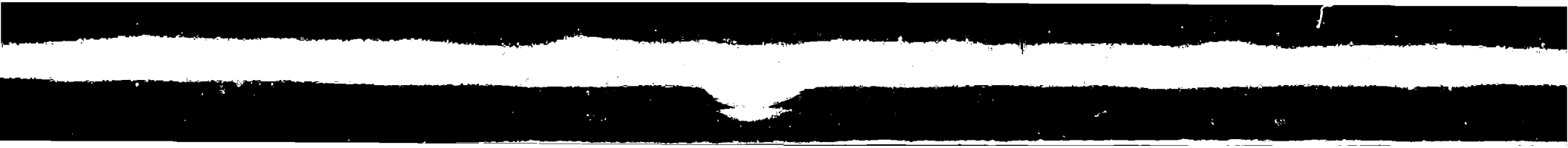

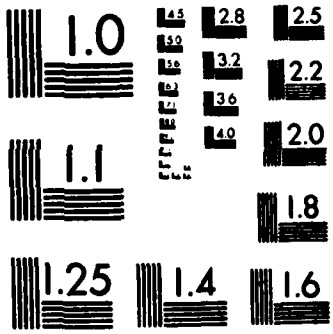

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