

C E



**Center for
Effective
Organizations**

**AN ORGANIZATIONAL LEARNING
FRAMEWORK FOR UNDERSTANDING
BUSINESS PROCESS REDESIGN:
A CASE STUDY FROM THE FINANCIAL
SERVICES INDUSTRY**

**CEO Publication
G 97-5 (317)**

**SUSAN ALBERS MOHRMAN
RAMKRISHNAN V. TENKASI
ALLAN M. MOHRMAN, JR.**

University of Southern California

March, 1997

An Organizational Learning Framework for Understanding Business Process Redesign:

A Case Study From the Financial Services Industry

ABSTRACT

In this paper we examine one company's experience with business process redesign coupled with the implementation of a new business strategy, advanced, networked information technology, and organizational design. The introduction of such multifaceted, large-scale organizational change is conceptualized as an organizational learning process. We studied four of the twelve regions of the company to determine what factors contributed to the successful implementation of the new organization. Qualitative and quantitative evidence suggest that the differential successes of the regions in implementing the redesign and the differential impact of the redesign on performance are related to the change implementation processes and on-going learning dynamics established in each unit. We examine the interconnections between business process redesign, design of information systems, and organization design and development and discuss implications.

The application of business process reengineering (BPR) by companies seeking to achieve breakthrough performance has skyrocketed. These companies face performance challenges that they deem not to be achievable given current ways of doing business. Driven by global competitive conditions, most business process reengineering aims to redesign and manage processes to contribute maximum value to the customer (Hammer and Champy, 1993). These redesign efforts generally entail the simultaneous design of the information systems of the company and its business processes to enable new computer-assisted ways of doing work and meeting the needs of the customer (Davenport, 1993). They also result in changing roles and in many cases in changes to the structure and managerial processes of the organization.

The first wave of business process reengineering is acknowledged even by the original proponents of the approach to have achieved disappointing results (Hammer & Champy, 1995; Hammer, 1996; Mullin, 1993). More than 70% of such efforts are reported by consultants heavily involved in their implementation to have failed to achieve their purposes (Bashein, Markus & Riley, 1994). Nevertheless, it is clear that companies are continuing to restructure and improve their work processes in order to achieve the levels of performance required to address competitive conditions, and that they will continue to introduce more advanced technology to enable more efficient and effective ways of meeting customer need. Even if BPR as a “movement” is a passing fad, its elements will continue as part of the creation of high performing organizations. It is thus imperative that we learn from companies’ experiences with business process reengineering and particular examples of business process redesign.

In this paper we examine the experiences of one organization with business process redesign that entailed the introduction of new information technology to support new ways of doing work. The organization simultaneously introduced a new business strategy, restructured its operations and corporate support units, and changed roles and positions. We analyze this company’s experience from an organizational learning perspective. We conceptualize the introduction of multi-faceted and large scale organizational change such as is being carried out by this company as an organizational learning process.

Before presenting the case study, we provide a short overview of various themes that appear in the literature to date that help frame our conceptualization of BPR. We will then provide a learning framework for understanding the change process that this organization is undergoing. In applying this framework to four units of this company, we will use a comparative case analysis to draw patterns that elucidate the close connection between the business process changes, the information systems aspects of the change, and the organizational design and process aspects. Our conclusion is that organizational purposes can be achieved only if the redesign process attends to all three aspects.

Business Process Reengineering: Promise and Pitfalls

Business Process Reengineering was touted as nothing short of the key to breakthrough performance. It is intended to be a new way of conceptualizing and enacting the organization. The “old” organization located work into functionally delineated units that do discipline driven pieces of the work of the organization, shaped by standards and methods of the discipline, and integrated through a hierarchy of managers. Various control and integration mechanisms were required because no one part of the “old” organization was able to see the big picture and make decisions that cut across the organization, and because many things fell through the cracks as work moved between different parts of the organization with narrowly defined domains of responsibility. Many parts of the organization had little visibility to the customer, and little concern or accountability for customer satisfaction.

The reengineered organization, on the other hand, is to be customer focused: it is organized around processes that consist of sets of activities that in their entirety deliver value to the customer. Standards and criteria have to do with value delivered to (and as perceived by) the customer. The organization is reconceptualized in terms of the key processes required to deliver value, which might include new product generation, order fulfillment, and cash generation, among others. These processes are inherently multi-functional, and the work processes of the organization are defined and optimized

across all the disciplines required to carry out the whole process. Early reports of the impact of reengineering included improvements of up to “100 times” in some performance dimensions (Davidson, 1993).

Why is it then that the majority of firms report that they do not achieve the intended results of BPR? A number of reasons have been offered. Perhaps the most frequently heard argument is that companies have strayed from the initial intent and philosophy of BPR. Embarking on it as a way to achieve breakthrough performance, top management focused on the cost cutting aspects, and the most immediate route to these was by cutting headcount. Thus, the exercise designed to change work processes to deliver greater value to customers often became in practice a downsizing effort---a view also shared by Champy, one of the original proponents of the approach (Mullin, 1993). Many commentators who make this point draw attention to the change process itself, and its precursors. A sample of leading BPR consultants studied by Bashein, Markus, and Riley (1994) faulted such factors as inadequate management understanding of and support for the reengineering project, unrealistic expectations for a quick pay-back, lack of a clear connection of BPR to business strategy, insufficient participation from relevant parties in the reengineering process, inadequate resources devoted to the project, and insufficient empowerment of and collaboration among the reengineering team. This scenario has reengineering failing in companies that have not implemented it in its essence. They have been unwilling to make a major commitment to changing the way work is done in the organization, and they have appropriated the tool to serve a more narrow and traditional set of objectives focusing primarily on cost cutting.

Another set of reasons come from literature examining why many large scale adoptions of new information technology have failed to achieve the benefits heralded by their advocates. In its fullest model, Business Process Reengineering occurs hand-in-glove with the implementation of new technology; especially information technology (IT). Processes are redesigned to take advantage of such technology in order to create highly efficient and effective work processes that deliver value to customers. Thus, BPR can be expected to encounter the same barriers as the implementation of large scale IT projects.

One argument of current observers of IT implementation is that such projects often do not achieve their intended benefits because they are designed centrally by a staff group that fails to understand the business and its work processes, and fails to involve the workers who have the best knowledge of what is required to actually do the work and other stakeholders who are impacted by the introduction of the new technology (Beath & Orlikowski, 1994; Mankin, Cohen & Bikson, 1996). In addition to the obvious problems of acceptance that may result from such faulty implementation, the project may also suffer from the failure to adequately analyze the system and its inputs, throughput and outputs, leading to IT systems that do not support effective work processes. In addition, failure to link in senior management may mean that the development of the new system is not tied to the strategic direction of the organization and a vision of the future (Thach & Woodman, 1994). This argument again posits that it is the process through which the new system is designed and implemented that has gone wrong.

A more penetrating argument is that the implementation of new technology fails to achieve its intended ends because managers fail to understand or accept the extent of change in the organization and its management processes required to take advantage of the benefits inherent in the technology (Thach & Woodman, 1994; Baskerville & Smithson, 1995). The potential benefits of new IT capabilities lie in the ability of the organization to take advantage of the connectivity that is created. Individuals and units throughout the organization are more connected to greatly increased information and expert tools, including on-line, real-time performance information and trend data and analysis capabilities. Different parts of the organization are more connected to each other and to customers and suppliers outside the organization. Because of this, it is possible for informed, expert decisions to be made by those closest to the customer; and it is possible for parts of the organization to coordinate directly without going through a management hierarchy. Units often have direct, automatic feedback and can regulate their own activities. Speed is attained because approval and coordination steps are eliminated. Costs are saved because the overhead associated with approval and coordination is reduced. These benefits of IT are completely congruent with the vision of BPR that processes will be managed across disciplines, with

quick responsiveness to and flexibility in meeting the needs of customers. However, just as the vision of BPR can be attenuated because implementation reduces it to one of creating cost savings by process simplification that enables downsizing, so the benefits of IT can be attenuated by implementing IT in a way that focuses primarily on the automation of highly controlled processes. Such an implementation does not take advantage of the capacity of IT to “informate”—to provide increased information and enable the application of judgment, problem-solving, and discretion in meeting the needs of customers (Zuboff, 1988). Many organizations do not recognize the need to introduce a new management philosophy that supports moving decisions down to the performing units, strongly reducing the day-to-day control function of management, and greatly altering the roles of managers and staff groups. This shift in power is often not accepted by those who stand to lose power, which may result in a sub-optimal system design or in an implementation that fails to transfer the power necessary to accrue benefits (Beath & Orlikowski, 1994; Baskerville & Smithson, 1995; Hull, Collins & Liker, 1996; Barry, 1989).

This line of thinking goes further. It points out that this transfer of power and transition from a vertically oriented to a laterally networked organization implies significant change in the design of the organization. Changes in the organization’s structure, the systems it uses to measure and provide feedback, and its human resource practices are necessary to support a new way of operating that takes advantage of the new IT capability (Thach & Woodman, 1994; Davidson & Davis, 1992). Furthermore, norms and culture supporting cross functional interaction need to be developed (Adler, 1989; Hull, Collins & Liker, 1996). Thus, from this perspective IT-facilitated BPR entails the redesign of the organization, not simply introducing process champions and a new technology that enables greater connectivity.

A final argument for why IT implementations often fail to achieve their promise is that organizational learning is not achieved. This argument takes two forms. First, information technologies offer great potential as learning tools, because of their ability to store and make accessible past organizational learning, to enable complex analyses that yield deeper system understanding, and to link together disparate points of view and knowledge bases (Boland, Tenkasi & Te’eni, 1994; Boland &

Tenkasi, 1995; Tenkasi & Boland, 1996). Second, the implementation of information technology offers an opportunity for learning about the organizational system and also about the process of technology implementation and what is required for it to help the organization achieve its objectives. Henderson and Lentz (1996) argue that if information technology implementation is to result in organizational learning, learning has to be built into the routines of the organization. Regular surfacing of learning and sharing of lessons learned have to become part of the ongoing activities of the organization. With regards to technology implementation, each implementation should itself be approached as a learning opportunity, complete with regular reviews and assessment, iterations and local experimentation, and dissemination of learning.

Orlikowski (1996), for example, examined the implementation and use of new information technology within one organization over a two year period. She found that the process entailed a significant amount of learning as organizational actors gradually appropriated the new technology into their work practices. They experimented with local innovations, responded to unanticipated breakdowns and contingencies, and initiated shifts in structure and coordination mechanisms. Further, they came up with new procedures, norms and understandings surrounding their evolving use of the technology. The major implication of the study was that accommodating to a new organizational practice such as technology involves a tremendous amount of situated learning as people improvise, innovate, and adjust their work routines over time.

A similar argument has been made by Mankin, Cohen and Bikson (1996) who propose an action learning approach to technology implementation. In part this is because of the complexity and uncertainty of large-scale technology implementation. In addition, it is because the successful implementation of technology requires changes to almost all aspects of the organization. This argument is not limited to large scale technology implementation. We have argued elsewhere (Tenkasi, Mohrman & Mohrman, in press) that large-scale, multi-system organizational transitions are best understood as organizational

learning processes. In this sense, the failure of BPR can be interpreted as a failure in organizational learning. In the next section, we present a model of BPR as a learning process.

Business Process Reengineering as Organizational Learning

In the past two decades there has been extensive literature on organizational learning (Argyris & Schon, 1978; Levitt & March, 1988; Fiol & Lyles, 1985; Senge, 1990) and the learning organization (McGill, Slocum & Lei, 1993; Ulrich, Von Glinow & Jick, 1993). Early conceptions of organizational learning tended to equate it with individual theories of learning (Kolb, 1983; Argyris & Schon, 1978). The next stage concerned how groups learn as exemplified by the notion of ‘communities-of- practice’ (Lave & Wenger, 1988). Senge (1990), evolved the state of the field by describing a generic set of competencies that symbolize learning organizations. Recently, there has been an interest in elevating the level of analysis toward examining the processes by which collective learning takes place in organizations. Further, there has been a realization that such understanding can be best achieved by observing organizations as they go about changing the way they do things (Weick, 1991; Simon, 1991). For example, Weick (1991) has made a call for replacing traditional definitions of organizational learning with one that is tied more closely to properties of organizations such as organizational change, a situation that entails tremendous amounts of collective learning. Simon (1991) is more specific in his suggestion that the most appropriate setting to understand organizational learning is when the organization is faced with a totally new situation, “and must acquire a new problem representation to deal with it” (p.132). Change in representation implies very fundamental change in organizational knowledge and skills, behaviors, role systems, and structures to perform better in the new situation.

We define organizational learning as the processes by which an organization changes the way it functions to attain new and higher levels of performance. It is a collective process, not residing solely in the heads of individuals, but manifest in the patterns of activities and interactions that take place in the organization as it carries out its work and achieves new performances. Furthermore, since learning is a

process, organizational learning occurs over time, as the organization tries out new approaches such as Business Process Reengineering and learns to use them effectively. Figure 1 shows the model the we use to depict the organizational learning process that constitutes large-scale transition as exemplified by BPR.

---INSERT FIGURE 1 ABOUT HERE---

The introduction of Business Process Reengineering is generally accomplished by setting up a design team that analyzes the organization's current processes, is guided by the organization's strategic direction, and reconceptualizes the processes of the organization in a manner intended to deliver maximum value to the customer consistent with the strategic directions. In so doing, the design team may go through learning processes to give it the tools and understandings for the redesign process. A complete redesign includes the generation of a new process depiction, the information systems to support it, and the organization design to house it. All these would be couched within the context of the strategy and vision of the organization. In practice, as noted above, many organizations give short shrift to the organization design, although changes to the structure and systems of the organization are key elements of the success of BPR and new IT.

Having generated a new design, organizations then turn to the business of "rolling it out". We argue that it is in this stage that true organizational learning occurs, for it is here that the knowledge generated by the design team becomes embodied in changed patterns of organizational behavior. Prior to the roll-out the new knowledge exists as design plans and blueprints. Further, we argue that whether learning occurs will depend on the change implementation and learning processes that are established organization-wide and in each of the adopting units. Thus, learning occurs globally as multiple units are exposed to new knowledge, and locally as units begin to use the new processes and tools to operate within the new structure and generate their own local understandings of and fixes to the new designs (Orlikowski, 1996).

Business process reengineering (and most large-scale changes) aim at changes in three highly interrelated aspects of the organizational system: the technical architecture (the methods and tools used to do work), the social architecture (the behaviors and interactions that characterize the organizational system), and the market architecture (the way the organization interfaces with its customers and relates to its environment). The driving force is generally the market: the express purpose is to deliver higher value to the customer, in a way that yields higher levels of competitiveness and financial return. Socially, the objective is to tear down the boundaries in the organization, and to encourage collaboration, integration, and collective focus on the key work processes and the mission of the organization. Technically, a key objective is to use information technology to facilitate smooth, responsive work processes that enable speed and high quality in meeting the needs of the customer, provide a foundation for integrating all the steps of the process, and for eliminating steps that do not add value.

Were this a simple mechanical process, the BPR blueprint could simply be rolled out, individuals and groups educated about the new approaches and trained in the new techniques, and the proof of the viability of the concept would rest on the technical performance of the system alone. However, as argued in the preceding section, the application of these approaches implies fundamental changes in the design of the organization, the distribution of power in the organization, and in the behavior patterns of the people within it. In fact, BPR often starts with new premises about the purpose of the organization (e.g. that it exists to add value to the customer) and its operating principles (e.g. that those closest to the customer should have the information, tools and authority to make the decisions required to meet the needs of the customer). Achieving change of this magnitude is thus an iterative process; one where organizations, by trying to apply new approaches, learn what those approaches mean, and how to carry them out successfully (Mohrman & Cummings, 1989).

Further, Business Process Reengineering often introduces company-wide change that impacts many organizational units. Our experience studying the implementation of other large scale changes has shown that within the same company, the implementation of the same general change takes quite

different forms in different units, and that these units vary in their ability to implement the change with veracity and to achieve the desired performance outcomes (Mohrman, Cohen & Mohrman, 1995; Orlikowski, 1996). This means that local learning processes are critical in determining whether BPR is successfully implemented

Since organizations are purposive, the ultimate evidence that an organization has learned lies in its ability to perform in intended new ways and achieve the new levels of performance that promote success in its environment. However, because of the nature of the change that constitutes BPR, other manifestations of organizational learning are critical. These are changes in people's cognitive understanding of the organization and how it functions (Duncan & Weiss, 1979), changes in the patterns of behavior within the organization (Daft & Weick, 1984), and changes in the design of the organization--its structures and systems (Simon, 1976; Jelinek, 1979). Each of the organization's architectures---technical, social, and market are made up of cognitions, behaviors and structures. Furthermore, it is through the ongoing enhancement of these elements as the organization develops a deeper understanding of its new approaches and generates knowledge that allows ongoing improvement of its approaches that performance improvement continues through time.

Given this relatively new research agenda, to understand organizational learning in the context of organizational change (Weick, 1991) and to understand the development of new problem understandings, behaviors and structural responses when the organization is faced with a new situation (Simon, 1991) our approach was primarily exploratory in nature. The general expectations guiding our examination of the BPR transition in our case example, therefore, is that the implementation of reengineered processes will result in performance improvement to the extent that there are changes in the cognitions, behaviors and designs of the organizational units in the social, technical and market architectures. We expect further that such changes will be facilitated by the implementation and learning processes in the organization and that local ongoing learning processes established in each unit of change will be critical in determining whether BPR is successfully implemented.

In the next section, we present an overview of the case which we will use to examine these general expectations.

The Setting

The financial services organization described in this paper is one organization in a multi-company study of organizational learning during large-scale transitions. The study is still in progress, although data collection from this company is complete. Data was collected from the company at two points in time, in April 1995, approximately 8 months after the initial implementation of the reengineered organization, and in September, 1996.

This financial services organization, is one company in a larger corporation that offers a variety of financial products and services. Its BPR occurred in the context of a larger corporate change oriented to separating lines of business more fully and establishing each as a self-contained business with the strategic leeway to optimize in its own market. Previously, multiple lines of business had been conducted by large functional units. All lines of business were subject to a common organizational strategy and it was difficult to hold them individually accountable for their performance. Although financially quite successful, the corporation feared it would lose business in a highly competitive and slowly growing market if it did not have the capacity to more fully gear its activities to profitably meet the needs of customers of different kinds of products in different geographic sub-markets. The company we studied existed in a particularly turbulent market, where new entrants, consolidated local competitors and established companies were vying in a very slowly growing marketplace, and prices were eroding.

Within this overall change in strategic direction of the corporation, this company carried out a textbook BPR process. A cross-sectional design team with high level participation and support was dedicated full-time for 12 months. It included a number of field people who were the ones “doing the work” as well as members of various staff groups all of whose work would change as a result of the

activity. The process yielded the design for a new IT-facilitated set of work processes for selling and servicing financial products. The three purposes of the reengineering were to create a closer and more responsive relationship to customers, to create more efficient processes and a reduced cost structure, and to permit the region to focus on profitability of its business.

The new work design consisted of a new technology and a new way of organizing to carry out the work processes. The technology consisted of a set of PC and network based tools to facilitate complete account management. It included features for automatic calculation and rating of accounts, gathering information on customer questions, and tracking customer commitments. It took steps out of the process and automated many steps that previously were performed manually by individuals with several different jobs. It provided ongoing real-time performance data, and carried templates such as form letters for clients. It also connected each office to all data from other offices and to supplemental work forms and processes being developed by other offices. The new IT system was to be introduced in a multi-step process. The system included a help line, where questions generated from anyone in the organization were answered by the appropriate party and both questions and answers were available to anyone in the company. People were also encouraged to put their learnings into the system so that others could learn too .

The new work design called for multi-skilled people (reducing the number of job classifications from 12 to 3), and placing them in teams that were collectively accountable for business processes and performance in a particular geographical area. Increased decision-making and some selling responsibility was to be placed in the technician roles that combined the processing tasks that used to be carried out by multiple specialists. The account manager role was responsible for selling, for some processing tasks that were previously performed by technicians, and for marketing. Collectively, the team members were accountable for growth, quality, cost of service, customer satisfaction and financial return. Financial return was a function not only of how much business was contracted, and of the cost of contracting it, but also of the quality of that business. It was the overall measure of business success, and the teams in it

were asked to focus on it. They were also held accountable for other measures such as growth, efficiency, and customer satisfaction

The organizational design was also changed. Several teams were combined into a region. Each region was measured as a business and, within the constraints of common processes and a high level company strategy, was encouraged to adopt a local strategy to build the business. Each region had a general manager responsible for overall operations and strategy development, and for the first time a financial officer was placed regionally to provide financial analysis support to the local teams and general manager. Up until that time, all strategy formulation and financial analysis had occurred in a corporate functional group. Several layers of management were eliminated, leaving each region with a general manager, the teams, and the team leaders, who were working members of the teams. Rewards were determined by financial performance of the region and by the performance of each team along a number of targeted dimensions such as productivity and customer satisfaction.

The relationship of the regions to the company headquarters was also changed. Company staff support groups were reduced in size and reoriented from strong auditing and controlling roles to a role of supporting the business units. The idea was to treat each region as an autonomous business unit, operating within broad corporate strategy and business goals.

Thus, the “blueprint” for change that was generated by the process reengineering team was quite comprehensive, and included changes in structure, role, authority, purpose, and relationships with customers, as well as changes in the work processes and technology. The blueprint did not entail any downsizing of the company. Some headquarters staff were let go when the larger corporation created the company as a separate line of business. This was before the beginning of the BPR planning process.

The implementation was also, in many ways, a complete and thorough job. Throughout the redesign process, individuals in the company were kept up-to-date with the work that was being done so

that the results would not come as a surprise. The finished product was communicated through videos, literature, and the President of the company visiting each of the regional offices to brief people about the changes. Each team attended a 10 day training class at headquarters in which they were given basic instruction in the use and capabilities of the new system and in the new roles and work processes. Some minimal team development exercises were included, but the main team development stemmed from the team being together and learning the new systems and roles together. In addition, cross-training to facilitate the multi-skilling and the combination of jobs was begun, with the remainder to occur on the job. In order to promote some consistency and learning across the company, the regional general managers met regularly and were updated about the implementation. They had a chance to influence how the implementation proceeded and to initiate mid-course corrections. Additionally, they explored their role as a leadership group and as individual leaders in the redesigned company, and their new relationships with the staff support functions.

During the 18 months between the two waves of data collection, the company conducted team leader training to help those individuals better define their roles, and to give them tools for developing their teams. In addition, three more days of team training was provided to the teams. Phase two of the new information systems was introduced several months prior to our second wave of data collection. It included better document management capabilities, such as a planning diary and an electronic checklist. It included some additional tools and enhanced features, and provided a more fully integrated set of data bases. The training that accompanied this phase was minimal, accomplished primarily by having trainers visit each office to demonstrate and provide overview training for the new functionalities of the system. Much documentation and computer-based help systems were provided, and each region was encouraged to have different individuals become expert in various aspects of the system and serve as consultants to each other.

The reengineering was very successful in helping the organization move toward desired ends. For example, for the period 1994 to 1996 the company saw an overall growth rate of 58% and 12%

respectively on two key performance metrics, one which was an effectiveness measure and the other an efficiency measure. Customer satisfaction data showed that the percentage of people who were satisfied or very satisfied with services of the organization had also increased significantly. Our interviews in September 1996 also indicated that people felt that the reengineered organization was helping them get their work done faster, better, and more efficiently. In 1995, 8 out of the 12 regions had achieved eligibility for performance payouts.

Figure 2 summarizes the parameters of organizational strategy, the reengineering plan, and the company-wide implementation activities that kicked off the local implementation and learning processes. The next section overviews the methodology we used to examine the factors that determined whether and how various regions in the company learned to work effectively in the new design.

---INSERT FIGURE 2 ABOUT HERE---

Methodology

Our purpose was to determine what factors contributed to or were barriers to the successful implementation of the new organization. We studied four of the twelve regions of the company, chosen to represent geographic, size, and market variation. This permitted us to use a comparative case methodology to understand differences and similarities among the regions.

Data Collection

Data were gathered at two points in time using three methodologies:

1. Surveys were administered to all members of the four regions to get region-wide readings of how the change was being experienced, and the change and learning processes in their region. The scales in these surveys were based on a review of the organizational learning and change literature, and represented a set of dimensions of learning that were abstracted from the literature. A longer version of these scales was used in the first wave of data gathering; the current scales reflect a refinement based on psychometric analyses of the first wave of data. The scales titles and a short explanation are provided below, with references to some of the literature that indicated that these constructs would be useful indicators of organizational learning. Appendix A contains the items for the scales and their reliability coefficients.

Three scales are based on the specific elements of redesign listed in interviews by members of the cross-sectional team tasked with the design and implementation of the reengineering. The 3 scales, *Corporate Design Elements*; *Business Unit Design Elements*, and *Work design Elements* were consistent with the reengineering strategy of creating autonomous regional companies responsible for strategy and products, who were independent business units managing costs and profits, and achieved through a redesign of work processes that involved teams, multiskilling and computer tools. All three dimensions of design were created to enable each region to optimize its own market and the customer interface.

Since this study focuses on examining learning issues entailed in fundamental organizational transformations that are distinct from incremental changes, we needed a measure of fundamentality of change. Starting with the theoretical framework of Romanelli and Tushman (1994) and their measures (strategy, structure and power changes) for characterizing fundamental organizational transformations, we developed three *Fundamentality of change* scales to assess how fundamental was the felt impact of the reengineering changes on core organizational domains and activities. Our scales of *Market*, *Technical* and *Power Fundamentality* assessed how profoundly these three core organizational domains were impacted by the transition.

Information systems are an integral part of most fundamental organizational transitions today (Lucas, 1999) and particularly the case with reengineering approaches (Davenport, 1993). The *Computer tools* scale was developed to capture the quality of information systems and perceptions of how 'enabling' were they in getting work done (Zuboff, 1988).

The change implementation scales were created to assess differences in strategies of change implementation. The *Change Clarity* and *Capability for Change* scales are consistent with the work of Beckhard and Harris (1977) and Tichy (1983) on managing organizational transitions. Respectively, they refer to the degree to which the nature of changes are clearly articulated and the degree to which people see themselves and their group as having the capabilities needed in the changed organization. *Change Leadership* has been identified as a key determinant of successful organizational transformation by scholars such as Pettigrew (1987). Scales that measure the openness to influence of the change process by those impacted by the changes and the degree to which people are *collectively dealing with change issues* through group problem solving were derived from theory and research on large scale organizational transitions (Mohrman et. al., 1989; Weisbord, 1987).

The learning processes scales were influenced by learning theory and research especially pertaining to learning about new situations and acquiring new problem representations, skills and behaviors to adapt to changes (Simon, 1991). *Shared learning about meaning* refers to activities by which groups come to develop shared understanding. *Learning about differences* refers to activities through which different points of view are surfaced. These two scales reflect the work of researchers (Shrivastava & Schneider, 1984; Dougherty, 1992; Senge, 1990; Mohrman et. al., 1995) who have observed the need for first surfacing and then reconciling dissimilar frames of reference and developing a shared and systemic interpretation of new events for effective action to take place. *Collectively Learning about performance* and performance feedback as a key requirement for on-going improvement of performance has been established in several research studies (Hirschman & Lindblom, 1962; Mohrman et. al., 1992). The

Dissemination of learning scale reflects several key concepts related to continual learning and change such as accumulation of prior knowledge (Cohen & Levinthal, 1990); developing effective internal and external knowledge linkages (Huber, 1991) and creating learning communities-of-practice (Brown & Duguid, 1991).

The Performance Effectiveness scales draw from the literature on assessing the effectiveness of business level strategic changes (Buzzel & Gale, 1987). The scales of *Throughput Performance*, *Business Performance*, and *Customer Focus Performance* reflect process level and performance outcome measures of firm effectiveness (Reed, Lemak, & Montgomery, 1996) and the dimensions of performance underlying the strategic rationale for reengineering (Henderson & Lentz, 1996).

The *Personal Impact scale* relies on the research of scholars such as Jahoda (1958) and Harrison (1977) who have examined the relationship between fundamental change, its impact on personal identity of the people experiencing the change, and adaptive learning. Fundamental organizational shift with all its chaos of changing values, behaviors, standards, and goals can require a redefinition of individual identity (Harrison, 1977). Thus change situations that focus on growth and development aspects of the individual such as an opportunity to do new things, accomplish more, or career growth, stimulate adaptive learning toward the new situation and enable a new sense of personal meaning for individuals . -

2. Systematic interviews were conducted with a sample of individuals in each region (ranging from 8 to 15 depending on the size of the region) to get a richer, qualitative account of how the organizational changes were introduced in each region, and of the processes and practices that were actually unfolding in the office. The content of these interviews will be used to help interpret the survey findings.

3. Descriptive archival and performance data were collected at each region. Interviews and archival data were also collected from a sample of key informants from the company headquarters, in order to get a rich picture of the corporate level change process, and hard data about performance. The hard performance data included measures of financial return and productivity which was collected for the period 1994-1996, and customer satisfaction data which was available for 1995-1996. The financial return was a measure of business performance effectiveness that reflected profitability and the ability of the region to create market and shareholder value. It depended not only how much business was contracted, and of the cost of contracting it, but also of the quality of that business. The productivity measure reflected expense control due to increased efficiency of staff and improved processes. The customer satisfaction data came from an annual survey of customers who assessed the regions on Customer support, Service effectiveness, and Ease of doing business.

At the end of each wave of data collection by us, we met with the regional leadership (including all the regional general managers) and discussed with them a report that synopsized the factors that were quantitatively or qualitatively related to fuller implementation of the new redesign and to performance improvement in the four region sample. In addition, we provided each region with its own data so that regional members could see where they scored on the key predictors of success. All regional general managers shared this data with their people and at least two developed detailed action plans based on the data.

Data Analysis

For the purposes of understanding what factors account for differences in success in implementing the reengineered organizational model and in achieving performance improvement using the new approaches, we treat each region as one study unit. Because of the small number of units, we rely on the creation of a contextually rich pattern of data for each region in addition to the survey data.

A comparative case analysis methodology that relies on multiple sources of evidence such as systematic interviewing, direct observation, and archival data is appropriate to develop rich contextual understandings of each setting as well as to generalize across multiple settings . Within case analysis helps become familiar with each case as a stand alone entity, and ‘across case analysis’ pushes for generalizable patterns across cases (Yin, 1984). We followed this logic in our analysis and treated each region as a unique case. Further, case analysis in combination with quantitative analysis has been suggested as a preferred approach to converge on the phenomena of interest especially when dealing with exploratory research (Martin & Siehl, 1988). The qualitative case analysis helps explain anomalies or variations or further elaborate the quantitative patterns that emerge by offering descriptive, contextual information on each unique setting (Thomas & Tymon, 1982).

The survey data represents a systematic measurement of each system at two points in time along a number of abstract dimensions. Surveys were delivered to all members of the region. After completion, they were sealed in individual envelopes, and each region returned them to the researchers in a batch. The average response rate to the survey for both time 1 and time 2 was 84% . For the four regions it ranged from 76% to 88% for time 1 and 72% to 97% for time 2. The useable number of response for time 1 was 152 and for time 2, it was 147. The number of repeat respondents was 113. Regions ranged in size from 33 to 60 employees.

For each measure, we examine the overall mean at two points in time in order to determine the overall level of that variable in the sample. Because of the small number of regions, we describe but do not statistically analyze, the sample means at time one and time two. We also present means for each of the four regions, if the results of a one-way analysis of variance determines if there are significant differences across the four regions. If the analysis of variance shows significant difference, the results of pair-wise T-Test comparisons are also presented to indicate which regions are higher and lower on the measure. Finally, we note whether a region experienced a statistically significant change in each measure from time one to time two, using paired T-Tests between time one and time two measures.

Because of the small number of regions, in order to determine whether various kinds of measures relate to one another (i.e., whether regions high on one are also high on others) we rely on visual pattern analysis. Themes from the interview data are used to explain the variation in survey data by capturing knowledge about specific practices in the region. The archival data provide systematic performance data as well as enhance our understanding of local practice.

Findings

There were many similarities and some differences between the business situations of the regions. Each of these regions was a “new” organizational unit, pulling together roles, tasks and personnel who had previously been spread across the corporation in different functions. They inherited the existing business for their line of business in their geography. Each started with different amounts of business of different levels of profitability, and with different initial levels of customer goodwill. Although one of the regions (Region 4) serviced a geographical area that was initially characterized by a rapidly expanding economy affording opportunities for growth, all four regions were experiencing a turbulent business environment characterized by an increasing number of competitors and price competition and erosion.

All regions were structured according to the template that was generated by the reengineering team. They consisted of from five to seven teams located in several different cities, with one regional general manager, a financial analyst, team leaders (who had account management as well as team leadership responsibility) and teams composed of accounts managers who managed accounts and built customer relationships and of technicians who processed accounts and dealt with many of the maintenance aspects of customer relationships. Regions 1, 2 and 3 chose to have at least one additional role to carry out regional business development activities. The four regional general managers were all experienced managers in various roles in the corporation.

Using the learning model in Figure 1 as our template, we will illustrate the patterns of data across the four regions and in the text we will provide qualitative explanations and interpretations for some of the key patterns of similarity and difference. We will investigate four questions:

1. To what extent were the elements of the reengineered organization implemented in the four regions and were they differentially implemented?
2. What role did the change implementation processes play in differential implementation?
3. Did regions that more fully implement the elements of the reengineered organization experience greater performance improvement?
4. What role did the learning processes in the regions play in facilitating performance improvement?

Extent of Implementation

Table 1 shows the means for the elements of change for the four regions combined. If an analysis of variance indicated that there were significant differences across the four units, the means are shown for each of the regions. An ellipse around a regional mean indicates that this region was significantly higher than at least one other region. A rectangle indicates that the region was statistically lower than at least one other region. An asterisk by a number in time 2 indicates that the region experienced a statistically significant change in the measure from time one to time two (computed with paired T-Tests)..

---INSERT TABLE 1 ABOUT HERE---

At time one, the highest level of implementation was in the work design area. Apparently regions were more easily able to implement the adoption of a well specified information system and to create teams that were at least in the beginning stages of cross-skilling, There were no significant differences between regions in this arena. However, interview results indicated that in all regions team

members were still struggling with questions such as “what is a team?” “what should be the role of the team leader?” and “how should our team operate?”.

Getting teams to see themselves as empowered business units held collectively accountable and rewarded for business results was evidently a slower process. Interviews indicated that this shift was more difficult for people as it entailed a new understanding of the business and of the contributors to business success, and acceptance of a new basis for a key personal outcome, rewards. It required that team members change their behavior from simply carrying out the processing aspects of their work efficiently and responsively to thinking through and making trade-offs among various courses of action. Here there were significant differences between regions, with region four leading the group, and regions one and two changing less. The general manager of region four was reported to be playing a very consistent role in pushing decisions back to the teams; the financial analyst had adopted an active educational role, providing special worksheets and personally teaching team members how to assess the profitability of business and to make trade-offs between different courses of action.

The redefinition of the role of headquarters to respect increased regional autonomy and to become service units entailed not only a role shift, but also a power shift. It also lagged behind the work redesign implementation, although some progress was reported. It is not surprising that there were no significant differences across regions, since the framework for this redefinition was occurring in large measure through company-wide meetings between the group of regional general managers and the managers of the shared services.

By time two, there had been an increase in the implementation of all three elements of the change. The significant difference between region four and regions one and two in the implementation of the empowered business unit concept continued. Neither regions one nor two reported a significant increase in that area. Additionally, region one was the only region that did not report significant progress in redefining the relations with the headquarters office, and region two did not report a significant

increase in implementation of the new work design. Interviews indicated that both regions one and two focused primarily on the technical tasks of delivering service and meeting the needs of the customer, and concern for profitability and business success was limited to a very small sub-set of the population. Both continued to operate in a more hierarchical manner: the technician population in these two offices did not report much awareness of nor concern with issues such as financial return. Although region two viewed itself as being advanced in the implementation of teams, its definition seemed to revolve around “getting along” with each other, not around working together.

The time two measures of how fundamental the changes were experienced by the people in these regions shed more light on these emerging differences between regions. Overall, the means indicate that the regions experienced the technical and power arenas to be quite a bit different, and the market arena to be somewhat different from the way things were before reengineering. Surprisingly, there was no difference between the regions in how fundamental the shift of power was. This company built a power shift into the way it organized, the goals it held out for people, and the way the headquarters dealt with the business units. In the market and technical arenas, the members of region one saw less fundamental change than in the other regions. In the technical arena, region two experienced the most fundamental change. It had been highly involved in piloting the new systems, and interviews indicated that the implementation of the new systems was the area in which it focused the most. This is confirmed by its score on the quality of the computer tools which show that, at time one, it viewed the systems more favorably than the other regions. Interestingly, the implementation of the system upgrade prior to time two was fraught with network difficulties, and was accompanied by less company sponsored training than the initial implementation. On average all regions appeared to show a decrease in the perceived usefulness of the computer tools. Thus, while regions three and four continued to increase the extent of implementation of all three aspects of the change, regions one and two were more spotty. We measured various aspects of the change implementation processes to determine if they can help explain the differences.

Implementation Process Issues

The change implementation process scores are also shown on Table One. At time one, there was no significant difference between regions in three areas: development of capabilities for change, change leadership, and openness of the change process to influence. Openness to influence was the lowest scoring aspect. Change leadership was the highest. The regions differed significantly along two dimensions of the change process: region three was higher than the others in the clarity of the articulation of the desired changes. Its general manager had been on the design team, and brought an in-depth knowledge of the substance and logic of the change to the region. Members of the region described him as having a clear and unwavering vision. Region four was the lowest on clarity at time one. However, this may actually have worked toward fuller implementation, because the general manager impressed on the members of that region that because the changes weren't clear, the region would have to spend time defining what they meant. This is confirmed by that region's higher score on the extent to which the members collectively deal with the changes.

By time two, all four regions had achieved similar levels of clarity regarding the nature of the redesign and had developed greater but still similar levels of capability regarding the change. Regions one and two had fallen behind in change leadership and the degree they experienced the changes to be open to influence. Even though region one continued to conduct collective processes to deal with the changes, they still experienced the changes to be less open to influence. Region three was clearly the highest in most of the change processes, and interview accounts indicate that its members continued to influence the refinement of the model of how they operated, in large part because of its leader's continuing encouragement. They continued to enhance their understanding of the difference between growth and profitable growth, and to learn to make the trade-offs that would enable them to deliver their financial commitments to the company. In some cases, they stressed, this meant not going after business that would not be profitable. Region four's implementation process scores were relatively lower in time two; interviewees reported they were stretched thin trying to deal with an eroding business climate. Region two was significantly lower in the areas of change leadership, influence, and collectively dealing with change.

At the time of the phase two interviews, region two members reported that they were just beginning to talk to each other about how the teams needed to operate in order to optimize performance. In sum, the regions having the most success implementing the business unit aspects of the change were those that quickly got people collectively involved in determining what that meant and the considered the reengineered elements to be open to change and refinement. Those that failed to do so early on began to do so later on, as they found that they did not have the processes in place to get the new model fully implemented to deal with their increasingly difficult business situation.

Relationship of Redesign Elements to Performance.

Table 2 provides both archival information and subjective self-ratings of regional performance. In order to interpret these findings, it is important to remember that each region existed in a different market with differing rates of economic growth, different levels of competitive saturation, and various starting points with respect to market share possessed by the company and profitability of that business. Because of the different starting points, the hard data are presented both in terms of rate of change and deviation from the company norm, with the rate of change being theoretically the best indicator of the impact of the redesign on performance. The self-ratings of effectiveness are in terms of how current performance compares with what members feel is possible in their situation.

---INSERT TABLE 2 ABOUT HERE---

Some interesting patterns are apparent from the self-reports. None of these regions rate themselves higher than about 75% of possible performance, indicating that they all see room for improvement. The amount of performance change reported in time two is somewhat lower than that reported in time one, which may reflect the toughening business environment. This decline also may indicate that these organizations immediately started to feel the positive impact of the new design, but that ongoing performance improvement becomes more difficult to attain as it requires behavior changes that challenges more deeply held beliefs and demand greater understanding.

Both the self-ratings of throughput and the archival productivity measures pertain to efficiency, speed, and quality of work. Region four rated itself higher than regions one and three at time one in levels of throughput performance. At time two there is no significant differences across the four regions. At time one, regions two and four reported significantly higher performance change in throughput with regions one and three being lower. At time two, region two was higher than region one in reported throughput performance change, with the other two in between. The archival productivity data show regions four and one with large positive deviations from the company average; they show the rate of change of regions two and four as significantly higher than the others. Region one, which concentrated more on the work design aspects of the change and much less on the business unit aspects, was high in company measures of productivity, but was increasing at a relatively low rate. Region two, which emphasized the technical tools, was achieving large increases in productivity matching self perceptions; interestingly, it was lower in actual levels of archival productivity. Region four, which took a more balanced and systemic approach to implementing the elements of change (i.e. did not emphasize work design and technology over business unit design), was nevertheless high in productivity compared to the company norm, and growing at a very rapid rate.

Questionnaire measures of business performance are concerned with cost, financial and market performance and can be compared to the archival measures of financial return. In this arena, self-report data show that region one rated itself among the two highest in time one, but shows a marked fall-off in self-ratings at time two. It also reported a significant decrease in performance change from time one to time two. This is substantiated by the financial return data that show it worst in both rate of change and deviation scores. Earlier data showed that this region also rated itself lowest in the implementation of the business unit elements of the change. Noticeably lacking in the interviews in this region were references to improving profitability, especially among the technicians in the teams.

Region four, which was the highest in implementation of the business unit aspects of the redesign, consistently rated itself higher than others both in levels of business effectiveness and in business performance change. Again, company financial return data support these self-perceptions: region four is high in both growth and deviation scores. Region three's self reports in the area of business performance and of the extent of implementation of the business unit model are middle of the pack. Interestingly, it has the highest positive rate of change in financial return, and is also quite high in its positive deviation from the company average. The interviews from regions three and four are full of references to the need for profitability, discussion of the drivers of profitability, and of the need to be very strategic about what kind of business to pursue and maintain. Region two is highest in average amount of return, but second worst (and in the negative range) in its gradient of change. Interviewees in this region did not stress the need for increase in profitability, and in fact seemed to be somewhat resistant to this direction, preferring to concentrate instead on productivity and generation of growth.

As mentioned earlier in the paper, many aspects of the redesign were intended to increase the ability to focus on the particular needs of customers in a region and to establish new relationships with those customers. Region one rated itself significantly lower in its customer focus effectiveness and reported the least improvement in this arena. Customer survey data show that it is indeed relatively low in customer satisfaction, but its improvement rate is relatively high. Region two rates itself among the highest in level and rate of change of customer effectiveness. Customer satisfaction data show that it is the highest in absolute levels of customer satisfaction, but improving at the slowest rate of the four regions. Region four, which rates itself relatively high in both levels of and change in customer focus, is the second highest in level and highest in rate of change in customer satisfaction. Region three is mixed, both in its self ratings and in customer ratings. It is low in actual levels of customer satisfaction, and relatively high in its rate of increase. This region had started out with a less profitable portfolio of business and had worked hard to change its mix of business, sometimes at the expense of growth. In the process, it was feeling a tension because in some cases this meant not meeting the needs of some customers.

Overall, only region four had achieved a balance between the business, productivity, and customer outcomes. Region one was struggling in most areas, although it was among the highest in productivity. Region three was achieving the greatest increase in financial returns, and was slowly growing in customer satisfaction, but was not making rapid strides in productivity.

Another key outcome of any change process is its impact on people. We can see from the chart, that self-reported personal impact was lowest in region one, where the implementation of the elements of change and the business performance outcomes were lowest, and relatively higher in the other three regions. In region one, employees are feeling neutral about the impact of the redesign: they are feeling somewhat positive in the other regions.

The Impact of Learning Processes on Performance

So far the pattern of data shows that the extent of implementation of the elements of change was similar in the four regions, except for the area of business unit implementation. Regions four and two focused heavily on this area, and experienced the most positive business outcomes, while region two, which focused heavily on the implementation of the new information technology, experienced the highest growth in productivity. Table 3 shows the measures of learning processes in the regions. These are the collective processes among the members of the regions that we believed would enable a region to operate more effectively in the new design. We believed that these learning processes would be required for the region to adopt the new understandings and behaviors required to generate higher levels of performance within the redesigned organization.

---INSERT TABLE 3 ABOUT HERE---

At time one and time two, there were no significant differences across regions in the extent to which they spent time discussing what performance means and how to improve it. At time one, there

were also no significant differences across regions in their degrees of surfacing and learning from differences within the region.

At time one, region three was highest in two of the other learning processes: learning (through discussion) about the meaning of the new work system, and disseminating learning within and across regions. By time two, it was also significantly higher in surfacing and learning from differences. They reported such behaviors as regular discussions of performance data in team meetings where they determined what issues had to be dealt with and what that meant for each of their contributions. They reported regular discussions of performance drivers, and they collectively generated a structured process for determining if business would be profitable. They purposefully brought in new members with different skills, and set up sharing processes to learn from them. The new members were reported to have brought fresh eyes to the situation, and to have been useful in pointing out aspects of the way they were functioning that needed to be changed for greater effectiveness. Interestingly, although region three was showing a positive trajectory in all three performance arenas, the area in which their performance was improving the most markedly was in financial return, the complex systemic outcome that reflected the careful decisions and trade-offs the region's teams were making. This outcome is not a straightforward result of implementing a more efficient process; rather, it requires judgment and management of uncertainty by team members.

Region one, on the other hand, was significantly lower in three learning processes at time two and in two areas at time one. Their interviews were full of comments that focused on individual performance problems and what to do about the "slackers", and that they were too busy to take time to help each other or work together. Region two was also quite low in the learning processes. Their focus also was primarily on individuals—particularly on developing individual competencies—and very little collective learning was reported. They reported that performance data were easily accessible on their IT system, for example, but the teams did not spend much time as a group examining it and discussing how to impact it. Several people reported, for example, that they didn't pay much attention to expenses and

that, given their eroding price position, this might become important in the future. Individual account managers were spending a great deal of time establishing closer relations with customers, but there was little team discussion of customer issues or of the overall performance picture. This region experienced a large growth in productivity, but had a negative trend with respect to financial return, and relatively slow growth in terms of customer satisfaction.

Although they were also lower on the learning processes scales, region four was portrayed much differently in interviews. In the interviews at time one respondents from this region mentioned a number of ways that they took advantage of each other's strengths, including tutoring each other, volunteering to carry out special functions for the region such as monitoring the help line in the new system, or keeping track of the needs of particular customer sets. This activity seemed to have decreased at time two when interviews indicated that dealing with the more difficult business environment was preoccupying them. However, they reported that the foundation they had built for working together collaboratively in the teams, and the processes they had established during the first year of implementation continued to be in place and to serve them well. In short, while they did not tend to use collective learning processes any more often than regions one and two, region four had established a positive climate of collaboratively working together.

Thus, it appears that the one region that was experiencing the greatest improvement in the management of overall business performance, also had the most active collective learning processes. Two of the other regions were continuing to carry out work in a very individualistic manner, emphasizing individual performance and competencies, and engaging in very little collective learning. The emphasis of region two, in particular, on putting information on the system, did not translate into collective learning that would allow each team to actually operate as a little business and optimize its performance. Its trends were not in the positive direction.

Although the remaining region, four, showed lower levels of ongoing learning processes it apparently continued to perform well due to its high initial implementation of the team as business unit design discussed earlier. Through the use of collective learning processes region three is playing catch-up apparently focusing on the bottom line, financial return, and literally subordinating productivity and customer satisfaction in its services.

Discussion

This paper has presented an in-depth case study of one company's experience with business process re-design coupled with the implementation of advanced, networked information technology and the implementation of a new organizational design. The company did a relatively complete job of design and implementation, providing a broad, systemic view of how the new organization was intended to function in order to pursue the new organizational strategy of optimizing the business within each geographical market. The redesigned organization was intended to enable local regions to establish a close, responsive relationship to the local customer base, to apply highly efficient service-delivery methods, and to have sufficient autonomy to develop a profitable business. Top management was involved in the redesign and provided high levels of support throughout the implementation. The business processes were carefully analyzed through a participative process led by line managers and supported by information technology professionals, and new processes and supporting information technology were designed that did indeed enhance the capability of the organization to operate more efficiently to meet the needs of the customers. The company worked diligently to ensure that the power shifts that were required to enable local units to make decisions to optimize within the local market did indeed occur. Working with an experienced organization development professional, the design team planned the implementation, and provided training, tools, templates, and consultative support to each of the regions as they were formed and started operating. Company-wide learning was enhanced by a number of activities for soliciting participant feedback about the effectiveness of the new information system and about the operation of the new design (the study being reported in this paper was one of those

activities). The information technology was designed to provide easy access to information, lessons learned, and innovation throughout the system. During the first two years of implementation, the company experienced increasing performance benefits.

This positive scenario makes this an ideal case in which to explore the interconnection between the redesign of processes, the design of the information systems, and organization redesign and development. Even in this very positive company-wide transformation, different units experienced and enacted the change quite differently. The company provided a common blueprint for change that included alterations in the technical, social and market architecture. Local units had to bring this process to fruition. They did this with uneven focus and unequal success; this unevenness of implementation reflects the importance of the processes that the local units utilized to put the blueprint into place. The blueprint for change is by necessity a general one, leaving it to each unit to attach meaning and activate local processes for adoption, implementation, and enhancement. The changes called for in this blueprint required substantial cognitive, behavioral, and structural modification: a blueprint cannot begin to deal with nuances involved in changing the operating logic of the system. Even the unit that experienced the fullest implementation and the greatest rate of performance improvement reported lack of clarity concerning the company changes: locally they decided that the only way to increase the clarity was to attach their own meaning.

There was no significant difference in the extent to which units reported that they implemented the work design and corporate redesign elements. However, interview data indicated that the *substance* of the implementation differed substantially. Each unit attached different meaning to the changes and behaved within the new design quite differently. For example, each unit enacted teams differently. Two regions, for example, worked hard to create minimal differences in focus between the account manager and technician roles and to build business development into the responsibilities of the team; other regions maintained relatively rigid roles, and had separate meetings of these different populations, and the regional general manager remained the primary mover in the business development process or

alternatively created special positions for that purpose. In the latter, the formal structure changed but an informal operating structure emerged that preserved the previous status quo.

In the arena of business unit redesign elements, regions reported different degrees of implementation *and* described quite different cognitive understandings and behaviors. Two of the four regions spent a great deal of time and energy grappling with what it means to optimize business performance, how to balance the focus on customer responsiveness, efficiency of processing, and economic return and how to build in the ability to make ongoing trade-offs. The others focused on efficiency of processing and responding to the customer, and spent little time grappling with what it means to be a financially accountable business. The former experienced the most change in the overall measure of the system: the rate of return. The region that particularly focused on the new technical system also experienced the greatest overall change in productivity; however, it maintained a hierarchical system, with rigid roles and very little team learning or business orientation. Although it started with high levels of financial return, it was on a downward course. Another region, which performed the most poorly on most dimensions, formally reorganized into teams but continued to carry out business as usual, with emphasis on individual roles and competencies, and little collective sense-making.

The differences between the regions relate to the change implementation and learning processes in the regions. These are the collective processes through which energy and commitment are generated, ownership is achieved, and the participants collectively come to understand, attach meaning to the new organization, determine how to behave within it, and learn how to continually improve the capability and performance of the system. They generate enhancements; new structures (such as inter-team meetings with rotating attendance in order for teams to learn from one another); new functionality for the technology (such as creating a local home page for making important customer data available to each other); new behavioral norms (such as it's not OK to sit passively while the group is trying to determine a course of direction); and new understandings (such as, for us what it means to be a business is that we

now act like owners, and try to optimize income and minimize expenses). They track various indicators of performance, scan the network to see if other regions have generated approaches that they can learn from, learn about cause and effect with respect to profitability, and respond to customer data by finding new ways to provide responsive service and new ways to relate to the customer.

Regions differed substantially in the extent to which they engaged in the change/implementation processes, and in the extent to which they engaged in ongoing learning processes. The dynamics of the adopting units are critical to the unit's ability to learn to operate effectively within a redesigned organization, and to effectively take advantages of the new capabilities afforded by a new technology (Orlikowski, 1996). The learning process was gradual; the implementation of the elements of redesign increased through time. In this company, this had little to do with shortcomings of the formal blueprint for change, support from top management, or unwillingness to transfer power from the headquarters staff groups. In essence, the organizational redesign in this company dismantled the old structure. Perhaps this is why, after three years, the company was indeed deriving the intended benefits from the transformation. What was left was to rebuild new ways of operating. This was easier in units that managed the implementation and learning through collective processes.

Business process redesign is a large-scale transformation and as such it is deep, pervasive, and multi-systemic (Ledford, Mohrman, Mohrman & Lawler, 1989). It implies change design and management that includes technical expertise and understanding of the business, expertise in information technology, organizational design expertise, and knowledge of change management. Perhaps it is best carried out by an interdisciplinary leadership group that can bring deep knowledge of all these aspects of the system to bear on changing the entire system. Organizational development practitioners may serve as the generalists—individuals who can pull together the different disciplines, and provide support in managing the content and process aspects of the transformation. This implies a broad understanding of business, technology, organization design, and change and learning processes.

Additionally, it is clear from this case that the change management issues and the learning involved in such transformation is not limited to the activities of a corporate design and implementation team. Rather, learning has to occur throughout the system, in each and every performing unit. Although it is relatively straightforward for units to formally reconfigure or start to use a new system, learning to think and act in new ways, and developing a new logic for and understanding of performance implies deep development. An organization development challenge will be to find ways to support the diffused learning that must occur throughout the complex system that has been fundamentally redesigned.

REFERENCES

- Adler, P. S. (1989). When Knowledge is the Critical Resource, Knowledge Management is the Critical Task. IEEE Transactions on Engineering Management, 36(2), 87-94.
- Argyris, C. & Schon, D. A. (1978). *Organizational Learning: A Theory of Action Perspective*. Reading, MA: Addison-Wesley.
- Barry, B. (1989). Information Technology and Organizational Development. In R. W. Woodman & W. A. Pasmore (Eds.), *Research in Organizational Change and Development*, Vol. 3. (213-231). Greenwich, CT: JAI Press.
- Bashein, B., Markus, M. L. & Riley, P. (1994). Preconditions for BPR Success. Information Systems Management, 11(2), 7-13.
- Baskerville, R. & Smithson, S. (1995). Information Technology and New Organizational Forms: Choosing Chaos over Panaceas. European Journal of Information Systems, 4(2), 66-73.
- Beath, C. M. & Orlikowski, W. J. (1994). The Contradictory Structures of Systems Development Methodologies: Deconstructing the IS-User Relationship in Information Engineering. Information Systems Research, 5(4), 350-377.
- Beckhard, R. & Harris, R. T. (1977). Organizational Transitions: Managing Complex Change. MA: Addison- Wesley.
- Boland, R. J., Tenkasi, R. V. & Te'eni, D. (1994). Designing Information Technology to Support Distributed Cognition. Organization Science, 5(3), 456-475.
- Boland, R. J. & Tenkasi, R. V. (1995). Perspective Making and Perspective Taking in Communities of Knowing. Organization Science, 4(6), 350-372.
- Brown, J. S. & Duguid, P. (1991). Organizational Learning and Communities-of-Practice: Toward a Unified View of Learning, Work and Innovation, Organization Science, 2(1), 40-57.
- Buzzel, R. & Gale, B. (1987). The PIMS Principles: Linking Strategy to Performance. NY: Free Press.
- Cohen, W. M. & Levinthal, D. A. (1990). Absorptive Capacity: A New Perspective on Learning and Innovation, Administrative Science Quarterly, 35, 128-152.
- Daft, R. L. & Weick, K. E. (1984). Toward a Model of Organizations as Interpretive Systems. Academy of Management Review, 9, 284-295.
- Davidson, W. H. (1993). Beyond Reengineering: The Three Phases of Business Transformation. IBM Systems Journal. January.
- Davidson, W. H. & Davis, S. M. (1990). Management and Organization Principles for the Information Economy. Human Resources Management, 29(4), 365-383.
- Davenport, T. H. (1993). Process Innovation: Reengineering Work through Information Technology. Boston: Harvard Business School Press.
- Dougherty, D. (1992). Interpretive Barriers to Successful Product Innovation in Large Firms, Organization Science, 3, 179-202.

- Duncan, R. B. & Weiss, A. (1979). Organizational Learning: Implications for Organizational Design. In B. Staw (Ed.), Research in Organizational Behavior. Vol. 1. Greenwich, CT: JAI Press.
- Fiol, M.C. & Lyles, M. A. (1985). Organizational Learning. Academy of Management Review, 10, 803-813.
- Hammer, M. (1996). You Get What You Deserve. CFO: The Magazine for Senior Financial Executives, 12(9), 9.
- Hammer, M. & Champy, J. (1993). Reengineering the Corporation: A Manifesto for Business Revolution. New York: Harper
- Hammer, M. & Champy, J. (1995). Who will Reengineer? Executive Excellence, 12(2), 13-14.
- Harrison, R. (1977). Defense and the Need to Know. In R. T. Golembiewski and A. Blumberg (Eds.), Sensitivity Training and the Laboratory Approach. (3rd ed.) Itasca, Ill: Peacock.
- Henderson, J. C. & Lentz, C. M. (1996). Learning, Working, and Innovation: A Case Study in the Insurance Industry. Journal of Management Information Systems, 12(3), 43-64.
- Hirschman, A. O. & Lindblom, E. (1962). Economic Development, Research and Development, Policy Making: Some Converging Views, Behavioral Science, 8, 211-222.
- Huber, G. (1991). Organizational Learning: The Contributing Processes and the Literatures, Organization Science, 2(1), 88-115.
- Hull, F. M., Collins, P. D., & Liker, J. K. (1996). Composite Forms of Organization as a Strategy for Concurrent Engineering Effectiveness. IEEE Transactions on Engineering Management, 43(2), 133-142.
- Jahoda, M. (1958). Current Concepts of Mental Health. New York: Basic Books.
- Jelinek, M. (1979). Institutionalizing Innovation: A Study of Organizational Learning Systems. New York: Praeger Publishers Inc.
- Kolb, D. A. (1983). Problem Management: Learning from Experience. In S. Srivastava (Ed.), The Executive Mind. San Francisco: Jossey-Bass.
- Lave, J. & Wenger, E. (1990). Situated Learning: Legitimate Peripheral Participation. IRL Report 90-0013, Palo Alto, CA: Institute for Research on Learning.
- Ledford, G. E., Mohrman, S. A., Mohrman, A.M., & Lawler, E. E. (1989). The Phenomenon of Large Scale Change. In A. M. Mohrman, Jr., and Associates. Large-Scale Organizational Change. San Francisco: Jossey-Bass.
- Levitt, B. & March, J. G. (1988). Organizational Learning. Annual Review of Sociology, 14, 319-340.
- Lucas, H. J. (1996). The T-Form Organization: Using Technology to Design Organizations for the 21st Century. San Francisco: Jossey-Bass.
- Mankin, D., Cohen, S. G. & Bikson, T. (1996). Teams and Technology: Fulfilling the Promise of the New Organization. Boston: Harvard School Business Press.

- Martin, J. & Siehl, C. (1988). Measuring Organizational Culture: Mixing Qualitative and Quantitative Methods. In M. Jones, M. Moore and R. Snyder (Eds.), Inside Organizations. CA: Sage.
- McGill, M. E., Slocum, J. W., & Lei, D. (1993). Management Practices in Learning Organizations. Organizational Dynamics, 22(1), 5-17.
- Mohrman, S. A., Cohen, S. G. & Mohrman, A. M. (1995). Designing Team-Based Organizations: New Forms for Knowledge Work. San Francisco: Jossey-Bass.
- Mohrman, A. M., Mohrman, S. A. & Lawler, E. E. (1992). The Performance Management of Teams. In W. Bruns (Ed.), Performance Measurement: Evaluation and Incentives. MA: Harvard Business School Press.
- Mohrman, A.M. & Associates (1989). Large-Scale Organizational Change. San Francisco: Jossey-Bass.
- Mohrman, S. A. & Cummings, T. G. (1989). Self-Designing Organizations: Learning How to Create High Performance. Reading, MA: Addison-Wesley.
- Mullin, R. (1993). Reengineering's Uneasy Guru Contemplates the Changes. Chemical Week, 153(5), 40.
- Orlikowski, W. J. (1996). Improvising Organizational Transformation Over Time: A Situated Change Perspective. Information Systems Research, 7(1), 63-92.
- Pettigrew, A. (1987). Context and Action in the Transformation of the Firm. Journal of Management Studies, 24(6), 649-670.
- Reed, R., Lemak, D. J. & Montgomery, J. C. (1996). Beyond Process: TQM Content and Firm Performance. Academy of Management Review, 21(1), 173-202.
- Romanelli, E. & Tushman, M. (1994). Organizational Transformation as Punctuated Equilibrium: An Empirical Test. Academy of Management Journal, 37(5), 1141-1166.
- Senge, P. (1990). The Fifth Discipline. New York: Doubleday.
- Simon, H. A. (1991). Bounded Rationality and Organizational Learning. Organization Science, 2(1), 125-134.
- Simon, H. A. (1976). Administrative Behavior. (3rd Ed.). New York: Macmillan.
- Tenkasi, R. V. & Boland, R. J. (1996). Exploring Knowledge Diversity in Knowledge Intensive Firms: A New Role for Information Systems. Journal of Organizational Change Management, 9(1), 79-91.
- Thach, L. & Woodman, R. W. (1994). Organizational Change and Information Technology: Managing on the Edge of Cyberspace. Organizational Dynamics, Summer, 30-46.
- Tichy, N. (1983). Managing Strategic Change. NY: John Wiley.
- Thomas, K. W. & Tymon, W. G. (1982). Necessary Properties of Relevant Research: Lessons from Recent Criticisms of the Organizational Sciences, Academy of Management Review, 7, 345-352.
- Ulrich, D., Von Glinow, M. A., & Jick, T. (1993). High Impact Learning: Building and Diffusing Learning Capability. Organizational Dynamics, 22(1), 52-79.

Weick, K. E. (1991). The Non Traditional Quality of Organizational Learning, Organization Science, 2(1), 116-124.

Weisbord, M. (1987). Productive Workplaces. San Francisco: Jossey-Bass.

Yin, R. (1984). Case Study Research. CA: Sage.

Zuboff, S. (1988). In the Age of the Smart Machine: The Future of Work and Power. New York: Basic Books.

Appendix 1
Scale Items and Reliabilities

I. Elements of Redesign

Response format: “ How much has your region experienced these changes?” (1= None, 2= A Little, 3= Some, 4= A Lot, 5= Completely)

Work Design (Cronbach Alpha= .78)

Working as teams
Multi-skilled jobs
Automated tools

Business Unit Design (Cronbach Alpha= .76)

Increased attention to building customer relationships
Teams as business units
More empowerment
Rewarding business results

Corporate Design (Cronbach Alpha= .57)

Shared services act as suppliers to the regions
Regional autonomy (e.g. strategy, products, and organization)

II. Fundamentality of Change

Response format: “ How different is your region on the following aspects than the work unit you were in before the reengineering began” (1= Not at all Different, 2= Slightly Different, 3= Somewhat Different, 4= Quite a bit Different, 5= Completely Different)

Market Fundamentality (Cronbach Alpha= .64)

Our mission: how we contribute to market/business success.
The way we relate to our customers.

Power Fundamentality (Cronbach Alpha= .85)

The way power is distributed.
The people who have authority.

Technical Fundamentality (Cronbach Alpha= .81)

The technologies and tools we use.
The methods we use to do our work.

III. Computer Tools (Cronbach Alpha= .78)

Response format “ How much do you agree with the following statements” (1= Strongly Disagree , 2= Disagree, 3= Neither, 4= Agree, 5= Strongly Agree)

We have easy computer access to the information we need to do our jobs.
Our computer systems provide tools and help to get the job done.
We have excellent computer systems for coordinating with each other.

IV. Change Implementation

Response format “ How much do you agree with the following statements” (1= Strongly Disagree , 2= Disagree, 3= Neither, 4= Agree, 5= Strongly Agree)

Capability for Change (Cronbach Alpha= .75)

The people I work with have the necessary skills and knowledge to do their work well in the changing organization.

I feel confident I have the skills and knowledge required for my role in the changing organization.

We have the support we need to learn our new roles.

We're not completely sure that we'll be able to achieve the new performances required.

We have had sufficient training for our new roles.

We have made sure the changes we are making build on our past strengths.

Clarity of Change (Cronbach Alpha= .85)

The changes have been described in a straightforward manner.

There has been clear communication about how all the changes fit together.

Management has communicated a very clear picture of what we're trying to become.

There is a clear vision guiding our activities.

Collectively Dealing With Change Issues (Cronbach Alpha= .74)

We have developed a shared sense of what these changes mean for us.

We talk together about our roles and contributions in the changing organization.

We've dealt with the problems and issues that emerge as we introduce change.

We discuss our frustrations and uncertainties about the changes.

Change Leadership (Cronbach Alpha= .74)

Our managers and leaders behave consistently with our new directions; they "walk the talk".

Our managers and leaders are supportive of the new directions.

Our managers and leaders are unwilling to give up their old roles (reversed) .

Our managers and leaders do not have the skills needed in our changing organization (reversed).

Openness to Influence (Cronbach Alpha= .83)

We have been able to influence decisions about new directions.

We have been able to influence the way changes are introduced.

Our feedback and input have been taken seriously.

V. Learning Processes

Response format “ How much do you agree with the following statements” (1= Strongly Disagree, 2= Disagree, 3= Neither, 4= Agree, 5= Strongly Agree)

Learning About Differences (Cronbach Alpha= .75)

Diverse viewpoints are taken into account.

We spend a fair amount of time evaluating different points of view about our work.

We encourage frank and open discussion of disagreements.

Dissemination of Learning (Cronbach Alpha= .78)

Previously successful approaches and solutions are readily available so we don't have to "rediscover the wheel".

When we solve interesting problems we share what happened with others in the company who can benefit.

We maintain contact with people in other parts of the company who can be a useful source of information, resources, and support.

We work with other parts of the organization to find better ways to get the whole job done.

We get good information about technical developments (e.g., process technology, scientific breakthroughs, technology advances) that are relevant to how we do work.

We get good information about new organizational practices effectively being used elsewhere.

Shared Learning about Meaning (Cronbach Alpha= .82)

We have worked together to develop new understandings about how we operate as a region.

We talk together about how our work fits into the bigger picture.

We talk together often about what our region needs to become.

We get together as a region to make sense out of how the organization is changing.

We regularly assess whether we're carrying out our vision and values.

Shared Learning about Performance (Cronbach Alpha= .71)

We spend time clarifying what successful performance is.

We talk about our performance and how to improve it.

We solicit input from our customers about how they feel about our performance.

We get feedback from other parts of the organization about how they perceive our work.

We regularly review how our region is doing in achieving its business objectives.

VI. Performance Effectiveness

Response format: "How effective is your region in each of the performance areas, compared to what you think is possible?" (0% to 100%).

Throughput Effectiveness (Cronbach Alpha= .85)

Quality

Productivity

Speed

Technical performance

Business Performance Effectiveness (Cronbach Alpha= .85)

Cost Effectiveness

Financial performance of the business

Market performance

Innovation and Continuous Improvement Effectiveness (Cronbach Alpha= .82)

Innovation

Continuous improvement

Customer Focus Effectiveness (single item scale)

Customer focus

VII. Change In Performance Effectiveness (items same as in previous section, performance effectiveness)

Response format: "How has effectiveness in each of these areas changed in the past year in your region? "
(1= Declined, 2= Stayed the Same, 3= Increased)

VIII. Personal Impact of Changes (Cronbach Alpha= .87)

Response format: " The changes allow me---- (1= Strongly Disagree, 2= Disagree, 3= Neither, 4= Agree, 5= Strongly Agree)

An opportunity to learn new things
To accomplish more than before
To have more say in my work
A better quality of work life
Opportunity for career growth
Job security
Opportunity to make more money

Table 1
Regional Differences on Implementation of Redesign Elements,
Fundamentality of Change, Technology and Change Processes

TIME 2												
Region	Implementation of Redesign Elements			Fundamentality of Changes			Technology Quality Computer Tools	Change Implementation Activities				
	Work Design	Business Unit Design	Corporate Design	Market Fundamentality	Power Fundamentality	Technical Fundamentality		Change Capability	Clarity of Change	Collectively Dealing with Changes	Change Leadership	Openness to Influence
1	*	3.39		2.65		3.34				3.59	3.49	3.01
2		3.46		3.25		4.23			3.31	3.48	3.05	
3	*	3.62*		3.32		3.78			3.86*	3.98*	3.68*	
4	*	3.89*		3.59		3.81			3.57	3.57	3.32	
Mean	3.99	3.56	3.62	3.15	3.68	3.78	3.37	3.57	3.64	3.56	3.59	3.21
SD	(.57)	(.65)	(.63)	(.99)	(1.06)	(.80)	(.76)	(.55)	(.63)	(.63)	(.63)	(.82)
ANOVA results, F=	NSD .74	4.27+	NSD 1.80	6.47+	NSD 1.82	10.71+	NSD 1.99	NSD 2.61	NSD 2.61	5.15+	4.77+	5.15+
TIME 1												
1		3.22		(not asked)		(not asked)	3.57		3.22	3.38		
2		3.26					3.94		3.39	3.10		
3		3.39					3.52		3.77	3.58		
4		3.65					3.46		3.14	3.55		
Mean	3.75	3.35	3.30		3.78		3.65	3.27	3.37	3.36	3.49	3.04
SD	(.61)	(.64)	(.71)		(.96)		(.69)	(.70)	(.76)	(.64)	(.64)	(.75)
ANOVA results, F=	NSD .27	3.17+	NSD 2.42		NSD 1.61		4.91+	NSD .67	4.09+	5.11+	NSD .96	NSD 77

Legend---

- ** Region significantly lower in implementation of the same reengineering element from Time 1, at least at $p \leq .05$.
- * Region significantly higher in implementation of the same reengineering element from Time 1 at least at $P \leq .05$.
- Significantly lower than at least one other region for that time period at least at $P \leq .05$
- Significantly higher than at least one other region for that time period at $P \leq .05$
- NSD ANOVA reveals no significant differences
- + $p \leq .05$ for ANOVA

Table 2
Regional Differences on Performance Effectiveness, Change in Performance,
Financial Return, Productivity, Customer Satisfaction, and Personal Impact

Region	<i>Perforamnce Effectiveness</i>			<i>Change in Performance</i>			<i>Archival Performance Mesures</i>						
	Throughput	Business Performance Effectiveness	Customer Focus Effectiveness	Throughput	Business Performance Effectiveness	Customer Focus Effectiveness	Productivity ('94-'96)		Financial Return ('94-'96)		Customer Satisfaction ('95-'96)		Personal Impact of Change
							Avg. Rate of Change	Deviation from Co. Avg.	Avg. Rate of Change	Deviation from Co. Avg.	Avg. Rate of Change	Deviation from Sample Avg.	
1		63.9	63.7	2.28		2.28	.07	19%	-.71	-60%	4%	-23%	3.13
2		73.2	78.7*	2.59		2.52	.22	4%	-.15	+150%	1%	+30%	3.34
3		69.6	75.0	2.49		2.48	.04	-2%	.35	+97%	4%	-23%	3.74
4		76.8	77.9	2.40		2.63	.20	24%	.22	129%	5%	+16%	3.67
<i>Mean</i>	74.6	70.7	73.3	2.44	2.31	2.47							3.42
<i>SD</i>	(14.9)	(17.3)	(19.8)	(.45)	(.48)	(.53)							(.77)
<i>ANOVA results, F=</i>	NSD 2.29				NSD 2.59								5.38*

TIME 1													
1	67.8*	72.8		2.33	2.53								3.04
2	71.2*	70.1		2.64	2.65								3.27
3	63.6	63.7		2.38	2.62								3.54
4	77.2	75.1		2.55	2.84								3.52
<i>Mean</i>	69.8	70.6	69.8	2.48	2.66	2.60							3.30
<i>SD</i>	(16.7)	(13.2)	(30.9)	(.44)	(.35)	(.56)							(.74)
<i>ANOVA results, F=</i>	3.41*	3.60*	NSD 1.52	4.53*	4.36*	2.38							3.83*

Legend--

- *** Region significantly lower in implementation of the same reengineering element from Time 1, at least at $p \leq .05$.
- * Region significantly higher in implementation of the same reengineering element from Time 1 at least at $P \leq .05$.
- Significantly lower than at least one other region for that time period at least at $P \leq .05$
- Significantly higher than at least one other region for that time period at $P \leq .05$
- NSD ANOVA reveals no significant differences
- + $p \leq .05$ for ANOVA

Table 3

Regional Differences on Learning Processes

TIME 2

Region	Learning Process Scales			
	Learning about Difference	Dissemination of Learning	Learning About Meaning	Learning About Performance
1	3.39*	2.84	3.15	
2	3.24	3.01	3.24	
3	3.72	3.42	3.76	
4	3.28	3.02	3.17	
<i>Mean</i>	3.39	3.04	3.30	3.46
<i>SD</i>	(.70)	(.62)	(.68)	(.48)
<i>ANOVA results, F=</i>	3.23+	5.71+	6.02+	NSD

TIME 1

Region	Learning Process Scales			
	Learning about Difference	Dissemination of Learning	Learning About Meaning	Learning About Performance
1		2.89	3.22	
2		3.05	3.08	
3		3.30	3.71	
4		2.86	3.25	
<i>Mean</i>	3.24	3.00	3.26	3.35
<i>SD</i>	(.70)	(.64)	(.66)	(.48)
<i>ANOVA results, F=</i>	NSD	3.12+	5.94+	NSD

Legend---

- ** Region significantly lower in implementation of the same reengineering element from Time 1, at least at $p \leq .05$.
- * Region significantly higher in implementation of the same reengineering element from Time 1 at least at $P \leq .05$.
- ☐ Significantly lower than at least one other region for that time period at least at $P \leq .05$
- Significantly higher than at least one other region for that time period at $P \leq .05$
- NSD ANOVA reveals no significant differences
- + $p \leq .05$ for ANOVA

Figure 1

Organizational Learning about Business Process Redesign

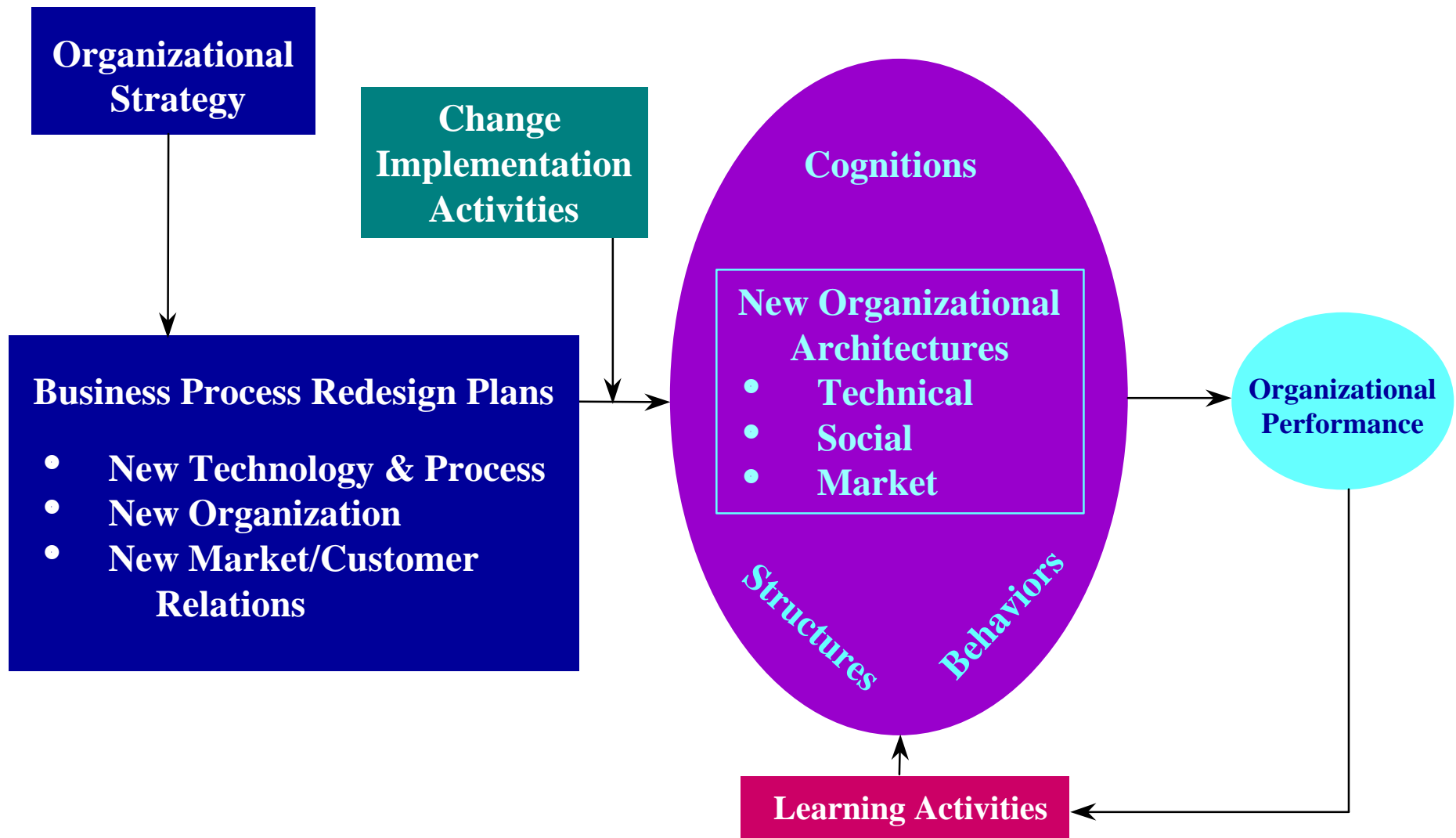


Figure 2
Specific Components of the Setting's Strategy,
Redesign Plans, and Implementation Activities

