DEVELOPING SPATIAL STRATEGIES FOR WORKPLACE CHANGE

by

Rashmi Venkatesh

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Signature of the author: --
Rashmi Venkatesh
Department of Architecture
May 20, 1999

Certified by: --
William L. Porter
Norman B. and Muriel Leventhal Professor of Architecture and Planning
Co -Thesis Supervisor

Certified by: --
Turid Horgen
Research Associate
Co -Thesis Supervisor

Accepted by: --
Roy Strickland
Associate Professor of Architecture
Chairman, Department Committee on Graduate Students
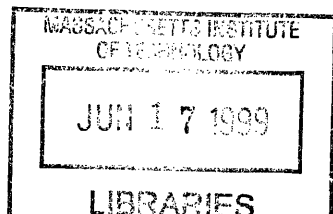
Peter J. Miscovich
Director, Workplace Transformation Group, Arthur Andersen
Thesis Reader

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Rashmi Venkatesh

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ABSTRACT

This thesis lays out a framework to address issues of uncertainty and constant change facing organizations in today's unstable and turbulent business world. The framework structures the complex process of workplace change and sets up a mechanism by which an inquiry into the existing nature of work practice drives the process of change. Framing the process of inquiry in the context of workplace change, the thesis develops methods and techniques of evaluation that engage people in the organization in a collaborative process of investigation and inquiry into the nature of their work practice. These techniques analyze people's perceptions of their spatial environment to understand the nature of work practice. The techniques are applied at Swanson Roberts, an executive search firm, and the results are analyzed to explore the relationship between spatial inquiry and the nature of work practice. The thesis demonstrates that an inquiry into the spatial environment can lead to an understanding of existing work practices which in turn drives the process of change, thus establishing a dynamic coherence between the workplace, work practices and organizational change. The thesis finally explores methods to integrate perceptions of the spatial environment with patterns of work practice in order to sustain change in organizations, and develops simple strategies that take the first step in helping organizations "learn" to continuously respond and adapt to the changing business environment.

THESIS CO-SUPERVISOR: WILLIAM L. Porter
TITLE: Norman B. and Muriel Leventhal Professor of Architecture and Planning

THESIS CO-SUPERVISOR: TURID HORGEN
TITLE: Research Associate

|| Shri Krishnaarpanamastu ||

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CONTENTS

1   INTRODUCTION

1.1   Overview

In this age of technological innovation and increased competition, it has become increasingly evident that in order to achieve consistent levels of growth and performance an organization has to respond to the rapidly changing external environment by continuously aligning its internal work practices with its strategic business goals. This process of alignment requires an organization to rethink and transform its internal work processes, practices and structures. In short, organizations have to undergo continuous change and transformation. In this thesis, we lay out a framework of workplace change and develop spatial strategies that help an organization continuously sustain, implement and manage change.

The proposed framework structures a continuous process of devising and implementing change, and evaluating the systemic effect of change on the nature of work practice. Traditional models of change often do not address the continuous, non-linear aspects of the change process, or do not capture the dynamic and systemic effect of change on the nature of work practice. We demonstrate that the existing nature of the work practice is a dynamic state that changes constantly throughout the process of change and one that demands continuous evaluation in order to refine the change strategy and to structure an effective strategy of alignment between the organization's internal work processes and its strategic goals. We show that continuous evaluation of the existing nature of work practice is not only crucial to the design of an effective strategy of change, but that an inquiry into the nature of work practice drives workplace change.

We develop tools and techniques that help workplace designers, programmers, consultants and the organization assess and evaluate the existing nature of the work practice. The evaluative techniques use an inquiry into the workplace as a medium to understand the existing nature of work and we have drawn upon the work of social geographers, urban designers and planners in developing them. The physical environment plays a large part in influencing human behavior and the relationship of people to their work and their surroundings. Spatial design and spatial patterns not only influence people's behavior and the way people work and interact, but the way in which people organize and construe their space is also indicative of the way they perceive themselves and their work. The techniques demonstrate that images and patterns of space influence behavior to such an extent that these spatial patterns can be analyzed to understand the meanings and symbolism attached to them. We apply the techniques that we have developed at a firm in Boston. From this exploration into the relationship between workplace and work practice we conclude that not only does workplace change influence the nature of the work practice, but an inquiry into the workplace can trigger change in the work practice, thus setting up a dynamic coherence between workplace, work practice and organizational change.

The thesis finally discusses ways in which learning can take root in an organization and explores methods to integrate perceptions of the spatial environment with patterns of work practice in order to sustain change in organizations, and develops simple strategies that take the first step in helping organizations "learn" to continuously respond and adapt to the changing business environment.

1.2   Significance

This thesis explores the relationship between an inquiry into the workplace and organizational change. Traditionally, workplaces have been viewed as physical containers for work, and workplace design is often influenced by considerations of cost, the work processes, and the organizational structure and hierarchy. More recently, however, the physical workplace has received greater attention. Corporate real estate managers, architects, and organizational planners have begun to realize the importance of looking at the workplace as a strategic element or resource of the organization. Horgen, et al, in their book Excellence by Design explore the relationship between workplaces and work processes. They describe the workplace to be "dependent upon the internal compatibility - indeed, the active mutual reinforcement - of the spatial, organizational, financial, and technological arrangements."[1] They further explain that there exists a dynamic relationship between these four dimensions, and a dynamic coherence between work processes and the workplace. Analyzing work process may influence a new workplace design and similarly new concepts of workplace design may influence the work processes.

In this thesis, we build upon these findings and explore the dynamic relationship between work places, work practices, and organizational change in greater detail. According to Horgen, et al, organizational change encompasses changes in work processes, the business and work environment, and the organization itself. Therefore the development of a new workplace can trigger a more comprehensive change in the work practice which in turn may enable organizational change and transformation. In this thesis, through the development of a framework for workplace change, and a process of inquiry and evaluation into the workplace we demonstrate that this inquiry into the physical workplace enables an inquiry and rethinking of the work practices which influences workplace change, which in turn creates a pressure for organizational change. Therefore this thesis establishes a dynamic coherence between workplaces, work practices, and organizational change. The significance of the role of the physical workplace as a driver of change casts architects, designers, planners and workplace consultants in a different role in organizations. By demonstrating that spatial design not only influences the way people work, but that the very nature of work practice can be understood and changed through an analysis of cues and clues in the spatial environment, the thesis attempts to firmly establish the importance of the physical workplace as a strategic element in the organization. Therefore not only do architects and spatial designers play a significant part in designing the workplace to support work processes, but they can also play a significant role in designing the process of workplace and organizational change.

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[1] Turid Horgen, et al, *Excellence by Design* (New York: Wiley and Sons, 1999), p. 8

1.3   Organization

Chapter 2 describes the unstable environment and the relentless pace of change that organizations are facing today. Through brief historical examples this chapter presents the importance of continuously aligning an organization's internal work practices with its strategic goals. The chapter describes the relationship between alignment and organizational change and highlights the importance of structuring an effective strategy of organizational change.

Chapter 3 first presents an overview of traditional models of change and then develops and lays out a new framework for workplace change that combines aspects of continuity and non-linearity from the more recent traditional models, and the inquiry into the state of the system[2] from the Beckhard and Harris model.[3] The framework, through the process of inquiry into the existing nature of work practice, sets up the distinction between the desired and existing nature of work practice. By setting up this distinction, the framework triggers a process of inquiry into the reasons for the distinction between the actual and desired states and therefore drives an organization to change its existing nature of work practice in order to move the actual state of work practice as close as possible to the desired state. We validate the framework by applying it to the case study of the successful transformation of Xerox's LX Laboratory.

In chapter 4 we examine traditional methods of evaluation that attempt to understand "what works" in the workplace and conclude that these methods often do not involve the stakeholders in the collection and analysis of data. In contrast, we develop methods of evaluation that adopt a strategy of intervention in which the consultant involves the participants in the analysis of the nature of work practice through an inquiry into their spatial perceptions and constructs. The interactive process results in learning about the organization in the process of trying to change it. This learning therefore benefits the whole organization, as all the stakeholders "learn" along with the consultant. We apply the techniques that we have developed at Swanson Roberts, Inc., an executive search firm in Boston. We present the methodology for the design of the process of inquiry, implementation, and the analysis of the data thus obtained. We also discuss the methodology for structuring a continuous process of inquiry into the workplace so as to help the organization develop an understanding of its evolving and changing nature of the work practice.

Chapter 5 discusses the importance of "learning" in the organization, both on the individual and on the organizational level, in the effort to sustain and evolve with change. We develop simple,

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[2] In this model of change, Beckhard and Harris describe the ideal state of the system as the state to be attained at some point in the future. They define the present state of the system, distinct from the ideal state, as that which has to evaluated by analyzing attitudes and usage patterns among people in the organization. In the model, this process of determining the ideal and present states of the system precedes the designing and implementation of the change strategy. However, as in the older models of change, this model also views the process of change as a "road-map" linearly connecting the starting and ending points in the change process. Therefore, it does not take into account the fact that the ideal and the present states of the system are themselves subject to change during the process of change.

[3] R. Beckhard and R.T. Harris, *Organization Transitions: Managing complex change. (2nd ed.)* Reading, MA: Addison-Wesley, 1987.

graphical representations of the analysis of the data obtained from the process of inquiry. These representations help the organization visualize abstract relationships between work processes, people, and the use of space and technology over time and would serve as a reference against which to compare the organization's evolving pattern of work practice, and to identify the gap between the desired and actual states of work practice.

Chapter 6 reflects on the previous chapters and summarizes the key concepts and findings of the thesis. We reflect on the process of inquiry and evaluation and our attempt to forge a link between the workplace and the work practice. We investigate and identify future directions of research to better understand the complex, interdependent nature of the relationship between workplaces and work practices.

The appendix compiles data from the process of evaluation and inquiry conducted at Swanson Roberts. It presents a record of the process with empirical data in the form of participant drawings and sketches; and our analysis and interpretation of the transcribed interviews and the drawings. The data presented in the appendix serves as a reference against which we check the hypotheses presented in chapters 3 through 6.

2   ALIGNMENT

2.1   What is alignment?

We've watched their struggle as changes in the marketplace, technology, competition, and government regulations pull their organizations apart while all around them, the unrelenting pace of change - technological, competitive, and economic - continues to accelerate.

-- George Labovitz & Victor Rosansky
The Power of Alignment: How great Companies Stay Centered and Accomplish Extraordinary Things[4]

The unrelenting pace of change is a reality that many organizations - in business, government and industry - have already begun to face, and this reality will soon reach the rest of the world. Organizations that are struggling to face this reality, and those that are successfully responding to the changing environment, have come to realize that to achieve growth and performance, devising an effective business strategy is not enough. Along with designing and crafting a business strategy, an organization has to integrate its key internal systems, processes and responses with the changes in the external environment. The word "integrate" has long been used to describe the idea of alignment. In the late 1960s, Paul Lawrence and Jay Lorsch of the Harvard Business School used the term "integration" to describe the state of collaboration that exists between departments that are required to achieve unity of effort by the demands of the environment. An organization crafts an external strategy or business strategy to meet the demands of the environment and develops a coherent internal strategy to achieve collaboration between departments and collective effort and action to meet the goals of the external strategy. In recent times, organizational analysts have begun to prefer the term "alignment" to "integration" because it conveys direction as well as internal coherence.

According to Labovitz and Rosansky, alignment can be thought of as both a state of being and a set of actions. Alignment as a state of being is defined as "the integration of internal systems in response to changes in the environment". But no organization can remain in a state of alignment for long, since almost every business lives in an environment of constant change. The real power of alignment is brought out when it is viewed as a set of actions. Labovitz and Rosansky enumerate these actions as follows.

1) Connecting employees' behavior to the mission of the company by turning intentions into actions.
2) Linking teams and processes to the changing needs of the customers.
3) Shaping business (external) strategy with real-time information from customers.
4) Creating a culture in which all these elements all work together seamlessly.[5]

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[4] Labovitz and Rosansky, *The power of alignment: How great companies stay centered and accomplish extraordinary things.*(New York : Wiley and Sons,1997) p. 4

Therefore alignment involves the rapid deployment of business strategy or external strategy that is manifested in the actions of people at work. Employees need to understand organization-wide goals and their role in achieving them. Alignment between people and business strategy alone, however, will not yield sufficient growth and profits. Aligning business processes with the customers' requirements has to be achieved. When these four elements: strategy, people, processes, and customers are simultaneously connected with each other a state of alignment is said to be reached. In other words, alignment refers to the continuous process of integrating a firm's external and internal strategies. Lawrence and Lorsch conducted studies on a number of organizations and found that "integrated" or aligned organizations performed better in every measurable financial standard than did their nonintegrated counterparts. To illustrate the importance of aligning an organization's internal and external strategies, a few brief historical examples are examined.

2.2   Patterns of Organizational Success and Failure

SLOAN AND GENERAL MOTORS[6]
When Alfred Sloan was appointed to head General Motors in 1921 the demand in cars had fallen due to the 1920 recession, and although the firm had already huge inventories of unsold cars, the factory managers continued to produce with abandon. In response to the falling demand, Ford Motor Company had cut the price of its Model T by about 25 percent – a reduction that GM with its higher costs could not afford to match. By 1921, Ford's Model T held a 55 percent of the US market share compared to 11 percent for all of GM's brands combined. Ford was expanding its production capacity in order to increase its already dominant position by taking advantage of the economies of scale that came with producing a single product at very high volume.

Apart from the problems caused by the recession, GM faced fundamental long term problems and could not produce a car that would offer more value at a lower price than the Model T, and it was squandering the resources and the capabilities it had, as divisions like Cadillac, Buick, Oakland and Chevrolet competed mostly with each other. What was needed was a coherent marketing strategy focused on competing with Ford. Sloan's plan was as follows: GM would design different cars for different segments of the market. Cadillac division would make cars for the highest-income group and the other divisions would serve successively lower income segments, with Chevrolet making a model that would be sold for less than Ford's Model T.

Carrying out this plan involved a combination of diversity of products and close coordination in design that exceeded anything that had been attempted before. Compared to Ford's one product strategy, Sloan's segmented market strategy required that many more decisions be made and much more information be continuously gathered and evaluated. Ford's organizational model could not serve as a model for the new GM. Sloan studied GM's organizational structure and decided that a

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[5] Ibid., p. 5

[6] See P. Milgrom, and J. Roberts,. *Economics, Organization and Management* (New Jersey: Prentice Hall, 1992) pp. 2-18 for a detailed description.

radical change was necessary. The new organization would be a multidivisional structure with a strong professional staff in the central office. There would be no infringement on the basic autonomy of the divisions in making operational decisions. Each separate division would make and sell a car targeted at an assigned market segment. Unlike other business organizations, GM's central office would not be responsible for day-to-day operations. Instead its primary role would be audit and evaluate each division's performance and to plan and coordinate overall business strategy.

Henry Ford, accustomed to being well informed about every important decision in his company, was skeptical about GM's reorganization and especially about how far its top management was removed from its operations. However, Sloan's organization, which looked so cumbersome to Ford, quickly transformed GM into a fearsome competitor. From 1927 to 1937, Ford lost $200 million, where as GM earned over $2 billion. GM's market share grew to 45 percent in 1940, whereas Ford's once commanding share shrunk to a mere 16 percent. The multidivisional form that GM helped pioneer has become a standard organizational feature of the corporate world, enabling many companies to discover the advantages of organizational innovation.

TOYOTA AND JIT[7]

In the early 1950s, Toyota was a small automobile manufacturer serving the Japanese market. Compared to its giant US competitors, Toyota suffered from a drastic lack of capital and an almost negligent economy of scale that it made it impossible to match its competitors' low production costs. Like other automobile companies in Europe, Toyota tried for some time to mimic the advanced mass-production techniques of its US competitors. Soon, however, it began to develop a distinct approach that was better suited to the scale and nature of its operations. One of the most famous Toyota innovations was the development of the "just-in-time" (JIT) manufacturing system.

This system was ideally invented to eliminate all inventories from the production process. In traditional manufacturing industries, goods processed on one machine would be held in a buffer inventory until the next machine in the sequence was ready for its operation. Inventories separating the successive stages protect each machine's operations from delay or disruptions at adjacent stages of production. However, inventory systems are subject to very large economies of scale, so Toyota could never achieve cost parity with its larger competitors if it relied on such a system.

In place of inventories, Toyota established a system of closer communication and tighter coordination between successive stages of the production process, so that each stage would be informed "just in time" when it had to deliver its product to the next stage. Without inventories to buffer the disruptions caused by defective products and broken machines, Toyota engineers had to work to improve the reliability of every step of the process. The same changes that reduced the number of interruptions in the production process often reduced the number of defects in Toyota cars as well, as flaws were caught immediately instead of piling up in the in-process inventory. The absence of inventories also meant that Toyota had to be linked more tightly to its suppliers than

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[7] See P. Milgrom, and J. Roberts,. *Economics, Organization and Management* (New Jersey: Prentice Hall, 1992) pp. 2-18 for a detailed description.

were the US firms, communicating with them about the day-to-day needs and helping them improve the reliability of their own systems. At the same time, the need to repair broken equipment quickly caused Toyota to train its equipment operators to carry out maintenance and repairs themselves. In contrast, maintaining and repairing machines was a separate specialty with a separate job classification in the US, and when a machine broke down, its operator stood around waiting until a repair specialist turned up to fix it.

Under Sloan's leadership, GM moved to take full advantage of the large scale of its operations by including the same parts in many different cars. By using the same chassis or engine or brakes in several models, GM could afford to develop specialized manufacturing for these components, substantially reducing production costs. In contrast, Toyota did not enjoy such scale economies and instead emphasized improving flexibility of the equipment it did use, so that the same equipment could be quickly reset to produce different models. Given this emphasis, it should come as no surprise that Toyota had become a world leader in the use of industrial robots as early as the 1960s.

In these few brief historical accounts, several patterns have begun to emerge. First and most fundamentally, external strategy can be as important as technology, cost, and demand in determining a firm's success. Despite its superior technology, greater resources and scale advantages, Ford Motor Company under Henry Ford's management lost its battle with Sloan's General Motors. GM, in turn, lost market share to a smaller and technologically weaker Toyota, which labored under the same kind of disadvantages. The successful competitors in these stories gained advantage partly from the external strategies they adopted in their markets, but a large part of their advantage also came from their internal strategy of innovative organizational structures and policies and especially from the alignment of their internal strategy with their external strategy.

These examples illustrate the widely appreciated fact that a firm's optimal external strategy often requires complementary internal strategy implementation. However, not only does external strategy drive internal strategy but in many cases internal strategy changes or influences external strategy decisions. The following example summarized from a Harvard Business School Case Study of a law firm demonstrates the influence of internal strategy over the firm's external strategy decisions.

BBF AND THE IMPACT OF INTERNAL STRATEGY ON EXTERNAL STRATEGY[8]
Brainard, Bennis and Farrell (BBF) was founded in 1963 at Stamford, Connecticut by three partners, each of whom had left a large Wall Street law firm to establish a practice that would deliver " outstanding legal services by providing a harmonious place to work for truly superior legal minds". Part of their external strategy for creating this "harmonious" place was to locate their practice outside New York City in an effort to get away from the brutal lifestyle and enormous pressure to bill hours that went with practicing on Wall Street. The firm got off to a good start, largely because a number of loyal corporate clients followed the founders to Connecticut. The firm

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[8] From: Andrew Burtis and John J. Gabarro, *Brainard, Bennis and Farrell*, Harvard Business School Cases, Case# 9-495-037: Harvard Business School Publishing.

had proved successful in attracting top graduates from the leading law schools as well as a growing client list of significant regional and Fortune 1000 companies. By the late 70s the firm had established a strong reputation and much of its growth was coming from referrals of existing clients.

In the early years Brainard, Bennis and Farrell served as the Managing Committee until 1980, when one of the senior partners was chosen to join them. Soon after Farrell retired. This pattern of the Managing Committee choosing its successors continued until 1989 when both Bennis and Brainard retired. At that time, the firm switched to an electoral system for choosing its executives. Four Executive Committee members were elected for rotating four-year terms, so that in each year one of the committee members was up for re-election.

In the early 90s the client list included several Fortune 500 companies and in an effort to provide in house support for all the needs of their clients, BBF expanded its services to include Litigation, Real Estate, Tax, Bankruptcy, and Trusts and Estates. By 1995 BBF had grown to 83 lawyers: 37 partners and 46 associates. According to a survey conducted by an accounting firm, BBF's economic results had been slightly above the median for firms of its size. However like other firms in the 90s the firm had faced increasing competition, escalation of costs and a consequent flattening of economic results forcing them to look closely at their business practice.

The firm's internal organization was set up to reflect its sedate corporate law practice where reputation and word of mouth brought in new clients. The incentive structure rewarded seniority (as a measure of reputation in the field) and other observable performance measures such as the number of hours billed and business origination. However, with the increasing competition, the incentive structure at BBF was modified to reward abilities like "business getting" and "profit generation". These internal changes had the effect of emphasizing and rewarding the abilities of the young litigators who aggressively sought out clients and whose practice included several clients at a time. This emphasis came to be reflected in the elections to the Managing Committee as the litigators began to use their strengthened position in the firm to actively lobby for their election into the committee. In 1997 the Managing Committee was comprised of two litigators, one corporate lawyer and one tax specialist.

BBF had slowly changed from being a genteel corporate law practice to one that almost mimicked the cut-throat law practice of Wall Street firms: the very opposite of what BBF founders had envisioned. Although changing the focus of the firm may have been a good economic outcome, the purpose of this example is to highlight the influence of internal strategy on the external strategy of the firm. The example also illustrates that alignment between a firm's internal and external strategy is crucial to remaining on the intended course.

2.3 How is alignment achieved?

In order to align an organization's internal and external strategies, it is important to understand those factors that influence and shape the external and internal strategies. The external strategy, as we have discussed previously, depends primarily upon the changes in the external environment. These changes in the environment can be attributed to changing market conditions, new players entering the market, demands for better products at cheaper prices. The external strategy can also depend on the changes an organization faces as it grows[9]. The internal strategy of the organization is influenced by the external strategy. Alfred D. Chandler, Jr., in his book Strategy and Structure[10] proposes that outside market opportunities determine a company's strategy, which in turn determines the company's organizational structure.

This implies that the organization's external strategy influences the internal strategy, which then has to be implemented on the internal organization in order to steer the organization towards alignment. For instance, Toyota implemented its internal strategy of JIT by creating and fostering closer communication and increasing reliability. Attributes of the organization such as reliability and communication are dependent on elements of the organization such as processes, incentives, organizational structures, etc. Toyota achieved reliability by changing organizational elements such as the organizational structure by delegating authority to those with information[11]. Drawing upon the examples described earlier, we can highlight some of the other important aspects and elements of the organization. Important shared features of these examples include incentives and the tendency to place authority for decisions in the hands of those with the information. Incentives are especially important when more initiative is expected from employees. GM with its multidivisional structure placed product and marketing decisions in the hands of divisional managers. Other aspects of the organization such as the spatial design of the work environment, organizational structures, hiring policies are equally important and shape and influence the nature of work. These examples therefore illustrate that changes in the elements of an organization can lead to changes in the way work is performed.

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[9] Larry Greiner in his paper "Evolution and revolution as organizations grow" explains that growing organizations tend to undergo phases of development. He uses the tern "evolution" to describe prolonged period of growth where no major upheaval occurs in organizational practices. "Revolution" is used to describe those periods of substantial turmoil in the organization and these phases tend to follow periods of evolution. The critical task for management in each revolutionary period is to find a new set of organizational practices that will become the basis for managing the next period of evolutionary growth because what was considered a major solution in one time period could become a major problem at a latter date.
Larry E. Greiner, *Evolutions and revolution as Organizations grow.* Harvard Business School Cases, Case# 9-495-037: Harvard Business School Publishing.

[10] Strategy and Structure: Chapters in the History of the American Industrial Enterprise (Cambridge, MA, The MIT Press, 1962)

[11] Decisions regarding machines and production processes were taken by the operators of the machines rather than by managers who had no direct contact with the machine or with the production process.

However, it is important to note that not only do changes in individual elements or variables of the organization change the nature of work, but also changes in these elements have a collective influence on the nature of the work. The collective influence of the aspects of the organization on the nature of work is termed as complementarities in organizational economics. For instance, although delegating authority to those with the information needed to make good decisions is an important part of organizational design, it is of little use unless the decision-makers share the organization's objectives. Delegation of authority is much more valuable when those being empowered have also been given the incentives to work for the organization's objectives. Delegation of authority and the incentive structure are examples of complementarities and it is important to understand and evaluate their effect on the firm in order to understand the nature of work and then to change it to respond to the firm's internal strategy.

Therefore, in order to implement and align a firm's internal strategy with its external strategy, designing and managing an effective organizational change strategy is of great importance. However, organizational change cannot be a one-shot event. Aligning a firm's internal and external strategies has often been compared to the intricacies involved in navigation. Like landing an airplane, aligning the strategies is an ongoing balancing act that involves setting direction, linking processes and systems, and making constant adjustments. Thus a continuous process of organizational change has to be set up in order to steer and maintain the organization on the intended course of alignment.

3   MODELS OF CHANGE

In the previous chapter we have discussed the importance of aligning an organization's internal and external strategies in the effort to succeed in the ever-changing business environment. We have also seen, through examples, the importance of designing, implementing and managing a continuous process of organizational change in order to effectively integrate internal work practices with strategic business goals. In this chapter we develop and lay out a model of organizational change and demonstrate that an inquiry into the workplace and the work environment not only helps structure an effective strategy of change, but also triggers an inquiry into the nature of work practice which in turn drives workplace change. "Change" is meant to include adaptation, evolution, learning, transformation and all other processes that lead a system to move from one state to another state.

SYSTEMS IN QUASI-STATIONARY EQUILIBRIUM

In order to understand any kind of change, we must first have a model of a "system" in a steady "state". Kurt Lewin refers to the steady state as a "quasi-stationary equilibrium".[12] A system can be an individual, a group, or an organization, and any given system is usually composed of a number of sub-systems. The system is always in a state of some change, but all systems are homeostatic in that they tend toward some kind of equilibrium. Some sub-systems change more slowly than others and those sub-systems that change at the slowest rate are often referred to as the "structure" of the system. The tendency toward equilibrium pushes a system to a state of equilibrium, however, once the environment changes, the equilibrium moves to another level. In this sense the "steady state" or the "equilibrium" is only "quasi-stationary".

SUB-SYSTEMS, CHANGE AGENT AND CHANGE TARGET

The state of work practice is dependent upon the sub-systems of the workplace. We define the sub-systems of the workplace as those elements of the workplace that can be changed either individually or in combination so as to result in change in the work patterns and the nature of work. For example, changing the spatial design, a sub-system, of the workplace influences the way people interact and thus leads to changes in the nature of the work practice from, for example, a strictly individualistic work environment to one that affords more interaction. Other examples of sub-systems include the organizational structure, the incentive and reward structure, information technology, and the organizational culture. Not only does the change in individual sub-systems impact the nature of work, but also changing the sub-systems in combination has a much deeper impact on the work practice. This collective influence of the sub-systems of the organization on the nature of work is termed as complementarities in organizational economics. In the above example, for instance, in addition to the open spatial plan, if the incentive structure is changed to

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[12] Lewin, K. Group decision and social change. In G.E. Swanson, T.N. Newcomb, & E. L. Hartley (Eds.) Readings in Social Psychology Rev. Ed. NY: Holt, 1952

reward collaborative work, the sub-systems of spatial design and the incentive structure work collectively, and more effectively, to influence the nature of work practice. Conversely choosing to change one sub-system without complementing it with changes in other sub-system could lead to sub-optimal results in the state of the work practice. For example, in an effort to increase collaboration, a firm may choose to house all its employees in cubicles. However, without appropriate changes in the reward structure, employees who were accustomed to seeing an increase in their physical space proportionate to their position in the organizational hierarchy may interpret the space-reducing strategy of the organization as reneging on an implicit contract. Thus the state of the workplace would reflect this perceived betrayal of trust by the firm in the form of reduced motivation among the employees.

As we have seen, choosing the sub-systems and the combinations of sub-systems can also impact the state of the system. Therefore changing the sub-systems can change the state of the system. We prefer the term "variables" to describe sub-systems as it conveys the impression that sub-systems are not fixed but can be varied and changed to influence the state of the system. Furthermore, in addition to these variables that can be changed and controlled, there exist other variables, such as, sudden changes in the political climate, sudden drops in demand, etc. that cannot be controlled, but which influence and change the state of the system. Therefore, we term those variables that are under our control or that we can design as "design variables" and those that we cannot control as "independent variables".

A change agent is defined as anyone who, intentionally or unintentionally, forces a change in the state of the system. In most situation, however, the change agent is someone who deliberately tries to move a system in the direction he or she desires. Change agents can be inside the systems as team members, leaders, etc., or outside the systems as consultants. The change agents designs and implements change on the design variables in order to change the state of the system. Therefore we refer to the change agent in the process of change as the design source[13] or the design source. Finally, what is to be changed is the change target. The design source manipulates the design variables to change the state of the system. The state of the system is therefore the change target. Most models of change incorporate the variables, the change agent and the change target into some framework in order to explain the process of change.

MODELS OF CHANGE

A chronological review of change management literature beginning in the 1940s shows a number of models depicting a three stage process: first, a beginning stage, when the organization becomes aware of its need to change and begins formulating a plan; second, a transition stage, when the organization implements the change; and third, a recovery stage, when the change becomes natural to the organization[14].

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[13] The design source can be comprised of more than one change agent. The design source refers to all those people involved in, and can influence, the process of change in the workplace.

[14] W. Bridges, *Transitions: Making sense of life's changes.* (Reading, MA: Addison - Wesley. 1980)
Kurt Lewin, *The research center for group dynamics.* (New York: Beacon House: 1947)

A model of planned change

Unfreezing: *Creating motivation to change*
        Disconfirmation
        Guilt/ anxiety
        Psychological safety

Changing: *Creating new beliefs, values, behavior*
        Identification, imitation
        Scanning, trial and error

Refreezing: *Stabilizing the changes*
        Integration into personality
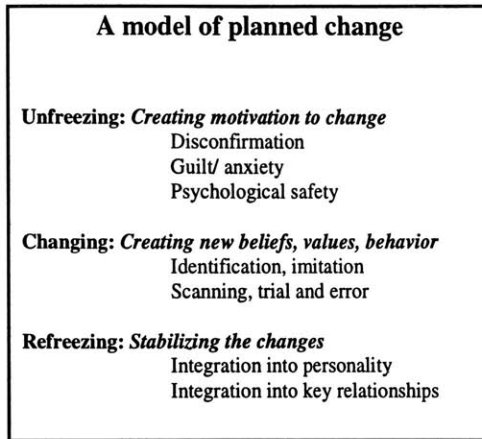   Integration into key relationships

Fig. 3.1. A Model of Planned Change
SOURCE: Kurt Lewin, The research center for group dynamics. (New York: Beacon house, 1947)

One of the most well known and longest surviving models is Kurt Lewin's model of "unfreezing, changing (or "moving"), and refreezing", as shown in figure 3.1. The unfreezing stage occurs when the organization begins encouraging employees to address the change, informs employees of the process, and dispels false information. During the changing stage, employee behavior, organizational attitudes, corporate values, and management practices all undergo a dramatic shift. Finally the refreezing occurs and the organization regains equilibrium, and employees' new way of working become "learned behaviors" and is supported by management.
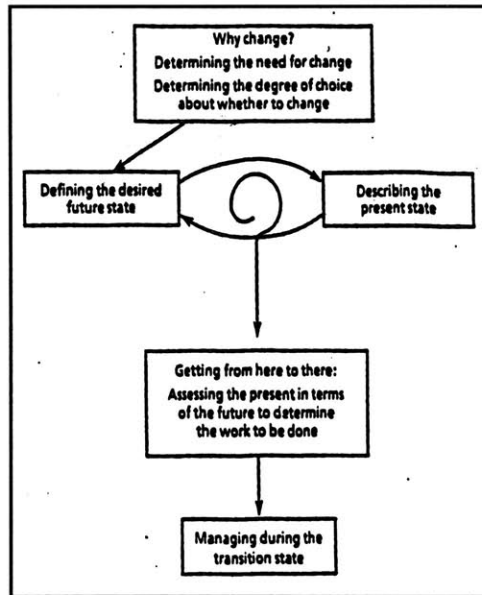

Fig. 3.1. A Map of the Change Management Process
SOURCE: R. Beckhard and R.T. Harris; *Organization Transitions: Managing complex change. (2nd ed.)* Reading, MA: Addison-Wesley, 1987.

Another well-known formulation for thinking about the management of a total change process is the road map provided by Beckhard and Harris[25] as shown in figure 3.2 alongside. The fist step is about providing a credible answer to the question "why change?" In this stage, the need for change is determined, and the degree to which change is crucial is ascertained. The next stage in the process is to develop a clear picture of the ideal state to be attained at some future date. Developing a concrete vision of the ideal state is essential in order to test the feasibility of the change. As the change process progresses, the ideal state vision often changes, but it is essential to always have it in some form. The next stage in the process is to define as precisely as possible the present state of the system. Once the present state has been determined, the next steps involve addressing the problem of moving from the present state to the desired state and of managing the transition.

Although the terminology used in different three-stage models has slightly different connotations, the models all follow the same line of reasoning - that change is a linear process (organizations move from one stage to another with one stage influencing the next but that step does not influence the previous step) through which employees must be managed in order for implementation to succeed.

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[15]R. Beckhard and R.T. Harris; *Organization Transitions: Managing complex change. (2nd ed.)* Reading, MA: Addison-Wesley, 1987.

Design
Source

Decision-making

Assessment/
Re-assessment
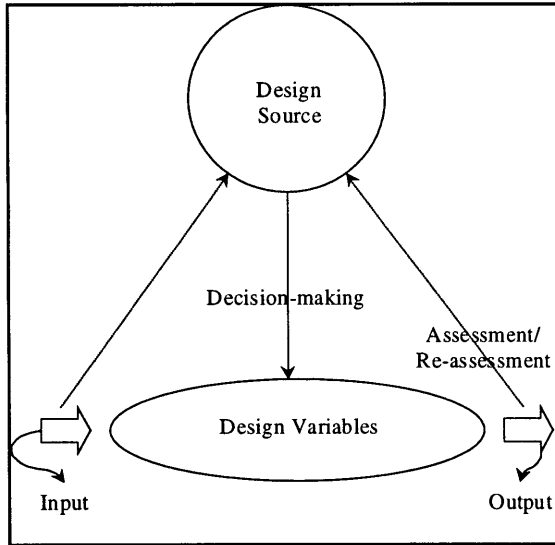
Design Variables

Input

Output

Fig. 3.3 Traditional models of decision-making and design have often focussed on the Design Variables rather than on the systemic effect of these variables on the nature of work practice

More recently, change management consultants and the organizations themselves have begun to look closely at how change actually occurs within organizations. From those studies, it has become evident that the change process is not linear. Stages often overlap or have to be revisited as the process goes forward. It has become apparent that change is a continuous series of overlapping steps that involve new management structures, new technologies, a variety of leaders, a completely different work setting, and so on. While the steps in the implementation process overlap, they can be divided into two separate categories in most models: assessing (that is, assessing business goals and the change in the state of the variables) and designing (that is, design and decision-making on the changes to be implemented and managing change); as shown in figure 3.3

WHAT IS LACKING?

We believe that the answer to this question is two-fold. First, the older models of change view the process of change as a "one-shot" linear event. They describe a linear, step-by-step progression from planning change to implementing and managing it. They do not capture the dynamic nature of the steps and the fact that each step can impact and influence all of the others is not modeled. Second, although the more recent models of change look at change as a non-linear and dynamic process, the method of designing and implementing change fails to capture the complexity of the collective influence of the variables on the state of the system. Assessing the change in the variables is often limited to evaluating the difference in the variables before and after change rather than analyzing and evaluating the systemic effect of these changes. Although the Beckhard and Harris model of change clearly defines the distinction between the desired state of the system and the actual state of the system as a result of the systemic effect of the variables, the model views the process of change as a linear process. This model does not indicate that both the desired state and the actual state of the system themselves are influenced by the change process and does not provide for the reassessment of the desired and actual states throughout the process of change. We address both these issues in the proposed framework, by combining aspects of continuity and dynamism of the recent models with the distinction between the actual and desired states of work practice from the Beckhard and Harris model.

3.1 A NEW FRAMEWORK FOR WORKPLACE CHANGE

We begin our discussion of the proposed framework by first defining the components of this framework, such as, the system, the design and independent variables, the design source, the desired and actual states of the work practice. We then lay out the structure of the framework for workplace change and demonstrate that an inquiry into the actual state of the work practice drives organizational change. Finally, we validate the framework by applying it to the case study of the successful transformation of the Liquid Xerography Laboratory at Xerox's Webster Research Center

3.11 Components of the framework

SYSTEM:
The system, as we have described earlier, is an individual, group or organization that is composed of sub-systems and, analogous to a living system, is almost always under some state of change. For the purposes of our framework, we define the system as the nature of the work practice. In order to succeed in a changing market environment, an organization has to align its internal work practices with its business goals. Therefore, the system, or the change target, in an organizational change process is the nature of work practice.

DESIGN VARIABLES:
We have previously described design variables as those elements and sub-systems of the workplace that can be changed or varied to produce a change in the state of the work practice. These variables are interdependent and dynamically coherent[16] and changing one variable changes all other elements and, consequently, the state of the workplace and the work practice.

INDEPENDENT VARIABLES:
Apart from the design variables, the actual state is also effected by independent variables. These independent variables, as the name suggests, cannot be controlled or designed. Examples of the independent variables include sudden, volatile changes in the external market forcing the firm to shift the focus of its recruitment or hiring strategy, freak weather patterns that result in huge drops in the share price of the firm thus reducing capital inflow, etc.

DESIRED STATE OF WORK PRACTICE:
The Beckhard and Harris model of change describes the desired state of the work practice as the ideal state to be attained by the organization at some future date. In terms of the proposed framework, we define the desired state as the concrete vision or the articulation of the actual behavior and attitudes to be achieved so that the work practices of the organization align with its

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[16] Horgen, et al, in their book *Excellence by Design* (New York: Wiley, 1999) explain that a dynamic coherence exists among work process and the workplace environment. Through case studies they demonstrate that when an "organization sets out to transform its work process, it commits itself to a transformation of all four (spatial, organizational, financial and technological) dimensions of its work environment."

strategic business goals. The term "desired state of the work practice" encompasses all aspects of the work practice such as collaboration, teamwork, motivation, organizational behavior and culture at their optimal degree such that this desired state drives the organization in the direction of alignment. In addition to being dependent on the alignment strategy the desired state is shaped by many other factors such as, "type", "bench marking", and insights into new methods of working.

Over the course of time, each industry, each class of work develops a "type" of work practice. For example, laboratory researchers have often been "typed" as those who constantly work with specialized, and often cumbersome, equipment and dangerous chemicals. As a result, organizations structure the work practice, workplace and the work environment based on a prevalent type rather than examining the fact that most of the dangerous and cumbersome work is now done by computers and robots and that the needs of the researchers are changing. Therefore, very often, the desired state of the work practice is based on type, whether or not it is still relevant to the nature of the work practice. Another factor that influences the desired state is the concept of bench marking. Effective bench marking can be a very useful tool in determining the desired state of the work practice[17]. Finally, the desired state can also be influenced and changed by insights into new methods of working. These insights are often a "side-effect" of the process of change. It is often noticed that when people in the organization are involved in analyzing the nature of their work, they gain a new perspective of the ways in which they have been working and very often, spot inefficiencies and redundancies in the existing nature of work.

THE ACTUAL STATE OF THE WORK PRACTICE:
The actual state is that state of the work practice that reflects the degree of collaboration, team work, motivation etc. among the employees of the firm as a result of the way in which the collective influence of the design variables is perceived. For instance, changing its compensation and reward structure to a "pay for performance" policy from a standard hourly wage policy a windshield manufacturing firm hoped to increase its output two-fold. The firm believed that since the employees were now paid by the number of windshields they produced, they would increase the level of production to take advantage of this "paid by the widget" policy. However, employees at the firm were threatened by this change in policy. The firm had not explicitly guaranteed to not ratchet down their wage rate once the employees became more "productive". The employees suspected that once production, and therefore output, increased the firm would either "lay-off" a portion of the workforce or reduce the wage rate, thus gaining productivity at a lesser cost. Fearing a ratchet effect, employees continued to produce the same number of windshields as under the hourly wage compensation structure. Therefore, in the context of the windshield-manufacturing firm, the firm's aim of increased production reflects the "desired" state and the skepticism of the employees towards the new compensation structure resulting in a stable rate of production reflects the "actual" state of the workplace.

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[17] Xerox, in its effort to manage inventory, bench marked L.L. Bean, a firm that almost solely sells its products through catalogs. Xerox understood that for L.L. Bean to be profitable it needed to reduce inventory costs and had to have an efficient storage and retrieval system. Xerox studied the L.L. Bean inventory management systems and set desired states of work practice in its own organization.

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In the case of the windshield-manufacturing firm, the reason for the distinction between the actual state and the desired state resulted from a lack of communication between the firm and its employees. Had the firm analyzed and discussed the situation with its employees and had it given the employees reassurance regarding its post-increased production policy, the firm may have experienced an increase in production along with a reassured and happy workforce. This instance illustrates but one of the many reasons for the distinction between the actual state and the desired state of a workplace. We briefly describe some of the other reasons for the distinction between the desired and actual states of work practice.

1. *Top Down enforcement:*

Decisions taken by management and enforced on employees. There is no collective involvement of those on whom the decisions effect or influence most.

For example, at Chiat/Day, an advertising company, the internal strategy of eco-friendliness, advertising, cost-reduction, space reduction, and through reduced storage requirements resulted in management's decision to reduce the use of paper and enforcement of a "no-paper" policy. All communication and documentation were to be handled electronically. These decisions were taken without the involvement of the people actually affected by this policy.

Desired state: Less paper consumed. Faster and more effective communication. (as data become electronic, it was hoped that information could be passed back and forth much faster.) Reduction in usage of space. (Storage requirements reduced)

Actual State: People spending more time hiding paper usage. This resulted in less time spent working and more time spent circumventing the policy, thus creating a distinction between the "desired" and the "actual" states of the organization.

2. *All parts of the organization not involved in the decision process:*

Often decisions are taken with involvement of employees of departments directly involved in the change process but without the involvement of departments the change process may effect.

For example, at Pfizer Inc., the transformation from functional groups to project groups involved most of the relevant functional groups, such as, the clinicians, the statisticians, the biometricians etc., but did not fully involve the medical writers. Medical writers were previously grouped together in a separate department and gained part of their identity through an association with their department and with their common space. The writers were not assigned to any one project but were assigned tasks (often associated with many projects) based on the internal power structure of the department. During the change process, when project groupings were suggested, medical writers were to be assigned to individual projects and would move upstream or downstream as the project developed.

Desired state: Less bureaucracy and more transparency in operations. Efficient use of expertise, and time since one person would be responsible for "writing" for one project and would be able to devote both time and expertise to it.

Actual State: Medical writers were confused and threatened by their position in the organization as they perceived a loss of identity, which they had built up through association and belonging to the "writing" department.

3. *Existing situation not taken into account:*

The design source fails to respond to the actual state of the work practice either because they do not have sufficient data pertaining to the actual state or because they ignore or abuse the data to further certain political agendas.

4. *Continuous feedback absent*

The design source does not have continuous information and feedback about the actual state and the variables upon which change has been implemented. Situation is almost analogous to "designing in the dark".

5. *Faulty assumptions*

Believing that what worked for one firm would work for their own, management, and the design source, implements the same transformation strategy on their firm. However, without analyzing the requirements of their organization, the transformation strategy may never be able to close the gap between the desired and the actual states of work practice.

6. *Faulty implementation*

Often, the distinction between the actual and desired states is caused by improper understanding of the collective influence of the variables on the actual state of the work practice, and improper implementation of the transformation strategy.

For example in Xerox's LX laboratory, a decision was taken to shift some employees to cubicles to achieve the desired state of collaboration and teamwork. The decision did not take into account the attendant problems of loss of territoriality and identity.

<u>Desired state:</u> Increased collaboration and communication among researchers.

<u>Actual state:</u> Loss of identity (sense of belonging) and employees threatened by the implication of the reduction of space.

7. *Mixed signals*

Improper understanding of the collective influence of the variables of change (space, processes, information technology etc.) on the actual state often results in sending mixed signals to the organization.

For example, consider the incentive system of basing compensation and salary on team performances to emphasize teamwork, but setting the measures for advancement (promotion) in the company on individual work. This sends a mixed signal to the employees as working in a team promises greater monetary benefits. However, teamwork would reduce the time spent on individual work and thus reduces the possibility of advancement in the company.

8. *Shock to the system*

When upheavals in the economy or market takes place the firm shifts its external strategy and this causes the internal strategy to change. Therefore the desired state itself changes dramatically.

3.12   Framework for workplace change

The change process can be conceptualized as consisting of phases of evaluation, redefinition and re-articulation of design issues, design and decision-making, and influencing or changing the actual state of the work practice, as shown in figure 3.4.
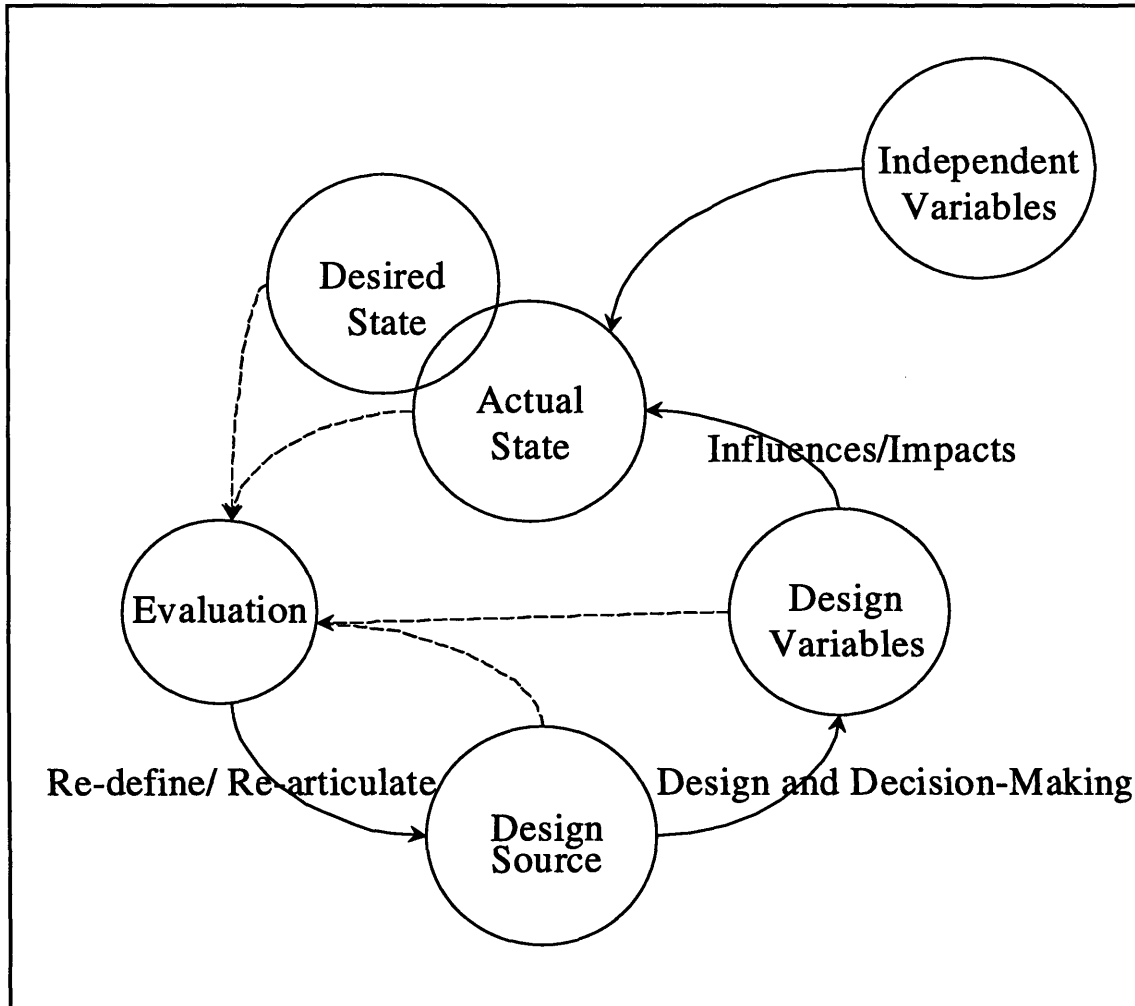

Fig. 3.4. Conceptual diagram of the framework for workplace change

1. EVALUATION: The actual state is analyzed by understanding how the existing workplace works, mapping how the work is currently done, diagnosing problems of the workplace setting and defining the design issues of the workplace. The cause of the distinction between the actual state and the desired state is examined by comparing data from the actual state against data pertaining to the changes in the design variables and the design decisions taken by the design source. The process of evaluation and inquiry is central to the proposed framework and we shall describe the process of evaluation in greater detail later in this chapter.

1. RE -DEFINITION AND RE -ARTICULATION OF DESIGN ISSUES: The data obtained from evaluation of the actual state helps define and articulate the design issues that should be examined and tackled by the design source. During evaluation, data from the actual state, design variables and policies and design issues of the design source are analyzed. This analysis helps the design source to clearly understand the actual situation in the organization and the direction in which the change process is headed (i.e., towards or away from alignment with the desired state). Evaluation also offers insights into better work practices that may result from an unintended consequence of the change process and this helps the design source inquire whether the desired state itself should be changed. Thus data obtained from evaluation forces the consultants to redefine or re-articulate the important design issues.

2. DESIGN AND DECISION-MAKING: The design source obtains those design issues that need to be tackled in order to influence the actual state so as to move it closer to the desired state. From this information, the design source designs a strategy to change the variables and takes a decision on the most effective method of implementation. Designing and implementing this strategy includes choosing and grouping the variables, setting the new value for the variables, deciding the sequence of the change process and picking the most effective method of implementation.

3. INFLUENCING AND IMPACTING THE ACTUAL STATE: The design source cannot directly influence or change the actual state of the work practice. The design source can only change or control the design variables which in turn influence and change the actual state of work practice. However, as we have seen in the examples highlighting the reasons behind the distinction between the actual and desired states, we cannot estimate or easily predict the "cause and effect" relationship between the collective influence of the design variables and the change in the actual state. Therefore, a one-to-one mapping between the design decisions taken by the design source, the change in the variables, and the resultant change in the actual state does not exist. This indirect and unmodeled relationship between design decisions and the consequent changes highlights the importance of continuously evaluating the design decisions taken by the design source, the change in the variables, and the subsequent change in the actual state. Of equal importance is the necessity of continuous feedback of this evaluative information to the design source so that the design source can continuously and dynamically refine and restructure the change strategy to produce the desired change in the actual state of work practice.

We have depicted the change process as a set of phases which imply a kind of orderly chronological progression. In reality, we find it useful to recognize that all phases of the change process tend to remain active throughout the continuing life of the organization - through one process of change to another. The sequence is not rigid either. Leaps occur, both forward and backward, and activities and events are visited and revisited as a consequence of the availability of new information. For example, what is learned by the process of evaluation may provoke a redefinition of the problem, generating new ideas and alternatives. The limitations of written text forces us to present these phases in the form of a sequential list, although we would prefer to represent the change process more graphically in the image of a dynamic spiral of iterative, neither random nor uncontrolled, events.

3.13 Significance of the framework

The framework for workplace change sets up a mechanism by which the process of inquiry into the work practice triggers a process of workplace change. By continuously inquiring into the existing nature of the work practice, the distinction between the desired state of work practice and the actual state is automatically set up. This distinction drives an organization to rethink its existing and desired nature of work practice and forces it to change in order to close the gap between the desired and actual states. Traditional models of change, as we have seen earlier, either do not distinguish between the actual and desired states or do not consider change to be a continuous, non linear process where each phase of the change process influences and changes the actual nature of work practice. Thus, traditional models do not view the existing nature of the work practice as a dynamic state that changes constantly throughout the process of change. These models therefore, often limit evaluation of the actual state to pre and post change evaluations that highlight the success or failure of a change strategy, or to measurements of the change in the organization's observable performance metrics such as cost reductions, profit increases etc. The time taken for the change to show up on an organization's balance sheet, or for the organization to completely adjust to change in order to conduct an effective post-change analysis, is enormous, making the process of change almost meaningless since the organization will not be able to keep pace with the rapidly changing external environment. We believe that the dynamic nature of the actual state demands continuous evaluation in order to refine the change strategy "on-line" and to structure an effective strategy of alignment between the organization's internal work processes and its strategic goals.

The framework highlights two important issues:
1. The importance of the process of evaluation and inquiry in structuring an effective strategy of change.
2. That the organization will effectively conduct a process of inquiry into its work practices in a way that is acceptable to the whole organization and its people.

We shall examine both these issues in greater depth.

PROCESS OF EVALUATION
The process of evaluation starts at the beginning of the process and continues as knowledge from previous projects and phases of change are brought into the process. Continuous evaluation serves to tie the several phases of the process together. Evaluation and learning from evaluation and the process of change are often "messy" since the very definition of "what works" or the actual state of the work practice and the criteria to be used to make those judgments are open to question and determination throughout the process of change. We have already discussed some of the challenges involved in evaluating the actual state of the work practice such as the difficulty in mapping the relationship between changes in variables and the changes in the actual state, and the influence of independent variables. Other issues that influence the actual state, and that have to be considered in order to evaluate the actual state, include the very metrics used to evaluate the actual state and the composition of the design source.

Evaluation criteria

Apart from the design and independent variables the process of evaluation itself influences the actual state. The metrics chosen to "measure" and "evaluate" the actual state has a significant influence on the nature of work practice. For instance, using time cards or the employee's presence in the workplace as a performance metric can influence the actual state by sending a message to the employees that being present in the office, whether or not they contribute to the organization, is more important than working off-site. This examples illustrates a case where the performance metric itself influences performance.

Composition of the design source

The composition of the design source has a significant influence on the actual state. We have previously discussed consequences on the actual state if the composition of the design source is limited to top management without the participation of all people affected by the change process. In that example, the perception of a loss of identity and the sense of ownership among the employees influenced the actual state of work practice. Conversely, if the composition of the design source includes all the stakeholders[18] in the change process, it is more likely to be a collaborative and interactive process of inquiry and evaluation, leading to an effective process of change.

EVALUATING THE ACTUAL STATE OF WORK PRACTICE

We have discussed the importance of evaluating the actual state of the work practice. We have also described some of the challenges involved in evaluating the actual state. The question therefore arises as to how does one evaluate the actual state of work practice. The actual state, as we have discussed previously, is that state of work practice that is a result of people's reaction to their perception of organizational policies and structures, and the changes in the design variables. In order to evaluate the actual state, therefore, we will have to understand the way in which people perceive the collective influence of the design variables on the work practice.

We believe that the only way to understand how people perceive their work is to actively and collaboratively engage the people in the inquiry process. Traditional methods of evaluation that attempt to understand "what works" in the workplace often do not involve the stakeholders in the collection and analysis of data. The traditional researcher gathers data by trying not to disturb the system and hence loses the opportunity to confirm or disconfirm his or her hypotheses or biases by eliciting information from the stakeholders. In contrast, we propose a strategy of intervention in which the consultant involves the participants in the formulation of the hypotheses about "what is going on" and collaboratively checks these hypotheses. This interactive process results in learning about the organization in the process of trying to change it. This learning therefore benefits the whole organization, as all the stakeholders "learn" along with the consultant. We will discuss the strategy of intervention in more detail later in the thesis when we develop methods and techniques to evaluate the actual state of the work practice.

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[18] The term stakeholders refers to all those people who are directly or indirectly responsible for, or affected by, the process of change.

The process of inquiry will continue to grow in depth and breadth over time as we gain new information and new insights. We believe that this process of inquiry should foster a growing understanding of the workplace change process among the stakeholders. However, we must first become aware of the roles the stakeholders play in the process of change. Horgen, Joroff, Porter and Schon, in their book *Excellence by Design* (Wiley, NY) use the "Design Game" to explain, analyze and "anticipate the unfolding of" the workplace change process and the roles the stakeholders play in it. The design game represents a microcosm of the larger organizational game of interests and powers and it gives "players" the opportunity to experiment with their resources and their freedom of action.

According to Horgen et al, the game features a large and diverse set of players: consultants, users, owners, managers, neighbors etc. These players have three traits: 1) they have different professional languages and opinions, 2) each has his or her own personal style of problem solving and thinking and 3) they come from different organizations, different parts of the same organization and most importantly, different positions of power and authority. The stakeholders or the players of the game take their relative positions on the game board. The game board as shown in figure 3.5 is in the form of a matrix with players arrayed on this board as instigators or as recipients. Instigators are those players who play a key role in initiating and promoting the workplace change process. Recipients are those players who are affected in some way by the process. However, these categories are not mutually exclusive and instigators can be recipients too.
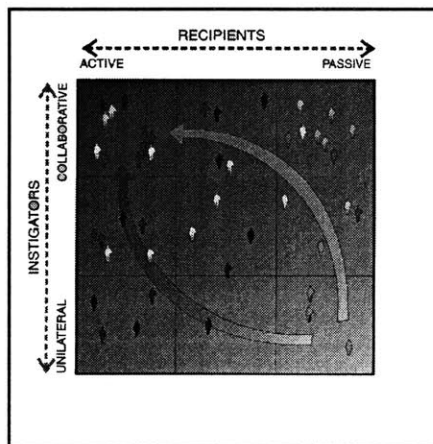

Fig. 3.5. Moving towards collaboration
SOURCE: Turid Horgen, et al, *Excellence By Design* (New York: Wiley and Sons, 1999)color plate 6

The horizontal axis of the matrix – passive to active – represents the degree to which the participants take active roles in the process. The vertical axis – isolated to collaborative – indicates the degree to which players act in agreement. When players (both instigators and recipients) move to the upper left-hand quadrant, i.e., when they participate both actively and collaboratively, the workplace change process becomes one of co-invention. The role of the workplace change consultant is therefore to try and change the status of the game board such that all the players are actively involved in the change process. In this state the composition of the design source includes all the stakeholders who are actively involved in the process of change. When the consultant is successful in changing the design game, the components undergo a process of rethinking and redefinition and new possibilities are brought into the change process. For example, the parameters of evaluating the actual state may change from mere observation to analysis and examination of the causes behind the distinction between the actual and desired state. The design variables may be redefined or new variables, hitherto unnoticed or thought impossible, may be introduced. Therefore, the proposed framework for workplace change is most informative and useful when structured in this context of active and collaborative participation of all the stakeholders.

3.14 Application and validation of the framework

We apply the framework to the case study of the successful transformation of the LX Laboratory at Xerox's Webster Research Center in order to validate the framework.

CREATING A LABORATORY FOR COLLABORATION: THE LX STORY[19]

In 1994 the Xerox Corporation formed the Wilson Research Center located in Webster, NY by combining a research center and an advanced technology development center. The Wilson Research Center was set up to position Xerox as the leading supplier of color-marking systems. The Liquid Xerography Lab. (LX) was one of the nine competency labs that aimed to "create innovative marking technologies". The competency labs formed one axis of the organizational matrix. The other axis of the matrix consisted of platform teams that "attempted to integrate those technologies into new product prototypes." The LX lab had the particular charge of developing Xerox's next generation of color marking technology, which would challenge its existing technologies, its knowledge base, and its conception of its products.

The member ship of LX included some of Xerox's top scientists. Among them were John Knapp, the leader of the day-to-day work in the LX lab, and Jim Larson, senior scientist and the lab manager, who were keen on creating a lab that produced twenty-first century marking technologies through collaborative design across competencies and through professional experience that would enhance problem-solving activities. Together Knapp and Larson wanted to organize a lab environment conducive to work process experiments and were instrumental in initiating the LARC project and the LX Workplace Experiment.

This case study traces the transformation of the LX lab from when it was created to when the LARC consultants entered the workplace change process, exploiting the full potential of the proposed framework by shifting the position of the stakeholders on the design game board, through to the time when the members of the LX lab received five out of the eight awards for outstanding performance at the Wilson Research Center. In addition, the LX lab had three times as many patents as the other labs at the Wilson Research Center. Two years later, John Knapp reported that the lab had been able to develop its first product for market, from the original concept to the introduction of the finished product in a period of eighteen months, while under normal circumstances five years would have been required.

The transformation of the LX lab followed an uneven course of development in which a change in one aspect of the workplace created pressure for change in one or more of the other aspects. By applying the proposed framework of workplace change to this case study, we intend to highlight the fact that the LX lab was not created by a single well planned stoke but through a long series of interactive adjustments, "each leading by degrees to a higher state of perfection." Although the transformation was achieved by keeping all the elements of the framework active at all times, for the purposes of highlighting the salient features of the framework and due to the restrictions of the format of written text, we develop the framework by means of a step-by-step analysis of the events surrounding the formation of the LX lab.

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[19] See Turid Horgen, et al, *Excellence By Design* (New York: Wiley and Sons, 1999) pp. 175-218, for detailed description.

Episode 1: April 94 - August 94

Phase 1: Desired State
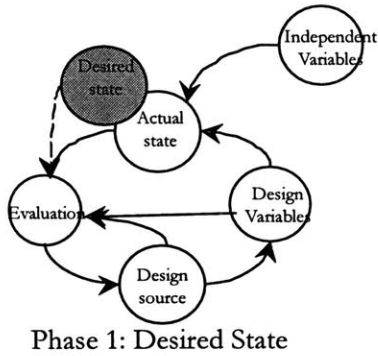
The desired state is influenced and shaped by the external strategy of reducing Time-to-market for new product development. LX is given the charge of developing the new generation of color-marking technology.

Desired State: Xerox management believes that cross-functional teams working in parallel with a focus on interdisciplinary work will create new business value for Xerox and improve overall performance in quality, cost, development cycle time and productivity.

Phase 2: Design
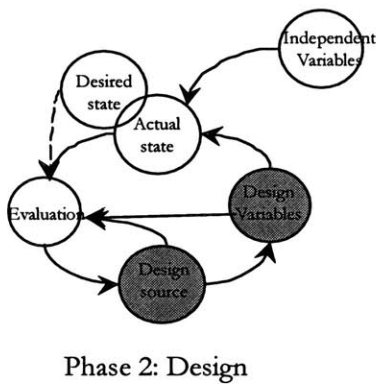
**Design Source:** Xerox Management
Design Variable: Human capital and Information technology.
Design/decision: People from a wide variety of backgrounds and disciplines were brought together in the LX lab. They included xerographers, chemists, process experts, materials experts, computer modelers and experimentalists. This diverse membership, it was believed, would foster collaboration by bringing together researchers from different specialties. Although these researchers were geographically dispersed, it was hoped that virtual co-location through the application of information technology would solve the problem. Xerox Vice President for Research Mark Myers was enthusiastic about the prospects of virtual co-location and was willing to engage the resources and outside expertise capable of developing it with the Wilson Center

Phase 3: Observing the
Actual State
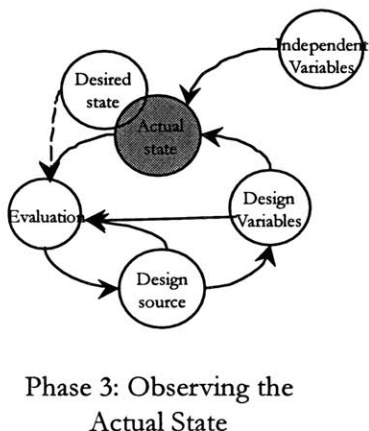
Actual State: No collaboration and little communication among the researchers. Social and intellectual interaction at LX was divided by professional expertise and researchers gravitated around their scientific specialties, with little interaction or cross-pollination of ideas. Physicists at LX would talk to and collaborate with physicists at Xerox's Palo Alto Research Center (PARC) and at Rank Xerox in Europe but would not talk to the chemist who occupied the adjacent lab.
Observation: LX Management observed the actual state and pinned the cause on the geographical dispersion of the researchers without surfacing and analyzing the real issues.
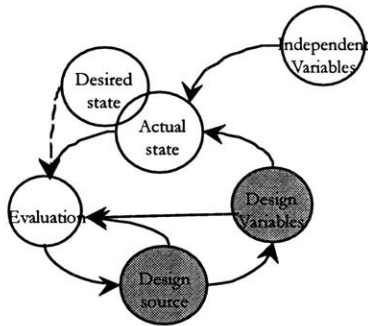
Phase 4: Design

The typical layout of activities at LX was to have laboratories located in the center of the buildings and offices on their perimeters. Inside, the place had the look and feel of a dreary, industrial facility, with rabbit-warren offices on one side of the corridor and closed laboratories on the other. The slit windows that allowed one to peer into these laboratories were almost always pasted over, shutting them off from the outside world and from observation by passers-by.

Design Source: Bob Lechner, head of facilities services for the WRC was charged with co-locating teams of engineers and lab researchers in ways that would improve their productivity. Lechner, within the constraints of the existing facilities had provided the LX lab with a space originally planned for a now dissolved group. This space was sufficient for only a third of the LX personnel and their lab space. In order to accommodate all the researchers in this space, Lechner purchased a number of small pre-built alcove-shaped office units or "harbors". Lechner viewed these "harbors" as the key to the co-location strategy and appropriate for individual lab members.
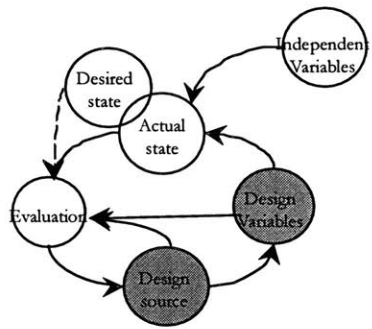
Design Variable: Space

Design/decision: The researchers were slated for co-location and were asked to move into these office units
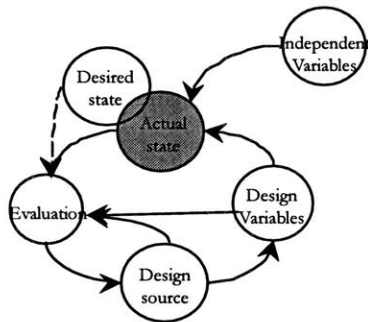
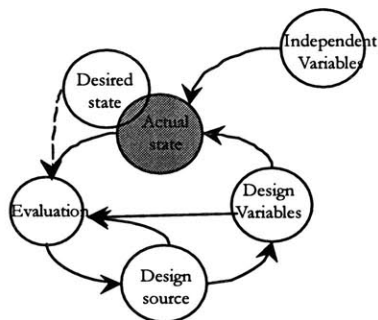

Phase 5: Observing the Actual State

Actual state: There was adverse reaction to the general use of the harbors by the LX members. They did not see how they could collaborate with their colleagues if they were housed in these "containers". The researchers were threatened by the change in the size of their offices. The implicit contract at Xerox was that individual performance led to better bonuses and promotions and those promotions meant better and better offices. The hierarchy of offices progressively included bigger offices, offices with personal meeting spaces, offices with windows etc. When the "containers" were introduced not only were researchers in line for an "office upgrade" asked to move into the booths but also some senior researchers, who had already climbed the spatial hierarchy and already had had offices with windows, were asked to occupy booths next to their junior colleagues. This was viewed by the researchers as reneging on the part of the management, leading to the near resignation of one researcher.

Observation: LX management continued to observe the lack of collaboration and believed the absence of organizational structures, such as project and group meetings, to be the reason for this lack of interaction.

Phase 6: Design

**Design Source**: LX management.
Design variable: Organizational structures.
Design/decision: To increase collaboration, weekly meetings, team meetings and technical meetings were added to the already busy schedule of the researchers with the intention that the researchers would share problems and openly discuss each others' work.

August 94 - December 94

Phase 7: Observing the
Actual State

Actual State: The meetings turned out to be presentations rather than brainstorming sessions. Project leaders made elaborate presentations of their work and never raised problems or unsolved issues. Gradually attendance at these meetings decreased and only those researchers interested in a particular project would attend the meeting.
Observation: At this point – three months into the LX project – Knapp and Xerox's Vice President for research, Mark Myers, were desperate. The Business unit managers who were responsible for the source of funds were getting impatient for results. Knapp had to convince the Xerox business units' managers that their patience would be rewarded. Knapp and Myers then initiated the LARC project[20] and knapp formally reduced LX's mandate from eight years to five, signalling to the business unit's managers that LX was confident of achieving its goal.

[20] The Laboratory for Remote Collaboration (LARC) project was created in 1993 as a collaborative research and development project between Digital Equipment Corporation and Xerox Corporation, through Xerox's Design Research Institute at Cornell University; later SPORG (Spatial Planning and Organization Research Group) at the MIT School of Architecture also became a partner in the project. Individuals from these groups converged in what became known as the LARC team. The LARC Workplace Pilot illustrated in this paper was conceived as a testing ground for collaborative technology, developed by LARC. The Vice Presidents for Research of the two corporations, Xerox's Mark Myers and DEC's Sam Fuller, initiated the LARC Workplace Pilot. Mark Myers suggested that LX in the newly formed Wilson Center in Webster be the place to establish a test site for remote-collaboration, as a real time experiment.
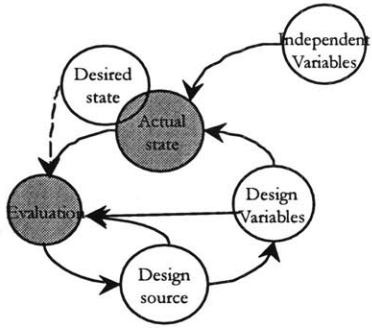
Phase 8: Model changes as consultants enter the process of change and all the stake holders are involved in the process. The model changes from observation of the actual state to evaluating the actual state

Actual state: The implicit contract at Xerox was that individual performance led to better bonuses and promotions and those promotions meant better and better offices. The hierarchy of offices progressively included bigger offices, offices with personal meeting spaces, offices with windows etc. When the "booths" were introduced not only were researchers in line for an "office upgrade" asked to move into the booths but also some senior researchers, who had already climbed the spatial hierarchy and already had had offices with windows, were asked to occupy booths next to their junior colleagues. This was viewed by the researchers as reneging on the part of the management, leading to the near resignation of one researcher. There was little or no interaction among the researchers and there was a growing feeling of territoriality among the different specialties.

Evaluation: The incentive structure was set up to reward an individual's Intellectual property (IP) and personal knowledge, it was against one's self interest to be perceived by the lab manager or the project leaders as someone who lacked an understanding of his or her specialty. This could also be viewed as a form of lobbying and creation of a positive impression with the manager. However, these lobbying costs mounted against LX since not only was the purpose of collaboration and open sharing of problems defeated, but valuable time and resources were being lost. The LARC consultants were also able to understand that the researchers to be in close contact with their lab fixtures, and aids to collaborative work like white boards were needed.
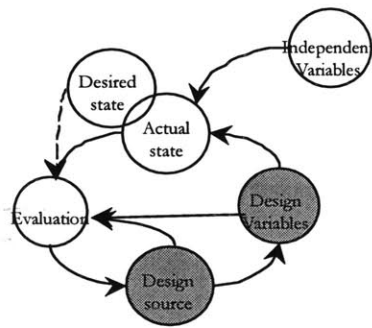
Phase 9: Design

Design source: LARC team.
Design Variable: Spatial design.
Design/decision: The LARC team set up what came to be called the LX Common. The LX Common was configured as a semi-enclosed area that could be extended into the corridor. It could permanently provide for a set of different activities or meetings, which previously would have required separate, dedicated places. Laboratories abutted the LX Common so that it was easy for the researchers to monitor experiments in process. The space occupied by the Common could only be loosely defined designed to change in response to the size of the group occupying it and how they were using it. A conference table was set up in the middle of the Common.

Episode 2: March 95 - June 95
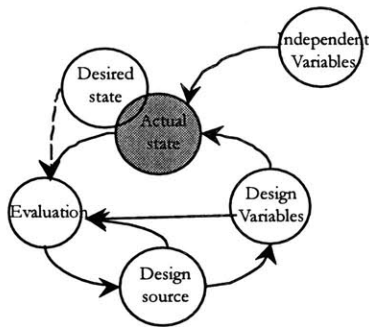
Phase 10: Evaluating the
Actual State
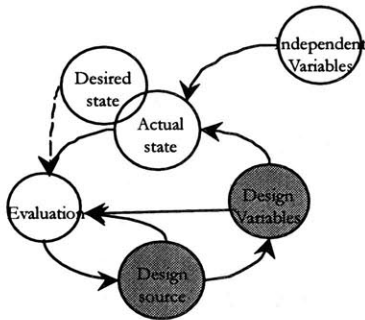
Phase 11: Design

Actual state: The LX Common began to be used for meetings. However, researchers were vary of disturbing meetings in progress and would try to circumvent the LX Common thus defeating the purpose of attracting people into the discussions by conducting the meetings in an open area. The level of collaboration still continued to be below the desired level.

Evaluation: Observations of the LX members and researchers from the evaluative workshops held over two days by the LARC team include dissatisfaction with the number and the length of meetings they had to attend with lab management. They felt thatthey could not leave the meetings and duck into their labs to monitor an experiment in process for fear of upsetting the manager. Another observation was that informal meeting places like the water-cooler, the kitchen etc., were where the most collaborative work took place. The researchers also felt that aids to collaborative work, like white boards, some method of accessing data etc., in these informal places could increase the frequency and duration of collaborative work.

Design source: LARC team.

Design Variable: Spatial design, organizational structure, and information technology.

Design/decision: Meetings were made informal and the "rules" of the meetings were also revised: people could walk in and out of meetings as they pleased without upsetting management. This reduced the amount of time the researchers spent at meetings and gave them the freedom to gain from, or contribute to, the discussions without having to worry about the consequences of attending or not attending a meeting. LX researchers and John Knapp had a series of discussions on the issue of space and the non-suitability of the "booths" to the researchers' nature of work. It was eventually agreed upon to move into an open plan office with cubicles rather than the "booths". Knapp himself gave up his executive suite and moved into one of the cubicles, which did not even have direct access to daylight. Aids to collaborative work like white boards were introduced in the kitchen. All the walls surrounding the kitchen table were transformed into white boards and the kitchen table itself was converted into a horizontal white board. Technological tools like LiveBoards were set up in the LX Common. The interactive LiveBoards in the Common area became aids to problem discussion and problem solving and team activities. Solutions arrived at during the meetings could be communicated to others in the group or the lab directly from the LiveBoards.
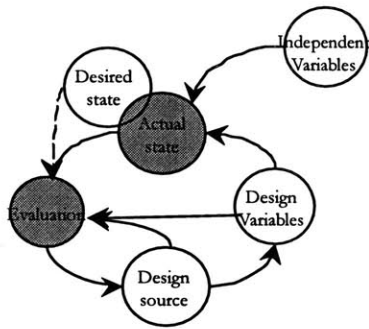
Phase 12: Evaluating the
Actual State

Actual State: The flexibility and informality of the meetings along with the complimentary spatial reconfiguration of labs abutting the meeting spaces helped researchers participate in meetings while still being able to monitor their experiments. The shift from a traditional office to a cubicle by Knapp helped de-link space from the incentive structure. Knapp's decision to move into a cubicle changed the perception of management from one of re-neging to one of fairness and equal treatment and helped to effectively de-link space from the incentive structure. Researchers also used the LiveBoards in the LX Common to project data from their experiments so that they were constantly aware of the progress of their experiments even while participating in meetings. Exposed to this new work environment, the researchers at LX invented a new kind of meeting, the LX Share Meeting. These meetings were devoted to presentation and discussion of unfinished work and where the group as a whole could be involved in the further development of incomplete ideas. The LX share meetings became a regular Friday event. However, the researchers were still wary of sharing raw data and information.

Evaluation: Bonuses and promotions continued to be based on the Intellectual property of each researcher: number of patents, number of publications, awards etc.
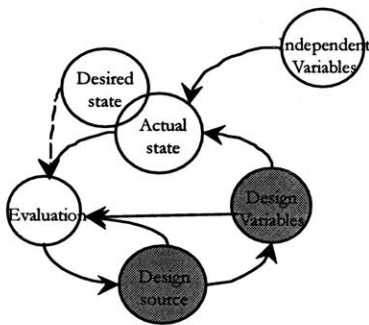
Phase 13: Design

Design source: LARC Team, John Knapp in particular.

Design variable: Information technology.

Design/decision: The researchers' PCs were also reconfigured. Knapp, understanding the dilemmas inherent in sharing incomplete work before having secured ownership of ideas, created a computerized communications network with three separate drives. The "P" drive was to be for personal information, to be kept private. The "W" drive was to be used for information that was to be shared among a few people. The "K" drive was for "knowledge" that was to be used to validate completed work suitable for public sharing.
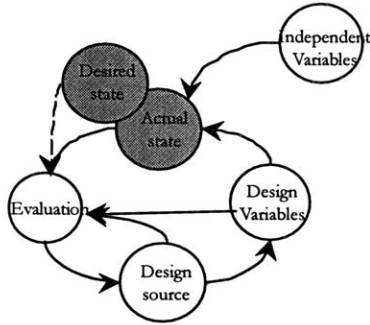
Phase 14: Desired and
Actual States

Actual state: The recognition of the importance of privacy of data and the provision to selectively publicize data and results by creating different categories of disk drives on the PCs, helped reduce the "wariness" among researchers in sharing data. The researchers could decide the level of publicity they wished for their data and this helped promote collaboration without the fear of losing ownership of ideas.

Desired state: The possibility of further reducing the Time-to-market, focused the Lab attention on whether they had chosen a "desired" TTM and on whether they were capable of reducing it.
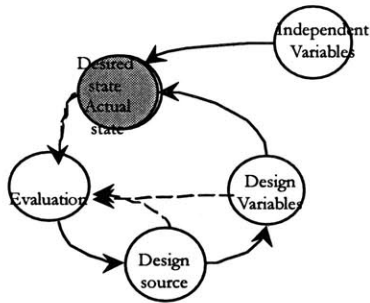
Phase 1: Desired and
Actual States overlap

Desired state and actual state: The two states overlap for the time being. During the year following the establishment of the new LX lab, for instance, five of the eight awards for outstanding performance at the whole Wilson Center went to individuals in the LX lab. The sixth award went to John Knapp the manager of the LX lab. The lab was credited with producing three times as many patents as the much larger laboratories at Xerox. After two years Knapp reported that the lab had been able to develop its first product for market, from the original concept to the introduction of the product, in a period of eighteen months, as opposed to the original mandate of five years.

3.15 Conclusion

To summarize, the proposed model for workplace change provides a framework within which to structure the process of change. It highlights the importance of viewing the change process as a continuous, non-linear and dynamic process, in which each phase of the change process influences and changes the state of work practice. It therefore captures the importance of continuously evaluating the actual state of work practice in order to structure an effective change process. By setting up the distinction between the actual state and the desired state of work practice, the framework helps the design source refine and restructure its change strategy so as to move the actual state as close as possible to the desired state. The framework therefore demonstrates that it is almost impossible to structure an effective strategy of change without the continuous evaluation of the actual state.

We believe that the true potential of the framework is realized when the stakeholders in the change process actively and collaboratively participate in the process of inquiry and change. The active participation of the stakeholders in the process of inquiry into their work practice ensures that the

distinction between the actual and desired states of work practice will trigger a process of inquiry into methods of improving and changing their existing nature of work. Therefore, the process of inquiry into work practices drives a process of workplace change.

In the following section we develop tools and techniques that evaluate the actual state of the workplace through a strategy of intervention into the workplace. These tools use people's spatial perceptions and spatial constructs to gain an understanding of the nature of their work practice. Therefore, we demonstrate that an inquiry into the workplace triggers an inquiry into the existing nature of the work practice which in turn drives organizational change.

4   Methods of evaluation

In the previous section we discussed the importance of, and the complexity involved in, evaluating the actual state of the workplace. We demonstrated that designing an effective strategy of change is almost impossible without understanding the existing nature of work practice in the workplace. We have also discussed that when the stakeholders are engaged in a collaborative inquiry, the process of evaluation and inquiry into work practices can drive an organization to rethink and reformulate its work practices, triggering the process of organizational change. In this chapter we examine some traditional methods of evaluation, describe their salient features and delineate the purposes they serve. We demonstrate that most traditional methods of evaluation, although useful in understanding the change in design variables, do not evaluate the existing nature of work. These techniques therefore are reduced to conjecturing about or at best observing the actual state rather than providing information pertinent to the cause of the distinction between the actual and desired states. We then develop techniques that evaluate the actual state of the workplace through a strategy of intervention, and design a methodology for combing them with other methods that aid in the evaluation and design of the workplace. We use people's spatial constructs and perceptions as the medium to evaluate the actual state and discuss the importance of using spatial design and the perception of space as the medium of these evaluative techniques. Finally we apply these techniques at Swanson Roberts and analyze their suitability to the context, the method of implementation, the type of data collected and the results thus obtained.

4.1   Traditional methods of evaluation

In this chapter we examine a few generic methods and techniques of evaluation in practice today such as surveys and techniques that measure the difference in the variables of the workplace caused by the application of change strategies in order to evaluate the effectiveness of these strategies. We explore the possibility of improving these techniques so as to help in evaluating the actual state and discuss their ease of use and suitability to frequent and regular use by the organization to monitor its actual state of work practice.

4.11 Survey research

General use:
Surveys are usually used to collect information from large numbers of users or employees. The advantage, or the greatest value, is that they can be distributed to a large number of people, making possible, quantitative analysis that is difficult with interviews or focus group sessions.

Surveys are sometimes used to review and develop workplace solutions by providing "feedback" on user adjustment issues and to "gather suggestions for fine-tuning a particular approach."[21]

PART II   WORK ACTIVITY

Please circle the letter next to the appropriate response, except where blanks are provided for response.

16 On average, how many hours per week do you spend working?
  a. less than 20 hours   d. 41 - 50 hours
  b. 21 - 30 hours   e. 51 - 60 hours
  c. 31 - 40 hours   f. over 60 hours

17 Compared to before you started the mobility program, have your average work hours changed?
  a. I work more hours now
  b. I work about the same number of hours
  c. I work fewer hours now

18 Over the course of an average WEEK, please indicate, for each location, how many TIMES you work, the TYPICAL amount of time spent in a setting each time you use it, and the MINIMUM and MAXIMUM amount of time you spend in each setting.

	Times per week	Typical amount of time (hrs.)	Min-max time in each setting
EXAMPLE: a. Home work area	8	4 hrs.	2 - 8 hrs.
a. Home work area			
b. Productivity center			
c. Client premises			
d. Other [Company] locations			
e. Car			
f. Restaurant			
g. Hotel			
h. Other (please specify)			

19 Please go back to question 18 and circle the letter next to the setting in which you are MOST PRODUCTIVE. Explain briefly what it is about the setting that makes you more productive.

20 When do you usually do your best work? Circle all that apply.
  a. 8 am - 12 pm   d. 8 pm - 12 am
  b. 12 pm - 4 pm   e. 12 am - 4 am
  c. 4 pm - 8 pm   f. 4 am - 8 am

Fig. 3.1. Sample Employee Survey Questionnaire. SOURCE: Frankiln Becker, Michael Joroff, Kristen l. Quinn, *Toolkit: Reinventing the Workplace* (New York: Cornell International Workplace Studies Program, 1995) p. 35

WHAT IS IT?:

The instrument or the questionnaire usually accompanied by a cover letter is the key factor in survey research. Surveys are not easy to develop as issues such as who to involve, what questions to ask, how should the questions be worded etc. have to be resolved. These issues and their solutions often are the reasons why surveys result in very little relevant data and information. Once the survey is developed, however, it is easy to administer to a large group of people and little skill or expertise is needed to analyze the resultant information.

Questionnaires attempt to collect quantitative data and usually consist of a set of pre-determined, often unambiguous "close-ended" questions that have 4-5 possible "answers" and in many cases, existing surveys are adapted and modified to incorporate specific questions that need to addressed. Limiting the responses to 4-5 possible answers makes it easy to compile and analyze data by using widely available spread-sheet programs such as Excel which have easy-to-use statistical modules that can be used to analyze and present data.

DRAWBACKS:

If the questionnaire is thoughtfully designed, the survey has some advantages in that it provides quantitative data that can be easily analyzed. Although surveys provide data concerning "what works" and "what does not work" they do not attempt to surface the reasons or the causes behind what does and does not work. For instance, in the above example (Figure 3.1) users are asked to indicate the period of time when they do their "best work". However, no attempt is made to understand 1) what each person means by "best work" and 2) why do they do their best work in the period indicated.

Surveys use unambiguous, pre-determined questions that do not adapt or probe incisively into issues and tensions in the workplace as would be possible in a face-to-face interview or in a focus group session. Unambiguous questions may help elicit quantifiable data, however, open-ended questions and questions based on the participants responses to these questions would be more useful in arriving at the reasons behind conflicts and tensions in the workplace.

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[21] Franklin Becker, Michael Joroff, Kristen L. Quinn, *Toolkit: Reinventing the Workplace* (New York: Cornell International Workplace Studies Program, 1995) p. 32

The survey research method affords confidentiality and anonymity to the participants. Although this provides a platform for people to express their opinions freely, it could also lead to disinterested and false reporting of the facts, as people cannot be held responsible in an anonymous survey. Survey research tries to overcome this potential for error by distributing the survey to a large number of people. However, this leads to the grouping of results by percentages and an analysis based on "mass" behavior. These percentages and statistics are often used in presentations to convince management about the success or failure of a particular policy. For this reason, although they are easy to use and can be used repeatedly once the initial questionnaire has been designed, surveys are of limited use to organizations in their effort to remain aligned as they reveal very little about the reasons and causes behind noticed behavior.

How can they be improved?:
In order to elicit further information and to probe preferences and opinions held by the participants, surveys could be modified to include open-ended questions with additional space for participants to explain their responses. Surveys could also be complemented by other more incisive evaluative techniques such as interviews. Finally surveys, when necessary to obtain information from a large number people, could be used to analyze and work patterns rather than using the data to prove the efficiency of certain workplace strategies.

4.12   Methods that analyze design variables and the work process

Evaluative techniques that measure the effectiveness of change strategies by comparing the "before" and "after" results of the analysis attempt to understand and evaluate changes in the design variables. Tools and techniques that belong in this category include pre and post-occupancy building evaluations[22] that assess the difference in user satisfaction with changes in the spatial design variables and morphological charts[23] that compare the differences in design variables such as organizational structure, spatial design, information technology, etc., before and after a change strategy. We examine, relationship charting, one such technique in greater detail in order to understand its salient features, and to explore ways in which to enrich the process of evaluating the variables of workplace change.

General use:
Work process analysis or relationship charting is used to map a process, whether it is a manufacturing process or the process of filing a sales order, in order to understand how the existing process functions and how it can be made more efficient. Relationship process charting is also used to check the performance of change strategies by comparing the "before" and "after" charts.

What is it?:
Work process analysis or relationship process charting is a tool for understanding how different groups interface for a given business process. A specific process for a department or group is mapped from beginning to end, showing who is involved and at what stages. For example, to fill a sales order, the customer would have to place an order, which is filled out by the sales representative, which is

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[22] See Franklin Becker, Michael Joroff, Kristen L. Quinn, *Toolkit: Reinventing the work place* (Ithaca, NY: Cornell International Workplace Studies Program, 1995) for detailed descriptions of these methods of evaluation.
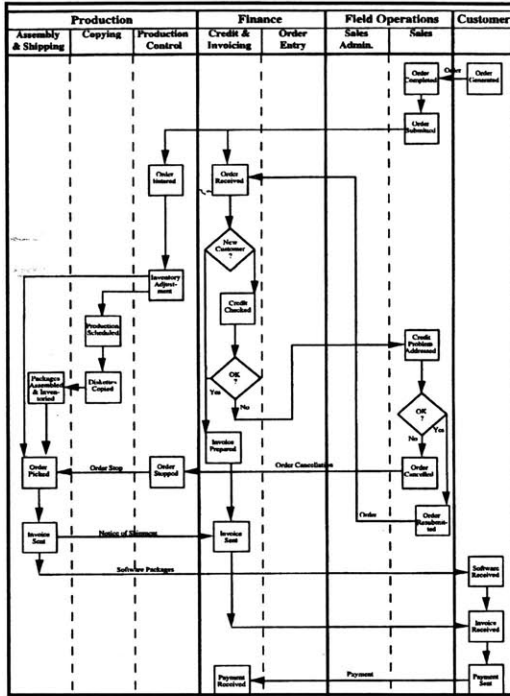[23] Ibid.

Fig. 3.2. Relationship Process Chart.
SOURCE: Frankiln Becker, Michael Joroff, Kristen l. Quinn, *Toolkit: Reinventing the Workplace* (New York: Cornell International Workplace Studies Program, 1995) p. 39

then submitted to sales administration to log the order, which is then sent to finance where it will be logged into their system and verified by the customer and the sales representative, and so on until the customer successfully receives the order as shown in the sample chart in Figure 3.2. The construction of the chart is frequently followed by discussion among the participants but is often limited to the top management.

The relationship process charting visually captures information about abstract systems and structures such as business processes. By delineating the entire process, participants often begin to "develop a sense of the big picture" and where their part fits in. If the process of constructing the chart includes people from all departments and divisions of the organization, different perspectives of the same problem can be brought into productive discussion. A problem in one process may trigger the improvements in seemingly independent processes[24].

DRAWBACKS:

Although the exercise of relationship charting can result in productive discussions about the existing work processes and the reasons behind the inefficiencies, very often participation and discussion of the work process is limited to top management. Improvements are therefore enforced in a "top-down" manner as decisions are handed down to the people who are involved in the process. People intimately associated with the process feel threatened as changes in the process could result in the loss of jobs. Therefore involving people involved in the work process in both constructing and analyzing the chart and designing improvements in the processes is crucial to achieving successful changes in the work process. The relationship chart that results from this exercise is dependent on the process of developing the chart. Depending upon the players involved[25], the chart may result in resembling the proscribed process as delineated in the company manual. Involving the players in a process of "learning" through the process of analyzing the relationship chart is important in order to establish cooperation and trust between hierarchical players.

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[24] Flight turn-around and ground maintenance processes in South West Airlines (SWA) were improved by the insights gained in improving the presumably independent process of passenger check-in. SWA ticketing employees found that checking passenger reservation lists on less than full flights was an avoidable waste of time. This improvement in the check-in process contributed to reducing the time an airplane spent on the ground and resulted in drastic reduction in the turn-around costs and improvements in gate scheduling processes.

[25] Power games and incentive issues have to be understood and resolved before developing the relationship chart. Lobbying costs, or the effort put in by employees to "look good in front of the boss" can significantly reduce the possibility of eliciting useful information about the existing nature of the work process.

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To summarize, traditional methods of evaluation often do not assist in enabling the participants of the organization to evaluate the existing nature of work and therefore to learn to adapt and evolve with change. To briefly revisit the examples we have discussed above, although survey research has advantages of reaching out to a larger group of people, it does not involve and engage these groups of people in the analysis of the data. This reduces the opportunities for understanding the actual state, and the reasons behind the observed behavior, and learning from the causes behind the distinction between the actual and desired nature of work practice. Techniques, such as relationship charting, that evaluate the changes in the variables can be useful to understand the dynamic nature of all the variables of the organization. However, if these techniques are not inclusive of people with information2[26] the danger of triggering an increase in lobbying costs or the perception of "betrayal" by the management is heightened and in order to obtain valuable information about the actual state of the workplace, a skilled facilitator is often required to conduct and guide the process of design and analysis. If the exercise is carried out in a democratic manner by involving people with the information, process charting can be a very useful tool in understanding the work practice. The process can be facilitated initially by the consultants and the organization can then learn to facilitate the process in an open and responsive manner. In the following sections we explore and develop methods and techniques to evaluate the actual state and devise simple strategies by which the organization can sustain change by learning to evaluate its work practice.

3.2 METHODOLOGY OF EVALUATION

Traditional methods of evaluation that we described in the previous section are useful in understanding the design variables and in evaluating the effect of change on these variables. As we have explained in the preceding chapters, in order to structure an effective workplace strategy we not only need to understand the effect of change on the variables but it is important to supplement that analysis with information regarding the actual state of the work practice. For instance, the relationship charting exercise can be modified to obtain a greater understanding of both the variables and the actual state of the work practice that influences, and is influenced by, these variables. The Sailboat Game[27], first used in setting up the redesigned paper processing operations at Bank of Boston, is concerned with learning to redesign and improve business process and serves as alternative to the relationship charting process. The sail boat game helps in critiquing existing work processes, inventing alternative work processes, teaching the just-in-time approach, improving work processes and building new teams for the new workplace. The sailboat game is designed to represent a typical manufacturing situation. The backdrop to the game is that the customer has ordered a toy sailboat and his/her marketing and engineering departments have worked in collaboration with the customer and have come up with a design. The engineering division has divided the sailboat into four sub-assemblies and has come up with a set of instructions of putting them together. Participants, who play the role of operators in the manufacturing group, are asked to put the sailboat together. The game begins by the customer calling out orders and progresses in rounds. After each round, operators meet to discuss and evaluate their performance and try to make improvements.

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[26] People with information in the manufacturing process, for instance, are those people who directly operate the machines, manage the inventory, etc.

During the game, operators become aware of the problems within their own work processes without having to rely on supervisors or consultants. In the Bank of Boston case, it was noticed that workers did the same when they returned to their regular jobs and with notable results. The evaluative techniques that we develop in this thesis attempt to analyze and understand the actual state of the work practice. The "diagnostic" data from these techniques, we believe, will enrich the process of evaluation by adding to the equally important data obtained from techniques that evaluate the changes in the variables.

4.21   Evaluating the actual state of work practice: Strategy of intervention

The methods of evaluation that we develop in this thesis are used to perform tasks of design inquiry. The participants, stakeholders in the organization, are encouraged to become actively involved in diagnosing and understanding their own organization and in helping to formulate effective work-place transformation strategies. Edgar Schein explains " Involve the client or learner in his or her own learning. Not only will this produce better learning, but it will produce more valid data about how the system really works."[27] This approach to evaluation stems from the concept of "action research" and the powerful notion that systems can only be understood and changed if one involved members of the systems in the inquiry process itself. It is critical to understand that the process of inquiry itself is an intervention into the organization and will influence the stakeholders' thinking and perception of the nature of their work. Another important notion underlying the proposed evaluation methods is termed the "process architecture" approach. This approach relinquishes the authority that the consultant is the sole expert and places that authority in the stakeholders who are considered experts in their work.

ACTION RESEARCH AND THE CO-DESIGN APPROACH

Action research is the observation, elicitation, and reporting of data that are available when the consultant is actively engaged in helping the system by involving the stakeholders in the process of inquiry. Action research springs out of the seminal work of Kurt Lewin who was able to combine the methodology of experimentation with strong theory, and most importantly, a concern for action around social issues. This differs from the traditional research paradigm that is based on quantitative and statistical measurements and one where the researcher enters the research site and makes observations without disturbing the situation. The legitimacy of the claim by some ethnographical researchers that they can go into organizations without influencing them has been disproved to some extent by the Hawthorne effect. In classical Hawthorne studies, a fetish was made out of the fact that the observer could be shown to have no effect on the members of the Bank Wiring Room – the focus of a case study. Later, however, the power of the Hawthorne effect was realized – that actively observing workers and paying attention to them had more impact on their morale and productivity than any of the variables manipulated in the formal study.

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[27] See Turid Horgen, et al, *Excellence by Design*, (new York: Wiley and Sons, 1999) p. 153 for detailed explanations on how the game works. The sailboat game was developed by Eliza O'Donnell of the firm Coopers and Lybrand.

[28] Edgar H. Schein, *Organization Development: Science, Technology, or Philosophy?* (WP # 3065-89-BPS, MIT Sloan School of Management, August 1981)p. 4

Lewin understood the power of intervention when he noted that "one cannot understand a human system without trying to change it."[29] It is in the attempt to change the system that some of the most important characteristics of the system reveal themselves.

The action research approach also stresses the importance of actively and collaboratively involving the stakeholders in the process of inquiry. In this interactive and collaborative process, action research differs from most traditional research. The traditional researcher gathers data by trying not to disturb the system and hence loses the opportunity to confirm or disconfirm his/her hypotheses or biases by eliciting information from the stakeholders. In contrast, following the action research approach, the consultant can formulate hypotheses about what is going on and test them "on-line" by the kinds of interventions he/she makes. In observing the responses to interventions, the consultant can confirm or disconfirm the hypotheses and can constantly gather more data for reformulating hypotheses. This interactive process results in learning about an organization in the process of trying to change it.

The LARC workshops at LX serve to illustrate the mobility and flexibility of the action research approach to the inquiry process. Four core events were pre-scheduled to take place on four days but each day was full of new discoveries and surprises that led to changes and improvisations in the structured events. For instance, just as the cardboard game designed to discover ways in which to furnish the LX Lab was about to be played one of the LARC consultants turned the board over and fashioned a game to elicit views about the LX organizational structure. Changes like these – in the event structure, strategy or implementation – were made for various reasons. In the cardboard game it was to build on what came out through the discussions and to use the results as inputs for the new designs. The intervention itself, therefore, is a game in play where the consultant makes adaptive use of the repertoire of available tools and techniques.

Horgen, et al,: explain that in the co-design approach:

> The consultant engages the stakeholders in a collaborative design process for the new work environment. The consultant relinquishes the authority of being sole expert, and is willing to confront his or her own expertise as designer with the recipients' specific expertise in how the work is done. The consultant responds to the messiness such a situation creates, developing a problem-specific interaction with the client system.[30]

This approach differs from the technical-rational approach in which the consultant sees his or her role as gathering data from the participants so as to provide a basis for " informed decision-making by the management." The function of this data, which passes passively from the consultant to the management, is used only to validate or eliminate preconceived designs or ideas. The consultant in this formulation holds specialized knowledge "in matters of social importance – a knowledge of technique based on systematic understandings of objective phenomena." The technical-rational

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[29] Kurt Lewin, *Group Decision and Social Change* In G.E. Swanson, T.N. Newcomb, and E.l. Hartley (Eds.) *Readings in Social Psychology Rev. Ed.* (New York: Holt, 1952)

[30] Turid Horgen, et al, *Excellence by Design* (New York: Wiley and Sons, 1999

approach is based on the assumption that the consultant can a priori understand, at least conceptually, the results of his/her actions.

The methods of evaluation developed in this thesis combine aspects of the co-design approach with action research to surface data about the client system. The data thus revealed allows the consultant to get a deeper insight into 1) the psychological defenses operating in the organization, 2) the cultural assumptions that are driving the organization, 3) the interpersonal and group dynamics that are operating and 4) how power and authority operate in the organization. The process of inquiry guides the stakeholder's thinking, focuses attention on certain issues, indicates that the consultant is interested in those issues, and in other ways produce unknown amounts of influence. Therefore, it is important for the consultant to define and understand the results of whom he or she decides to talk to and how the conversation is to be framed. The process of evaluation itself, therefore, influences the client system. We believe that the intervention of the workplace consultant triggers the people in the organization to look closely at their own workplaces and enriches the process of evaluation and learning in the organization.

4.3 EVALUATION THROUGH SPATIAL PERCEPTION

"But it's kind of nice because it's like when you pass through these doors you're on your own turf.... There's a relationship between ownership and productivity. .... In my own lab in Building 114 I feel like it's my lab. And because it's my lab I have taken, I arrange things the way that I feel is most productive. So that it maximizes my productivity I have equipment on one side of the lab where I measure things and I have balances and a preparation area on the other side of the lab. I have a little desk between the two sides. I have a storage facility in the rear. So in that case... And I feel like I'm productive there. I know my way around....."[31]

- Frank Bonsignore

From the transcripts from the process of Transformation of the LX Lab

The physical environment plays a large part in influencing human behavior and the relationship of office workers to their work and their surroundings. Organizations, architects and management consultants have begun to realize the role of the physical environment in influencing the nature of work practice. We propose that spatial design not only influences spatial behavior and the way people work and interact, but the way in which people organize their space and construe their space is also indicative of the way they perceive themselves and their work. In the quote from the transformation of the LX Lab, for example, the researcher organizes his space in ways that he perceives to be most productive, thereby using space to influence and improve his work processes. However, through the organization of his space we can also discern issues of territoriality, belonging, and the nature of his work. Issues of territoriality and belonging, for instance, have a significant bearing on the way people interact with others, take ownership and responsibility of

ideas, etc. In order to structure effective workplace transformation strategies and to sustain change, designers, strategists and the organizations themselves, need to understand the nature of work and the relationship between the office worker and his or her work. We believe that evaluative methods and techniques for identifying and assessing the actual state of the workplace and the nature of work through an exploration of spatial constructs will be powerful tools in the process of initiating workplace change. In the next chapter we develop techniques that evaluate the actual state of the workplace through an analysis of people's spatial perception, and describe the methodology for designing and implementing an effective strategy for sustaining change in the workplace.

In this chapter we discuss the significance of spatial design and spatial constructs both in influencing behavior and as an indicator of behavior. Drawing from the work of social geographers and urban planners we examine the significance of spatial and mental constructs in shaping our preferences and choice of behavior.

4.31   Human spatial behavior

The space we occupy serves as a frame of reference for locating ourselves and our activities relative to all other events and happenings. Space carries different meanings for different people and it depends on how they occupy it and how they move in it and around it. What space means to people and how they use it is a reflection of the social meanings they attach to the space and to other people and the meanings that space and others have attached to them. Therefore space and human behavior in space (spatial behavior) cannot be understood apart from its social context.

Social meanings are assigned to space on the basis of past experiences with people in the same or similar spaces. Social geographers Jakle, et al,[32] refer to these social meanings as place meanings. According to educational psychologists spatial awareness and the tendency to generate place meanings develop early in childhood. Infants learn about space by manipulating the objects of the immediate surroundings and children as young as seven learn the location of things beyond their homes and neighborhoods. The architect George Rand [33] states that eleven-year-old children are able to separate denotative meanings from connotative meanings. That is, objects come to have purely social meanings apart from any functional or utilitarian values. "The mock colonial house is seen as expressive of "traditional values", the overstuffed couch becomes indicative of informality, the manicured lawn becomes a trademark of conformity"[34]. Thus people continuously structure

[31] Transcripts of the proceedings of the process workplace transformation at Xerox's LX Laboratory, Wilson Research Center, NY.

[32] John A. Jakle, Stanley Brunn and Curtis C. Roseman, *Human Spatial Behavior: A Social Geography* (North Scituate, MA: Wadsworth Publishing Company, Inc., 1976)

[33] George Rand, *Children's Images of Houses: A Prolegomena to the Study of Why People Still Want Pitched Roofs"* In William J. Mitchell, Ed., *Environmental Design, Research and Practice* (Los Angeles: University of California, School of Architecture and Urban Planning, Proceedings of the Third Annual Environmental Design Research Association and the Eighth Annual A.I.A. – Architects Researchers' Conference, Jan 24-27, 1972, section 6, Paper No. 9)

[34] Ibid.

mental responses to spatial patterns and attach social meaning to space based on past experiences. Signals from the spatial environment, in the form of spatial patterns and groupings, are constantly evaluated against these mental images or constructs, and a person's spatial behavior is a result of acting upon these continuous assessments.

Urban planners and social geographers have demonstrated that spatial behavior is an important manifestation of people's everyday lives and represent an important process through which people gain information about and negotiate with their environment. For example, urban residents often avoid particular places in their movement through the city because of perceived hazards related to gang territories and high crime areas.[35] The residents' past experience with territorial gangs or ethnic groups structure their behavioral response and thus shape their spatial behavior of avoiding these areas of perceived stress. Spatial patterns become linked with these responses and residents of a city respond similarly when they encounter similar spatial patterns, such as avoiding inner city areas in all other cities.

At the scale of buildings, architects and designers have recognized that people respond differently to different spatial environments and that behavior can be influenced through the spatial environment. This knowledge has played an important role in the effort to design churches, schools and parks to direct human behavior toward worship, learning and relaxation. The relationship between spatial environments and human behavior has, quite recently, caught the attention of the Corporate World. Many organizations have begun to realize that the environment plays a large part in influencing human behavior and consequently in influencing the relationship between office workers and their work. As John Seiler, architect and professor at the GSD, Harvard University, observed, "Influencing behavior is almost all of what management is about, and buildings influence behavior."[36] Cecil Williams, David Armstrong and Clark Malcolm, in their book, *The Negotiable Environment*, characterize the relationship of office workers, their work and their physical surroundings as a constant negotiation between workers and their environments, required by constantly shifting perceptions and constantly changing work. They further elaborate that "ultimately, the negotiation aims to create a workable balance between the perception of the person doing a task and the surroundings in which that task is to be accomplished."[37]

As an example of the role the environment can play in people's work and this continual process of negotiation and balancing we describe the interaction and spatial behavior of the LX researchers before and after the formation of the LX Common in the LX Laboratory at WRC, Webster. The typical layout of activities at LX was to have laboratories located in the center of the buildings with

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[35] John A. Jakle, Stanley Brunn and Curtis C. Roseman, *Human Spatial Behavior: A Social Geography* (North Scituate, MA: Wadsworth Publishing Company, Inc., 1976)

[36] This managing of human nature through the environment assumes one thing to be true: The potential to be a productive is inherent in human beings. Personality theorists have long called productive work a necessary part of living. Gordon Allport (Pattern and Growth in Personality), Abraham Maslow (The Farther Reaches of Human Nature), and Victor Frankl (Man's Search for Meaning) pronounce work and the achievement of goals as vital in models of a healthy personality. Freud states that man's goal is to "work and love."

[37] Cecil Williams, David Armstrong, Clark Malcolm, *The Negotiable Environment: People, White-collar Work, and the Office* (Ann Arbor, Michigan: Facility Management Institute, 1985)p. 9

offices on their perimeters. Inside, the place had the look and feel of a dreary, factory, with small offices on one side of the corridor and closed laboratories on the other. The slit windows that allowed one to look into these laboratories were almost always pasted over, shutting them off from the outside world and from observation by passers-by. The interaction between the researchers, both social and intellectual, mirrored the physical environment within which people worked. Although LX brought together researchers from different competencies and specialties, they drifted towards their own scientific specialties. The spatial structure, with individual offices and labs and with no common areas like conference rooms, lounge spaces etc., restricted the researchers' movements within their specialized boundaries. Each researcher therefore developed and maintained his or her own "turf" both spatially and intellectually and there was hardly any collaboration or sharing of ideas.

Responding to the situation a series of spatial, organizational and technological changes were made. These changes included re-designing the LX office space to incorporate what came to be called the LX Common. The LX Common was configured as a semi-enclosed area that could be extended into the corridor. It could permanently provide for a set of different activities or meetings, which previously would have required separate, dedicated places. Laboratories abutted the LX Common so that it was easy for the researchers to monitor experiments in process. The boundaries to this area were blurred. Cubicles that spilled out on to the Common replaced individual offices. The space occupied by the Common could only be loosely defined, designed to change in response to the size of the group occupying it and how they were using it. Many of the researchers began to use the LX Common as their home base and there was constant activity and flow of information at that "hub". LX members, having moved into cubicles were always aware of intelligible conversation at the LX. This constant source of information created awareness among all the researchers of the different projects and the various developments in each project and contributed to a higher degree of communication and collaboration among the researchers. This example demonstrates that although spatial environments cannot *make* people communicate, they can make communicating and collaborating easier and more productive.

Several books have explored the process of understanding one's environment. *The Construing Person*, by Mancuso and Adams-Webber, describes the process by which an individual systematically construes the events, activities, and artifacts of the environment to "fit a model of the perceptual system within the individual."[38] From that, the person provides a framework for understanding all events and environments. *Human Spatial Behavior: A Social Geography* by John A. Jakle, Stanley Brunn and Curtis C. Roseman explains that "How a person evaluates the spatial environment depends upon who he thinks he is, what he thinks are his proper social and spatial relationships to others in the place." [39] Another attempt to understand this relationship was proffered by Festinger.[40] He explains the process in which people intellectually balance information so that it does not appear

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[38] James C. Mancuso and Jack R. Adams-Webber *The Construing Person* (New York : Praeger, 1982)

[39] John A. Jakle, Stanley Brunn and Curtis C. Roseman, *Human Spatial Behavior: A Social Geography* (North Scituate, MA: Wadsworth Publishing Company, Inc., 1976) p. 301

discordant to them. Festinger uses the word "dissonance" to describe the inability of people to fit what they perceive into the way they understand the world. This process can also describe how people construe their workplaces and work to be consistent with what they think of themselves and their worlds. Thus space not only influences spatial behavior and the way people work and interact, but the way in which people organize their space and construe their space is also indicative of the way they perceive themselves and their work.

The exercise of designing the ideal workplace is an example of exploring the relationship between the mental constructs people make of their environment and their relation to it. In this exercise, participants, drawn from a cross- sampling of office workers, are asked to draw their "ideal workplace" based on what each participant found important in his or her own work environment. The drawings could address any level of scale from a single workstation to the whole firm. These drawings represent what the participant perceives to be important to his or her work. From this we can attempt to understand how he or she perceives to be his or her work, and his or her perception of how he or she fits in relation to the work. Participants could then explain their drawings to each other, analyze the different concepts, take them apart, and maybe even re-design their office space or their perception of work based on this collective inquiry[41].

In the following section we describe and develop techniques that evaluate the nature of work through spatial perceptions and mental constructs. In developing these techniques we demonstrate that images and patterns of space influence behavior to such an extent that these spatial patterns can be used to understand the meanings and symbolism attached to them. The techniques draw upon the methodologies of action research and the co-design approach to surface issues and tensions in the workplace. The process of implementing the techniques of evaluation itself influences the client system and begins to trigger a process of change and learning in the organization. The techniques add to a repertoire of inquiry tools that the consultant and ultimately the organization can use in a given situation. One possible combination is explored, and implemented at Swanson Roberts and the reasons behind the choice of tools and their implementation is examined in detail in the following sections.

[40] Leon A. Festinger, *A Theory of Cognitive Dissonance* (Evanston: Row, Peterson, 1957)
[41] See Turid Horgen, et al, *Excellence By Design* (New York: Wiley, 1999) for a detailed explanation of the idealization exercise.

4.4   METHODS TO EVALUATE THE ACTUAL STATE

In this section we develop and describe in detail the techniques that evaluate the actual state of work practice. We describe the principle behind each technique, its method of implementation and the process of analyzing and evaluating the data obtained.

4.41   Workplace maps

CONCEPT:

Social geographers Jakle, et al,[42] explain that each time an individual is faced with a geographical decision he or she constructs a mental map in which he or she elaborates the most significant elements of the spatial environment, while eliminating unnecessary detail. They further elaborate that when faced with the task of walking or traveling from point A to point B in a city, people often visualize or conceptualize a route connecting the two points. The conceptualized route takes the form of a series of stages marked by a succession of anticipated features, such as streets, intersections, and buildings. Passing them reassures the traveler that he or she is on the right route and is getting closer to the goal. Mental maps therefore have implicit in them notions of direction and distance as well as environmental content. Since we cannot see mental maps, we can only assume that they do, in fact, exist from the success of having moved around without being lost. The closest we come to measuring a mental map is when we ask people to draw sketch maps in response to questions regarding routes to particular destinations or describing the general lay of the land.
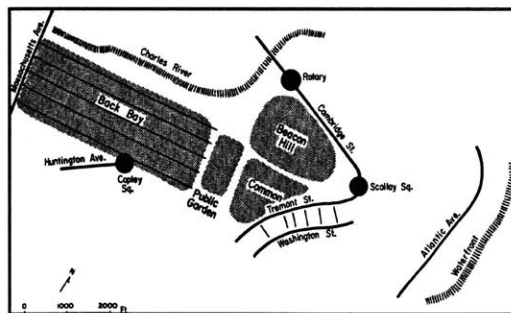

Fig. 4.3. Mental Map of Boston
SOURCE: Kevin Lynch, *The Image of the City* (Massachusetts: M.I.T. Press, 1960) p. 21

Mental maps contain two kinds of information. First, the elements or objects that comprise a space are conceptualized. Second, their relationships are conceptualized. Thus cues and spatial patterns in the landscape generate "place meanings"[43] and cognitive meanings are attached to the space. Kevin Lynch[44] was one of the first to attempt measuring people's mental maps (Figure 3.3). On the basis of his study, Lynch identified paths, nodes, districts, and landmarks as significant classes of landscape imagery.

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[42] Jakle, Brunn and Roseman, *Human Spatial Behavior: A Social Geography* (North Scituate, MA: Wadsworth Publishing Company, Inc., 1976)

[43] Ibid., p. 79

[44] Respondents in 3 cities were asked to draw sketch maps of their cities, give detailed descriptions of frequent trips in their respective urban areas, and list the elements of their local landscape that they felt to be most distinctive. Kevin Lynch *The image of the city.* (Cambridge, MA: The Technology Press & Harvard University Press, 1960)

The workplace map exercise developed in this thesis is based on the concept of mental maps and draws heavily on Lynch's studies and findings. We relate Lynch's study of cities to the study and analysis of people's perception of workplaces to identify workplace nodes, boundaries, hierarchies, and districts.

THE USE OF THE METHOD:

In applying the concept of imageability and mental maps to the workplace, we have developed the method of interviewing a representative sample of the workplace.[45] The interview conducted in the workplace consists in its essentials a request for a sketch map of the workplace, for detailed description of the frequent trips or paths of movement in the workplace, and for a brief description of the those parts of the workplace felt to be most distinctive. We describe the method of interview and then discuss what we hope to gain from this evaluation method.

The interview covers the following questions:

1) What first comes to mind, what symbolizes the word "office" for you? How would you broadly describe your workplace?

2) Please make a quick map of your workplace. Make it just as if you were making a rapid description of the workplace to a stranger, covering all the main features. Label those features of the workplace that you feel are most significant or important. We don't expect an accurate drawing, just a rough sketch. Please provide an oral description as you draw the map. [The oral description is taped. The audio recording of the exercise provides a chronological sequence to the objects and elements drawn. Due to the difficulty in drawing and representation, certain aspects of the workplace that are difficult to represent may get omitted during the sketching exercise. The recorded description of the workplace and the manner in which each individual experiences it will help the consultants get a complete picture of how an individual experiences his or her workplace.]

3) Discuss why certain elements were labeled. [The consultant or the interviewer probes for reasons why the participant considers some elements to be more important than others]

4) Starting from your desk sketch those trips that occur frequently during the time you are at the office. Please provide an oral description as you sketch. Picture yourself making the trip, and describe the sequence of things you would see, hear or smell along the way, including the path markers that have become important to you, and the clues that a stranger would need to make the same decisions that you have to make. [The audio recording of the descriptions of trips provides information about how the participant experiences the workplace.]

The interview lasts about 15-20 minutes. The entire proceedings are recorded on tape and transcribed, a clumsy procedure which nevertheless records full details, as well as revealing pauses and inflections of voice.

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[45] A representative sample includes people from all levels of the organization, representing all departments and divisions.

Elements of the workplace that can be distinguished[46]:

Paths: Channels along which people customarily move and from which they cognize their workplace.

Nodes: Focal points into and out of which people move as they move within the workplaces. Team spaces, water coolers, printing copying areas, intersection of corridors, traffic islands, etc.

> These nodes could either be dedicated to their function or could be serving many purposes. For example, a node created by the printer/copier area may serve as an area where people print and copy but could also serve as an interaction area. The same may be the case with intersections in corridors or where one team space overlaps another. These nodes could be physically present or they could be part of the perception of the workplace.

Districts: Sections of the workplace that display a high degree of homogeneity. Common size, shapes or pattern of spaces. Spaces could be grouped into districts either due to the homogeneity of their spatial pattern or due to the homogeneity of their organizational purpose.

Landmarks: Points of reference. They cue behavior or establish a relation between people and other elements in the workplace. For instance, a filing cabinet near the end of the hallway may serve to remind a person to turn left or right at the end of the hall.

Edges: Boundaries or barriers. They may be physical or organizational and serve to separate two areas or as a barrier or restriction to movement.

Networks: Strongly related paths that form the system of movement in the workplace.

Functional flows: Movements specific to function. Movements associated with dispatching. Routes followed by sales, by the mailman etc.

Hierarchies: Some nodes and paths etc. may be more important than other nodes or paths. People tend to draw first, or elaborate in more detail, elements that are most important or significant (the organizing principles of the workplace) and fill in the details later. Therefore an audio recording of the mental map exercise will give us the chronological progression of the representation of the workplace.

Observations and analysis:

1. Following Lynch, we may be able to conclude that highly imageable workplaces are those which have a heterogeneous character: office spaces which combine interaction spaces, individual office spaces, team spaces, etc. Similarly, less imageable workplaces may be too homogenous, and lacking in distinctive and diverse spaces.

2. From the diagrams we may also be able to get an insight into organizational and physical boundaries. For instance, a team or project group may be divided into two due to a certain allocation of space. Likewise, organizational boundaries (which are difficult to detect, but which effect the way people think of teams and groups) may surface from the readings of the

drawings. This could be useful in understanding team and group loyalties, territoriality, and may even help understand the perception of the organizational structure among the participants.

3. The chronological record provided by the audio recordings would help the consultant better understand the hierarchies each individual places on the elements of the workplace. This exercise may inform the consultant about the importance associated with each element in the workplace. Those drawn first, or drawn in more detail, may be what the individual perceives to be most defining. From the elements the participants label and from the description of the reasons behind labeling the elements, the consultant may be able to further understand the importance each individual associates with those elements. By comparing the mental maps of all the participants, the consultant may represent able to distinguish between those behavioral cues and associations that are common to most participants, thus contributing to a shared understanding of the workplace, and those that are associated with each individual.

4. The mental maps drawn by the participants can be compared with the actual plan of the office. The mental maps developed by the participants can used to identify elements important to the participants because of the social meanings they reflect. Comparing these mental maps may help the consultant understand the meanings and expectations participants attach to their environment that cues their behavior in the workplace.

4.42   Hypothetical trips

CONCEPT:

Gravity model:
This model popularly termed "gravity model" because of its obvious similarity to Newton's Law of Gravity attempts to estimate the aggregate amount of interaction between two geographic points (cities, states, etc.) in a given period of time, based on the population of those two points and the distance separating them. Hence:

$$I_{1,2} = \frac{P_1 P_2}{D^2}$$

where: I = some index of interaction between point 1 and point 2;
P_1 = population of point 1;
P_2 = population of point 2;
D = distance separating points 1 and 2. [47]

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[46] Description of nodes, paths, districts, landmarks and edges have been adapted to the workplace, based on Lynch's description of these elements in relation to cities. To Lynch's scheme, we have added networks, flows and hierarchies.

[47] Jakle, Brunn and Roseman, *Human Spatial Behavior: A Social Geography* (North Scituate, MA: Wadsworth Publishing Company, Inc., 1976) p. 114

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This model has been used with reasonable success to predict such interactions as migration between cities, traffic flow among different parts of a city, flow of information and goods, and communication (physically or via telephone). For our purposes of evaluating the existing nature of work it is sufficient to understand the essential principle of this model. We quote Jakle, et al when they extract the essence of the model and describe it as follows:

> An inverse relationship is formed between the distance traveled to an activity and the frequency of participation in that activity, owing in part to the greater time or monetary cost of longer trips. The frequency of participation in an activity is also related to the spatial distribution of opportunities surrounding an individual's home and may be severely limited or zero if that activity is located too far away. [48]

We superimpose the different types of communication in workplaces on this model to understand its relation to the workplace. Thomas Allen[49] distinguishes between the types of communication product development engineers participate in and need in their nature of work. Type I communication exists in all organizations and is the type needed to coordinate work. This type of communication can be scheduled to occur regularly through project group meetings. Type II communication is necessary when the knowledge, upon which the organization draws, is dynamic. Type II communication among colleagues plays a major role in keeping employees informed about the developments in their specialties. This type of communication can also be managed easily through intra-departmental or intra-divisional meetings. Finally, where creativity is needed, there is a need for Type III communication. This type of communication is the most difficult to predict and most difficult of the three to manage. Type III communication occurs during chance encounters, and therefore the physical environment can "strongly promote or impede such occurrences."[50]

The gravity model, in relation to the types of communication in the workplace, can therefore be used to estimate the occurrence of Type III communication. Type III communication, which cannot be managed or regulated by the organization, is analogous to the type of interaction between city dwellers as explained in the gravity model. The gravity model sets up an inverse relationship between distance and interaction. Therefore, by analyzing patterns of movement and spatial relationships in the workplace we may be able to estimate the frequency of Type III communication in the workplace.

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[48] Ibid., p. 116

[49] Allen, J. Thomas, 1997. Working paper: *Architecture and communication among product development engineers* International Center for Research on the Management of Technology

[50] In case studies of R&D facilities, Allen examines the relationship between the occurrence of Type III communication and the physical environment. He concludes that "Type III communication will not happen unless people accidentally come into contact with one another. What we are doing is managing these accidents, using physical location of work stations and traffic patterns to increase the likelihood of occurrence in those situations in which we believe there will be payoff."

Intervening opportunities model (IOM):

This model says that it is not the distance between two points per se, but rather the amount of intervening demands upon interaction that retards interaction. Hence:

$$I_{1,2} = \frac{P_1 P_2}{Q}$$

where:
  I = some index of interaction between point 1 and point 2;
  P_1 = population of point 1;
  P_2 = population of point 2;
  Q = some measure of intervening opportunities.[51]

For example, IOM has been used to study the migration pattern between Boston and Philadelphia. Between these two cities there are many more opportunities like New York City and cities in New Jersey and Connecticut. IOM is particularly useful when precise nature of opportunities can be specified and measured and in these situations IOM is superior to the gravity model. Translating the Intervening opportunities model to the workplace, can help us understand why people don't walk over to distant 'dedicated' team meeting areas when meeting nodes, such as in the intersection of hallways, in front of the copier or the water cooler, can be spontaneously formed in the intervening distance.

IOM and gravity models serve as aggregate models of human behavior. However, it is important to note that at a scale of workplaces, the distance "D" refers to the cognized distance rather than to the actual distance between two points. For instance, some people may cognize the distance between points A and B to be relatively closer than what other people cognize it to be.

Therefore from the gravity and intervening opportunity models we can begin to speculate on the following:

1) What distances are people willing to travel for each kind of activity?
2) If common facilities like printers, water coolers etc. are placed a little farther away, would people walk more and hence interact with more people or would efficiency be hindered?
3) How do people cognize distance? What is considered near enough and what would be too far away?

In order to elicit relevant responses to the above questions we need to first understand circulation and patterns of movement in the workplace.

Patterns of movement and circulation in the workplace:

People have a tendency to perceive distances between frequently visited places as shorter than those infrequently visited. Distances between places where there is reduced stress and threat are also perceived to be shorter than between places where they expect to experience stress.[52] It has also been noticed that people sometimes travel "out of their way" to participate in certain activities.

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[51] Jakle, Brunn and Roseman, *Human Spatial Behavior: A Social Geography* (North Scituate, MA: Wadsworth Publishing Company, Inc., 1976) p. 116
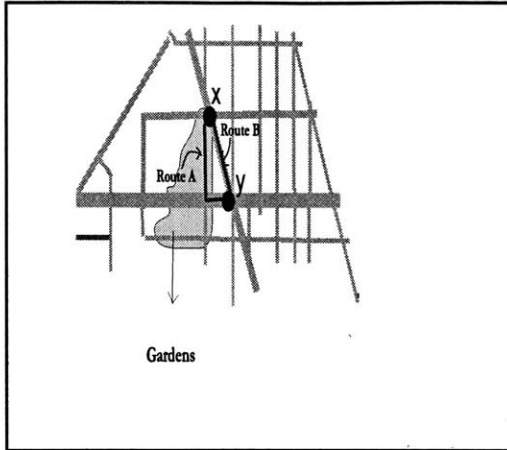
[52] Ibid.

Fig. 4.4 People may prefer to walk along tree-lined route B although route A is a shorter route between points X and Y.

For example, people may prefer route A to route B to travel from point X to point Y in the Figure 4.4 alongside. Although route B is shorter, route A involves walking through a pleasant tree-lined pathway. Distances in order to participate in these enjoyable or beneficial activities are not perceived to be large despite the fact that people travel an extra distance.
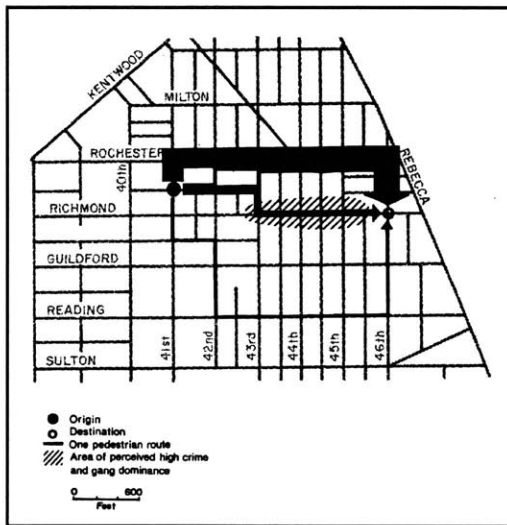

Fig. 4.5 People opted to walk along fairly well-traveled and "activity-filled" ,streets, such as Rochester and 46th. streets rather than through areas perceived to have a high crime risk.

SOURCE: David F. Ley, *The Black Inner City as Frontier Outpost: Images and Behavior of a Philadelphia Neighborhood* (Washington, DC: Association of American Geographers, Monograph Series No. 7, 1974), pp. 224-225.

Another important aspect of distance cognition and patterns of movement is the concept of territoriality. For example, a majority of routes from one point to another may avoid or circumvent certain areas, and on the other hand may deliberately pass through other areas. It would be informative to understand the reasons for this behavior as it may give an indication of the territorial boundaries that exist, those boundaries that are rigid and those that are permeable etc. Studies show that when people in North Philadelphia were asked how they would walk from one point to another in their neighborhood, the majority of the responses indicated a desire to avoid an area that they perceived to have a high crime risk and street gang dominance, at the expense of walking further.[53] Therefore perceived and formally defined territories act to constrain and direct an individual's trip through the spatial environment.

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[53] David F. Ley, "The Black Inner City as Frontier Outpost: Images and Behavior of a Philadelphia Neighborhood" (Washington, DC: Association of American Geographers, Monograph Series No. 7, 1974), pp. 224-225.

The hypothetical trips exercise developed in this thesis is based on the concept of the IOM and Gravity model and that of territoriality and perceived distances. We relate these concepts to the study and analysis of people's perception of workplaces to discern boundaries and territories through preferred paths of movement, estimate the occurrence of interaction, and to understand how people cognize and experience distances in their workplaces.

The use of the method:
In order to conduct the Hypothetical Trips exercise we have developed the method of interviewing a representative sample of the workplace. The interview conducted in the workplace includes a drawing exercise and a detailed description of the trips or paths of movement from one point in the workplace to another. The consultant or the interviewer defines the two points and the exercise is carried out for several sets of points, with each participant. We describe the method of the drawing exercise and the interview and then discuss what we hope to gain from this evaluation method.

The exercise covers the following questions:

1) Starting from your desk, sketch those trips that occur frequently during the time you are at the office. Please provide an oral description as you sketch.[The participant is asked to mark the trips on a blank sheet of paper with " * " marks denoting the location of the points in the workplace to which he or she travels.]

2) Please mark the route you would follow to go from your desk to ————. From ———— to ————. [The consultant fills the places dependent upon the workplace. This question is repeated for 3 or 4 sets of points]

3) Now can you mark those same trips on the layout plan of the office? [The interviewer asks the participant to mark those same trips on the actual architectural plan of the workplace.]

The interview lasts about 15-20 minutes. The entire proceedings are recorded on tape and transcribed.

Analysis of the data collected during the hypothetical trips exercise

Without using the plan of the workplace as an underlay:
Asking participants to sketch their trips in the workplace without using the architectural plan of the workplace as an underlay, the consultant may be able to develop an understanding about how people cognize distances (what is marked closer than it actually is and what is marked farther than it is on the plan), spatial orientation, and perception of spatial distribution.

Analyzing the diagrams with respect to cognized distance and comparing them to the actual physical distance may help the consultant understand the places in the workplace that are more often visited and those that are visited less frequently, spaces and activities associated with those spaces that are considered less stressful and those spaces and activities that are considered more stressful.

The analysis may shed some light on the organizational policies in place and the consultant may be able to arrive at a recommendation for a change in the organizational policies based on the analysis.

Using the plan of the workplace as an underlay:

The architectural plan of the workplace can be used as an underlay to understand the issues of territories and boundaries and how people perceive the space in the office as belonging to one team or group or to another. This exercise would supplement the analysis of edges and boundaries developed by analyzing the sketches that do not use the plan as an underlay. Preference for certain routes may also indicate an inclination to participate in certain activities along that route. This will help identify physical or organizational boundaries, barriers to movement and also identify informal "rules" in the workplace.

Therefore, data from this exercise can be analyzed to understand the issues of territoriality, turfs and also the preference for certain routes or spaces in the workplace. The analysis may reveal organizational structures in the workplace that along with the physical structures dictate the individual's behavior in the workplace.

4.43   Occupancy logs

CONCEPT:

Occupancy studies have been used to build a picture of space usage patterns in the workplace. The occupancy logs that we have developed draw upon occupancy studies currently in practice. We have modified and enriched these studies so as to obtain data pertaining to the actual nature of work practice. We first describe two such occupancy studies and then present the format in which we have structured the occupancy logs.

Occupancy Study:[54] *(Source: IWSP; 1993)*

In this model, occupancy studies are used to visualize "who, when, and how people are using a particular workplace." Several times a day over a period of weeks, a secretary or an administrative staff person who has been given prior training records, working from pre-coded floor plans, the use pattern for the workplace. These records provide data on where people are working at different times of the day and, depending upon the detail collected, "what they are doing and their pattern of movement in and out of their offices or workstations."

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[54] See Frankiln Becker, Michael Joroff, Kristen L. Quinn, *Toolkit: Reinventing the work place* (Ithaca, NY: Cornell International Workplace Studies Program, 1995) p.40 – 44

The method of recording information is complex as the recorder has to follow pre-determined codes and directions as shown in the example from the IWSP Occupancy Study Evaluation Method in the Figures 4.6a and 4.6b.

OCCUPANCY DATA COLLECTION

Directions:

The purpose of this exercise is to gain an understanding of where people are working at different times of the day and what kinds of activities are being performed. Observations of the group areas should be made once an hour for a period of three weeks.

Please fill in your name, the date, the time the observation is made, and the group or area being observed in the spaces provided.

To complete each chart, please follow the directions below:

For each person belonging to the group or area, please indicate in the appropriate column:
1) If the person is out of the office on vacation or for other personal reasons, please check the box in the column labeled "Out." Do not fill in any of the other columns for people who are out of the office for personal reasons.

2) Please indicate the location of each individual by filling in the appropriate number in the column labeled "Location." Numbers and their corresponding locations are:
1 = At personal workspace (i.e., desk, office)
2 = At someone else's personal workspace (i.e., desk, office)
3 = In group areas (i.e., project room, conference room, hallway, informal seating area, etc.)
4 = Working in the building, but not in the office area at the time of observation
5 = Working out of the building all day (i.e., at clients', at home, at other company locations)
6 = Working out of the building for part of the day (i.e., at clients', at home, at other company locations)

3) Please indicate the activity being performed by the individual by filling in the appropriate letter in the column labeled "Activity." Letters and their corresponding activities are:
• Working on the computer...(code = C)
• Reading materials..(code = R)
• Talking on the telephone...(code = T)
• Paperwork...(code = P)
• Meeting...(code = M)
• Other...(code = O)

OCCUPANCY PATTERNS DATA COLLECTION SHEET

Group Observed: . Management Consulting ....Date: 9/11/94

Observed by: ....Laura Potts........................Time: 10:05am

Name	Out	Location (code)	Activity (code)
Janet Kim		1	C
Kimberly Poole		5	M
Scott Jennings		4	O
Tim Milam		6	M
Alexander Flueck		5	M
William Noon		2	M
Debbie Ford		1	M
Paul Reed		1	T
George P. Burdell	X		
LeighAnn Davis		3	T
Patrick Sheppard		3	R
Steve Neilsen		6	M
Austin Montgomery	X		

Fig. 4.6a Directions for recording occupancy data
SOURCE: Franklin Becker, Michael Joroff, Kristen L. Quinn, *Toolkit: Reinventing the workplace* (IWSP, 1995)p.43

Fig. 4.6b Data Sheet
SOURCE: Franklin Becker, Michael Joroff, Kristen L. Quinn, *Toolkit: Reinventing the workplace* (IWSP, 1995)p.44

Occupancy studies can be very useful in understanding how the workspace is currently being used and can help determine the appropriate mix of settings when designing the workplace. Occupancy studies can also be helpful when used to support information collected through other means such as interviews. Observed patterns of space occupancy provide an accurate view of work patterns.

Space and Time utilization studies[55] (Source: DEGW)

In these studies, hand-held computers, operated by trained staff, are used to observe "what is really happening". At each workstation, on a pre-determined route around the workplace, observations about its occupancy or vacancy are recorded. The recordings are taken on a diurnal basis and for a period of two weeks. From the data obtained, one can identify time in and out of the office, degrees of individual and collaborative work as well as individual work content. The analysis of the data is presented in the form of charts as shown in Figures (4.7a and 4.7b)
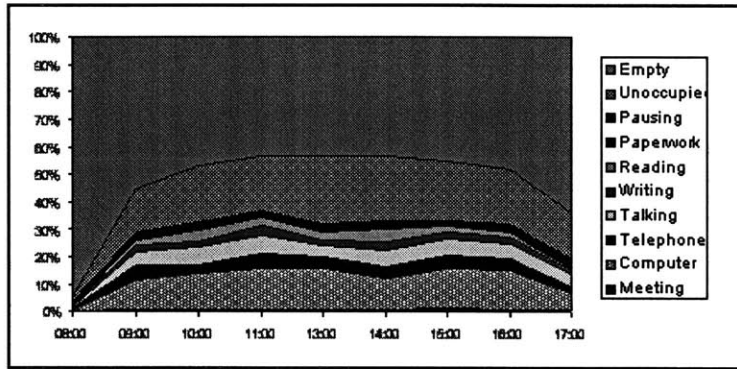
Fig. 4.7a. Time Utilization Survey: Daily Activity patern in Workspaces
SOURCE: DEGW

This chart shows the pattern of activities observed in workspaces over an average day. The horizontal axis shows the times of the observations. The vertical axis shows the percentage breakdown of the observations by the type of activity observed, including empty and temporarily unoccupied 'activities'.
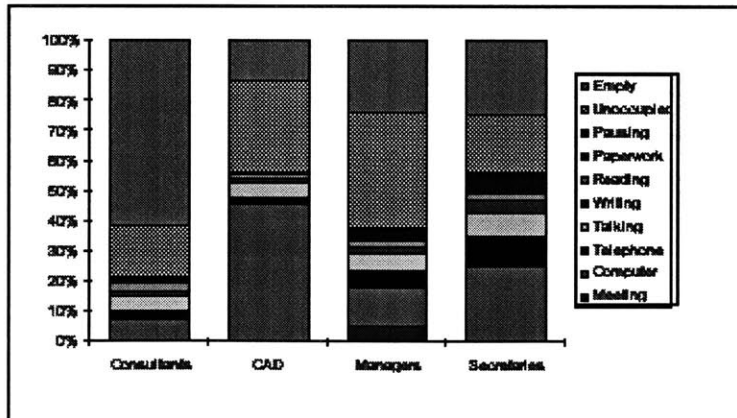

Fig. 4.7b. Time Utilization Survey: Activity in Workspaces by Job Type, core day
SOURCE: DEGW

This bar chart shows, for each job type, the pattern of activities during the core day observed in workspaces of that job type. The horizontal axis shows the job type. The vertical axis shows the percentage breakdown of the core day observations by the type of activity observed, including empty and temporarily unoccupied 'activities'.

[55] See Sir Francis Duffy, *The New Office*, (London, UK: Conran Octopus Limited, 1997) p. 227-8 for detailed explanation of the Space and Time Utilization Studies.

However, both the occupancy studies and the Time utilization surveys do not provide the complete picture of space and time utilization in the workplace for the following reasons:

- The record, both in the occupancy study and the time utilization survey, is maintained by an observer and not by the people involved in the study. The assumption therefore is that the recorder is able to observe the people he or she has to observe at all times.

- In the occupancy study model, the record is maintained at particular instances of time (for example, as shown in the sample record, 10:05 am). It is therefore difficult to estimate the duration of each activity and the time of occurrence of a particular activity. Information pertaining to duration and the time of occurrence of activities is crucial to the understanding of work patterns and space utilization.

- Both modes do not allow for the recording of occurrence of multiple tasks at a time. For example, an individual may be talking on the phone and reading email messages at the same time. Not only do the models not allow for varied tasks, but it is also difficult for the observer to accurately record information pertaining to multiple tasks.

- Since both models rely on the observer to record data about "who, when, and how people are using a particular workplace", they therefore cannot provide information on "what" they were working on. For instance, a product development engineer may work between 10:00 - 10:45 a.m. on product 1 in his workspace and between 11:00 a.m. and 3:00 p.m. on product 2 with his team members in a team room. This information would help us understand the distribution of resources and time for each project and help us probe deeper into the nature of work associated with each project.

- Both the models involve the stakeholders in neither the collection of data nor the analysis of the data obtained. An active and collaborative participation of the stakeholders, we believe, can greatly influence a collective inquiry into the existing time and space utilization thus leading to an inquiry into the work process and individual styles of working.

Patterns of work and space usage:

Laing, et al, in their book *New Environments for Working*[56] explain that the ways of working in offices are changing radically and new ways of working across time and space are emerging. He further elaborates that not only is the pattern of space occupancy over time "extended and intensified", but the very notion of office space has been transformed. Taking the place of the "one-person-to-an-office-or-desk" stereotype, an assumption that has persisted for over a century, is the idea of the office as a set of spaces designed to support a wide range of different tasks and activities. Consequently, organizations and people working in organizations are developing different and higher expectations for control of time and place, the quality of the work environment, the "healthiness of their workplaces and their lifestyles". Duffy explores the relationship between work process and patterns of space use and identifies four, part organizational-part spatial, types: hive, cell, den and club. Duffy further elaborates: Hive: This model describes the vast majority of office buildings. The hive is associated with individual process work, little interaction and low levels of individual autonomy. Staff sit at simple workstations for continuous periods of time on a regular schedule. The settings are typically uniform, open planned, and impersonal. Examples include: Tele-sales centers, call centers, routine banking, financial and administrative operations.

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[56] Andrew Laing, Francis Duffy, Denice Jaunzens, and Steve Willis. New Environments for Working: The re-design of offices and environmental systems for new ways of working (London: E & FN SPON, an imprint of Routledge, 1998)

Cell: The cell is for individuals involved in concentrated work with little interaction. Highly autonomous individuals occupy the office in an intermittent and irregular pattern with extended working hours. They spend many hours working away from the office. Each individual uses either an enclosed cell or a highly screened workstation for a wide variety of tasks. This working space may be shared. Examples include: Law, some parts of accountancy, academic office and some research and consultancy organization.

Den: The den is associated with group work. The "den" worker is interactive but not necessarily highly autonomous, carrying out tasks that are typically of short duration and team based. The space is designed for group working, with a range of simple settings in the open plan or group room that encourage interaction. There is also access to some shared facilities. Examples include: Design, insurance, media and advertising.

Club: The club is for knowledge work: both autonomous and interactive. The pattern of occupancy is intermittent and over an extended working day. A wide variety of shared task based settings serve both concentrated work and group interactive work. Individuals and teams occupy space on an as-needed basis, moving around the space to take advantage of a wide range of facilities. Examples include: Advertising or management consultancies, IT companies, and other high-value-adding knowledge workers in many sectors.[57]
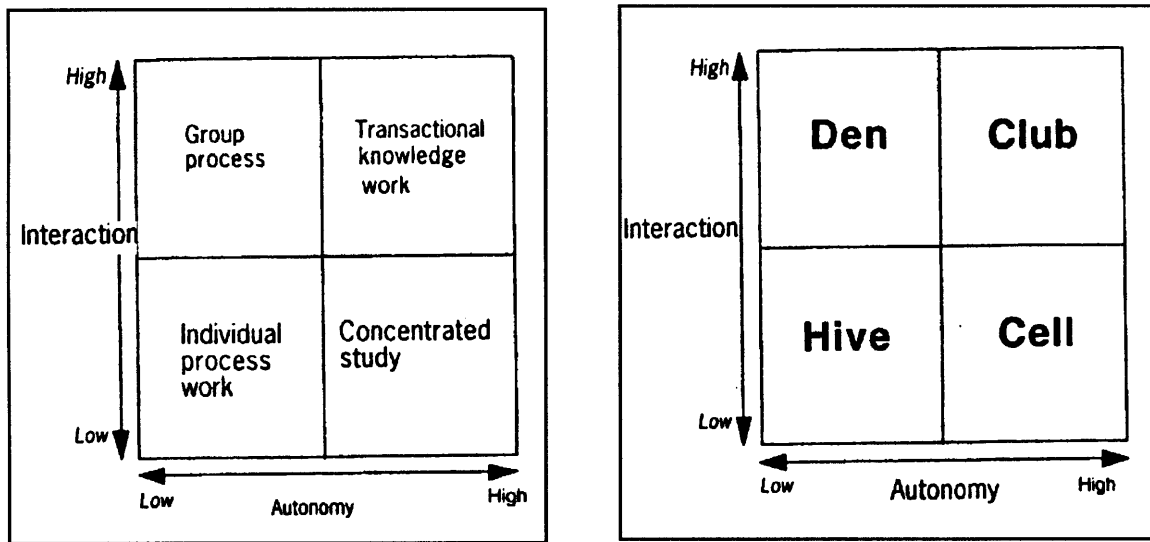

Fig. 4.8a & b. Patterns of Work: four major types

SOURCE: Andrew Laing, Francis Duffy, Denice Jaunzens, and Steve Willis. New Environments for Working: The re-design of ofices and environmental systems for new ways of working (London: E & FN SPON, an imprint of Routledge, 1998) p. 9

Although it is difficult to effectively categorize all work in relation to these types, we draw upon the essence of this categorization to develop our occupancy logs. In relation to the nature of work, the model says that as the nature of work becomes more autonomous and more interactive, space usage becomes irregular and intermittent. Higher levels of interaction and autonomy are also associated with the need for greater diversity of work settings. Therefore, for the purposes of the occupancy logs, we can speculate on the pattern of work through an observation of how people occupy space with respect to time.

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[57] Andrew Laing, Francis Duffy, Denice Jaunzens, and Steve Willis. New Environments for Working: The re-design of ofices and environmental systems for new ways of working (London: E & FN SPON, an imprint of Routledge, 1998) p. 9

THE USE OF THE METHOD:

The occupancy logs are distributed to a representative sample of people from the organization and are asked to maintain a daily log over several "typical work days." We adopt the method of asking participants to log their own data instead of training a member of the staff to be the recorder. This method not only provides more information related to the different tasks and projects an individual may be involved in, but also informs the participants about their patterns of work and space occupancy and sets in motion a process of awareness and inquiry into the nature and pattern of work.

The participants are encouraged to "customize" the log according to the nature of their work by categorizing their work into logical groups or projects of their choice. For instance, an administrative staff person may divide his work into the categories of maintaining accounts, updating databases, filing information, and some personal tasks. This flexibility serves two purposes as can be seen in the figure 3.9. The first purpose is that the consultant gains an insight into the divisions in which the work is perceived and the second, and more important, purpose is that it allows the participant to represent the fluidity and flexibility of the nature of his or her work, instead of forcing the participant to choose between pre-coded and pre-determined categories of work.

Name:	Project 1 (P1): ——— Project 2 (P2): ——— Project 3 (P3): ———						Project 4 (P4): ——— Project 5 (P5): ——— Project 6 (P6): ———										
DATE	TIME		LOCATION	INDIVIDUAL				MEETING			CONTENT						
	START	END		PHONE/ EMAIL	DATA ACCESS/ ENTRY	WORD PROCES SING	OTHER	SCH	UNSC	PARTICIPANTS	P1	P2	P3	P4	P5	P6

Fig. 4.9 Occupancy Log

ANALYSIS OF THE DATA COLLECTED FROM THE OCCUPANCY LOGS:

The occupancy logs that we develop is an attempt to represent organizational and spatial models with respect to:

• Patterns of work with respect to each individual, his or her use of time and space and the distribution of resources (space, time and people) with respect to each project.

• Patterns of space occupancy with respect to each individual, his or her usage of space with respect to time.

• Patterns of use of Information Technology with respect to each individual use of technology in relation to space, time and the project.

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Data from the occupancy logs in the form of duration, location and the type of activity the participants engage in on a typical day may help the consultant gain an insight into the nature of work. The logs would provide information pertaining to frequency of communication among individuals in the workplace, the duration of these interactions and more importantly the physical location of these interactions. The logs would also provide information on the type of communication, whether it was scheduled or unscheduled and the people involved in these interactions. This would give the consultant an insight into team and group interactions, reward systems, organizational structures and spatial arrangements that either impede or promote interaction.

The information from the occupancy logs can be represented graphically to gain an insight into the patterns of work. The information can also be visually represented on the layout plan of the workplace to indicate the distribution of activity, the pattern of work with respect to space and the location of activities in space with respect to each project in the workplace. Two examples of these visual representations are presented in figures 4.10a and 4.10b. Occupancy logs can be maintained over the course of a workplace transformation process and representations of information obtained from the logs can form a record of the organization's pattern of work before and after the change process. These records can also be periodically logged and analyzed by the organization to understand its existing work patterns and therefore the existing nature of work. The data from the logs when complemented by the trade-off game, which we describe next, helps the organization monitor the changing nature of work.
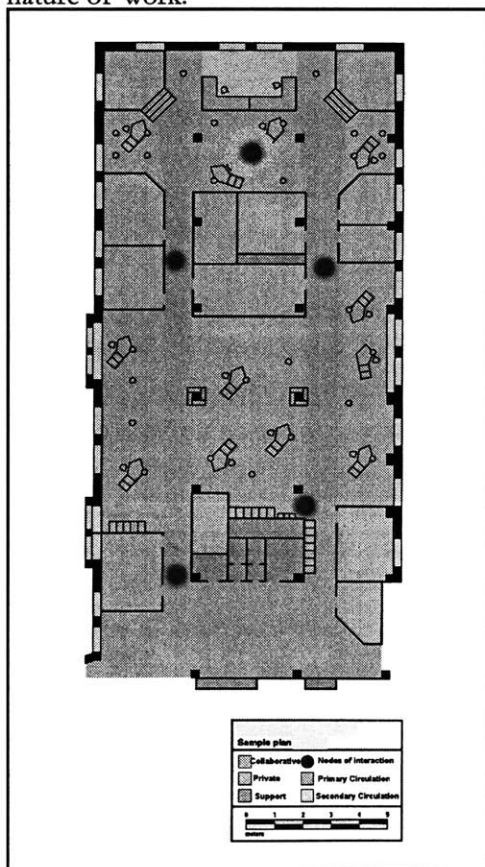

Fig. 4.10a Sample plan showing the different types of activities with respect to space
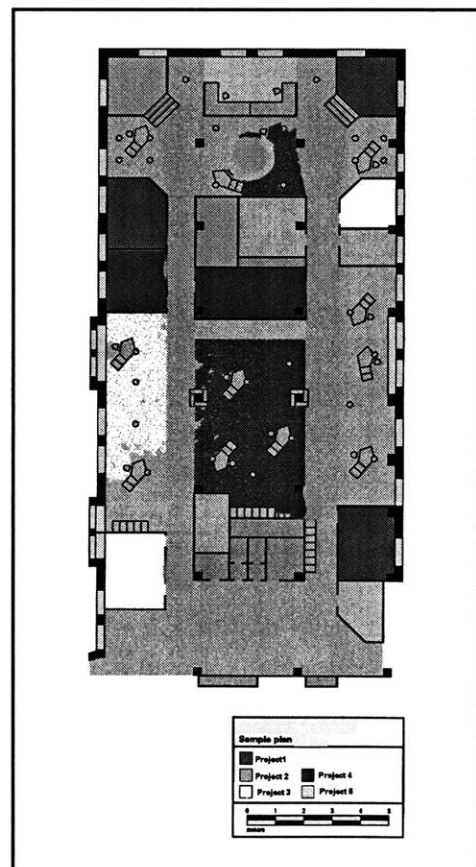
Fig. 4.10b Sample plan showing the distribution of projects with respect to space at a given instant of time

4.44 Trade-off games:

CONCEPT

The basic method of most trade-off games in planning and design is that the participants are confronted with a number of "attribute"[1] (such as public services, housing attributes, public facilities, etc.), each with several possible quality levels. Typically, each attribute level has an associated cost, defined in units of currency, points or some other value measure. Participants are allocated a budget (or some other constraint mechanism) and are allowed to 'purchase' the quality levels they desire. However, by making the total budget insufficient to permit purchase of the highest or best levels of all attributes or by adding another set of constraints (such as having to chose between two types of attributes), the participants are forced to make trade-offs. Participants are allowed to iterate and reallocate their budgets among the alternative levels until they achieve the most satisfactory combination or "optimum mix".

The trade-off game method is related to the economist's theory of "utility", which tries to explain consumer choice. To an economist, trade-offs are defined as "marginal rate of substitution between commodities."[2] In brief, the economist's theory of utility states that a choice or trade-off between any two dimensions or attributes is dependent upon the cost and utility associated with various quantities of each dimension. The ratio of costs of the dimensions, together with a given level of income determines the budget function. The process of trading-off to obtain an optimum mix of dimensions in known as "utility maximization". The question that therefore arises is: for a given budget, what combination of dimensions or attributes will yield the greatest level of satisfaction? Economists answer this by developing indifference curves; that is, each level of utility is viewed as a locus of points representing equal levels of satisfaction, with points of tangency between the budget functions and the indifference curves yielding maximum levels of satisfaction for a given budget.

The trade-off game with a group of participants in the workplace with game board elements such as private offices, team spaces, shared facilities, spatial and organizational groupings, etc., can be played in two different scenarios. The first situation deals with participants having nothing on the board at the beginning of the game and using their budget to "buy" everything they may need in order to work efficiently. The other situation deals with participants coming to the board with those elements and attributes they already possess in their existing workplace. The second situation can then play out as a game in which participants can relinquish or trade what they have for what they would like to have. While the first situation can ideally cause the participants to rethink their entire process of work and the attributes that contribute to it, the second situation is akin to a commentary on what people like in their present workplace and what they would like to change. It also throws light on the importance attached to certain attributes by the extent to which the participants try to retain or "buy" these attributes.

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[58] Ira M Robinson, *Trade-off games as a research tool for environmental design.* In *Methods in Environmental and Behavioral Research*, ed. Robert B. Bechtel, Robert W. Marans, William Michelson,(New York: Van Nostrand Reinhold Company, 1987) p. 120-161

[59] H.S. Houthakker, *The present state of consumption theory: A survey article.* (Econometrica 29:704-40)1961

This game can also be played out over frequent intervals in the life cycle of a project or over the course of a change process. As the nature of work shifts, so will the preference for certain styles of work and therefore a certain set of attributes. The record of all trade-off games can serve as a comparison of the changing nature of work over time and can be very useful to organizations in their effort to monitor the actual state of the workplace in order to sustain change.

THE USE OF THE METHOD:

Although it would seem that the application of this concept is fairly easy and straightforward, in practice, however, in matters of design and evaluation, especially with respect to abstract attributes such as privacy or interaction, it is more difficult to apply. These attributes are very difficult to 'cost' since so many of them are subjectively perceived and evaluated that it is not a matter of determining the "exchange rates" between, for example, apples and oranges. Moreover, these attributes are neither truly independent nor dependent, but interactive, and thus combined pricing between two interactive attributes is almost impossible, even in theory. Further, the consultant and the organization's realm of concern does not comprise any single individual, nor only a few attributes, but groups of people and many dimensions, each group with presumably different sets of preferences. Therefore, we need to develop a 'community' trade-off preference function.

In the trade-off game we propose, we limit the attributes to a diverse set of work settings. In the context of this thesis, we impose this limit in order to develop and test a simple game. The trade-off game and the game board can then be enriched and made more complex by adding other dimensions and attributes. We design the game board such that the trade-off game complements the data from occupancy logs described above. At a minimum, occupancy logs help the organization sustain change by providing a record of space and time utilization charts that can be compared over time to monitor the actual state of the work practice. Drawing upon the model developed by DEGW we had previously concluded that higher degrees of interaction and autonomy can be expected when space utilization with respect to time becomes more intermittent. Based on this model, we design the game-board of the trade-off game to include diverse work settings, ranging from individual private offices to team spaces, to shared facilities. The concept behind choosing these elements is that, as an individual's work practice tends to become more interactive and autonomous, his or her preference for varied and diverse work settings increases. For example, as an individual's work practice becomes more interactive, he or she may prefer to trade-off an assigned, private office for a shared team space with occasional access to an unassigned private office for work that involves greater concentration.

One possible layout of the game-board consists of attributes, levels, and costs as shown below.

Attribute	Level	Cost	Round 1	Round 2
Individual workspaces	1. Assigned private enclosed office	$ 800		
	2. Unassigned private enclosed office	$ 600		
	3. Assigned open but individually used workstations	$ 400		
	4. Unassigned open but individually used workstations	$ 200		
Team workspaces	1. Dedicated meeting spaces (e.g. conference rooms)	$ 800		
	2. Meeting areas interspersed in between assigned workspaces	$ 600		
	3. Team spaces with shared spaces within teams	$ 400		
	4. Multipurpose spaces with shared facilities	$ 200		

In the first instance of game playing we assign a higher monetary level to the assigned private enclosed offices and assigned, dedicated meeting areas so as to challenge stereotypes of space usage patterns. According to Duffy, the implicit assumption many organizations and people have is that:

- office work is routine and undertaken largely by individuals working alone
- people work regular 9-5 days
- everyone in the firm has his or her own office or desk where they spend the whole day
- most people are in the firm's physical building throughout the day and on all days
- the range of office space is simple and standards (size, facilities, etc.) are based on organizational hierarchies
- access to information can only be obtained in fixed places. Information technology is attached to physical artifacts and cannot move around.[60]

In the first playing of the game, a group of participants is allocated a budget such that the group cannot buy an assigned private office. We believe, this situation will force the participants to examine their work practices and 'negotiate' with each other to reach an agreement about ' who gets what' and why. The data from the occupancy logs pertaining to space and time utilization serves as an effective guide to setting up the game board and we believe that occupancy logs should be maintained over a period of at least a week prior to playing the trade-off game. The calibration of the costs should be re-thought and should be changed each time the game is played based on the previous games and on the data available from the occupancy logs. Therefore, when played for the second time, for example, the cost of a private assigned office may be priced lower than an assigned private workstation. The game board could also be made more complex by adding more attributes and levels of attributes.

ANALYSIS OF THE OUTCOME OF THE TRADE-OFF GAME

The trade-off game provides insights into the existing nature of the work practice. By analyzing the choices the participants make and comparing them against the space and occupancy patterns obtained from the occupancy logs we can evaluate and gain an understanding of the way in which the participants perceive the nature of their work practice. For example, if an individual or a group of individuals "buy" assigned enclosed private offices but their occupancy logs indicate that their present workplaces are unoccupied most of the time, we can detect discrepancies in the two sources of information. This discrepancy (of wanting private offices that are unused most of the time) can trigger further analysis and evaluation. These discrepancies are important to the process of surfacing deeper underlying issues, such as compensation systems that emphasize and reward individual achievement over team performance. This system may be the reason driving the individuals to protect their "turf" (space, information, knowledge, etc.) Therefore, occupancy logs and the trade-off game can help reveal the reasons and causes behind observed behavior.

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[60] Sir Francis Duffy, *The New Office*, (London, UK: Conran Octopus Limited, 1997) p. 22-25

The trade-off game and the occupancy logs when played and maintained over time respectively, contribute to creating a record of the organization's changing nature of work practice. Analyzing the "buying" patterns of the people in the organization and comparing them against data from the occupancy logs can help the consultant and the organization monitor the nature of the work practice. For instance, greater preference for multiple work settings coupled with intermittent space and time utilization may suggest that the nature of the work practice is shifting from a controlled and individualistic nature of work to a more autonomous and interactive nature of work.[61] Depending upon whether this outcome is desired or not, the organization can change its variables to promote or redirect this trend.

4.5 APPLICATION OF THE METHODS OF EVALUATION

In the preceding chapters we have described an approach to evaluation that seeks dynamic coherence in the relationship between inquiry into the actual state of the work practice and workplace change. We have advanced the idea that the process of inquiry into the existing nature of work is not only crucial to structuring an effective workplace change strategy, but that this process of inquiry drives change in the organization. Evaluating the existing nature of work practice is therefore the first step in an organization's effort to sustain change. We have also put forward the idea that the spatial environment not only influences the existing nature of work, but that the way in which people organize their spatial environment serves as an indicator of the nature of the work practice. In Section 4.4 we developed techniques that evaluate the nature of the work practice through an inquiry into the spatial perceptions held by people in the organization to arrive at an understanding of the nature of their work. In this chapter we describe the application of the techniques at Swanson Roberts, Inc. and analyze and present the data to validate our hypothesis that an inquiry into the workplace can lead to an understanding of the actual state of work practice.

4.51 The Swanson Roberts Project

Swanson Roberts, Inc., an executive search firm in Boston, is contemplating a shift in office location. The consultants have been asked to assist in choosing the new office space, and in doing so, to help Swanson Roberts understand the nature of their work practice, so as to choose and design the new premises to support or improve the nature of their work. Swanson Roberts, a joint venture between the executive search firms of Michael Swanson and Peter Roberts, presently occupies two floors of a building in downtown Boston. The Swanson group employs approximately thirty five people and is located on the fifth floor, while the Roberts group with about fifteen employees occupies half of the fourth floor. The Roberts group further sublets a

[61] Duffy, Frank Sir. 1997, *The new office*, pp. 10-27 Conran Octopus Limited. London

portion of its space to other firms although, at present, the Roberts group could make more than good use of it. Despite the fact that floor divisions separate the Swanson group and the Roberts group, they share common facilities like the reception, knowledge databases, and most of the service facilities, such as the mailbox, the facsimile and supply room services. In the process of inquiry, we apply the techniques we have developed in this thesis in combination with other methods of workplace design and inquiry such as the walk through and slide-shows, in order to understand the existing nature of the work and to develop a shared understanding among the people in the organization.

PROCESS OF INQUIRY:
The first phase of evaluation was structured to elicit responses pertaining to the perception of the nature of work and of the spatial environment. The inquiry followed the method of interviewing a representative sample drawn from both the Swanson and Roberts groups. The interview consists of a request for description of the nature of work, a sketch map of the workplace, and of "trips" or paths of movement in the workplace. The interview, lasting twenty minutes, was conducted in the workplace and each of the twelve participants was interviewed separately. The second phase of evaluation was structured to gain further insights into the relationship between the spatial environment and the work practice and to create a shared understanding of this interdependent relationship among the people in the firm, and included methods such as the walk through and the slide show. We describe the structure and method of these phases of evaluation and the analysis of the data thus obtained.

The first phase of evaluation consists of the previously described sketch map exercise, the hypothetical trips exercise, the occupancy logs and interview questions pertaining to the nature of work. From this process of inquiry we hoped to gain an understanding on the manner in which the workplace and spatial environment is perceived and experienced. These evaluative techniques, as described in the previous section, help the consultant gain an insight into the physical or perceived territories, the boundaries, edges, nodes of interaction, the inclination of people in the organization to participate in certain activities, paths and lines of communication, communities of work practice and the distribution of activities over space and time. The format of the interview is presented below. The responses to the questions and exercises were recorded and transcribed.

Interviews and spatial design exercises.

- What are the key components of your work? Who are the people you need to interact with and what part of the organization do they come from?

- Can you describe the life cycle of a project?

- What do you consider the most important element in the workplace?

- What first comes to mind, what symbolizes the word "office" for you? How would you broadly describe your workplace?

- Please make a quick map of your workplace. Make it just as if you were making a rapid description of the workplace to a stranger, covering all the main features. Label those features of the workplace that you feel are most significant or important. We don't expect an accurate drawing, just a rough sketch. Please provide an oral description as you draw the map. [The interviewer discusses why certain elements were labeled]

- Starting from your desk, sketch those trips that occur frequently during the time you are at the office. Please provide an oral description as you sketch.

- Can you describe the route you would follow to go from your desk to -----------; from ----------- -, to ---------------. Picture yourself making the trip, and describe the sequence of things you would see, hear or smell along the way, including the path markers that have become important to you, and the clues that a stranger would need to make the same decisions that you have to make. [The interviewer fills in the names of the places depending upon where the participant's workspace was located and on the perceived nature of their work.]

- Occupancy logs. Please can you maintain a log of your activities on a typical day, covering aspects such as location, duration and description of activity. There is a sample log provided which should help you maintain your log.

Description of data collected from the interviews and the design exercises.

1. From the interview questions:

   - Audio recordings of:

     - Description of the essence of each individual's work. The key components of the each individual's work and the people they need to interact with.

     - What each individual considers to be the most important element in the workplace and the reasons for it.

     - Description of that which symbolizes the workplace in the mind of each individual and the meaning associated with it.

     - Each individual's description of the workplace. How he/she experiences the workplace.

   - Visual representation and audio recordings of:

     - Each individual's mental map of the workplace. The audio recording of the exercise provides a chronological sequence to the objects and elements drawn. However, due to the difficulty in drawing and representation, certain aspects of the workplace that are difficult to represent may get omitted during the sketching exercise. The recorded description of the workplace and the manner in which each individual experiences it will help the consultants get a complete picture of how an individual experiences his/her workplace.

     - Hypothetical trips in the workplace. The exercise involves asking people to chart several hypothetical trips from their office space as the point of origin to a destination.

- Occupancy logs:
  - Occupancy charts logged on a few typical working days giving information pertaining to type of activity, duration and location of activities.

ANALYSIS OF THE DATA:

We analyzed data collected from these interviews in increasing levels of abstraction to arrive at an understanding of the existing nature of work. First, each individual interview was analyzed with respect to each technique as described in the previous chapter. That is, each interview was analyzed to "answer" the issues raised in the sketch map exercise and the hypothetical trips exercise. The results were then aggregated to arrive at the responses each participant had to issues such as, individual and group work, communication lines, interaction nodes, likes and dislikes. We present the sketch maps, drawings, and this part of the analysis in the appendix. The next level of evaluation involved sifting through this issue-based analysis to arrive at the participant's shared understanding of the workplace and work practice, congruencies of thoughts and preferences and the disagreements and discrepancies. We present our analysis of the existing nature of work practice in the following categories:

Shared understanding or issues of congruence: Include those perceptions of the work practice and the workplace that are shared by a majority of the people. These include a shared understanding about the utilization of space and resources, communication and interaction, etc.

Issues of disagreements of discrepancies: Include those issues on which opinions and perceptions vary. We believe that it is these issues that trigger further inquiry into the nature of the work practice and we present a set of questions that probe deeper into the nature of the work practice.

Problems/opportunities: Summarizing from the issues of congruence and disagreements we pose a set of questions that would trigger further inquiry into the work practice. In trying to answer these questions, we believe that we will be able to spot inefficiencies and resolve issues that will help us rethink and reformulate the work practice.

We have drawn extensively from the transcripts, sketch maps, drawings and our initial analysis presented in the appendix to arrive at this understanding of the work practice. We therefore urge the reader to review the appendix prior to reading the following section. In presenting our analysis of the nature of the work practice, we have keyed in some of the information and quotes contained in the appendix.

Issues of congruence:

Places and nodes of interaction:

Almost all participants feel interaction takes place at the reception, kitchen and equipment room. In addition to these areas many participants felt that their workspace was a node of interaction. In general interaction seems to take place in non-territorial services areas: in the reception, by nature of its location and in the equipment room and kitchen, by nature of its function (since these areas are necessary for work and is accessed by all).

When asked if she could mark on her sketch those places where she thinks the most interaction takes place, Beatrice Brady, an associate replied:

"I would say here in front of the reception where we have some nice chairs and seating area. Although we have this conference room, no one kind of picks up their things and comes to this room. But many people like to sit at the seating area and talk. Then we become so loud that Jenn has to scream to answer the phone. Then I would say people meet at the kitchen and the fax room too."

Dana Adams, an administrative assistant responded to the same question by naming "Jen's desk", referring to the receptionist's desk, the kitchen and the copy room:

Yeah. Oh, let me just make this as Jen's desk. Huge. Here. I think there's a lot of stuff that goes on right in the lobby and the other spot would certainly be where I sit because a lot of people like to come in and chat with me there. Those are the two prime spots. Another spot would definitely be the fax room/kitchen. So those are the three hot spots."

Resources are very important:

All participants need resources of communication – email, voicemail, fax, and telephone – for their work. This is especially true for those directly involved in the searches – selling the work, networking with external sources and with clients and candidates. Those directly involved in the searches include Vice Presidents, associates, and administrative assistants.

Sally Summers, an associate in the Roberts group describes these resources in terms of the key components of her work:

"Right. The key component of my work is actually being on the phone and being able to access word processing, which I do all of my charts and organize myself from. That's a majority of my work. And e-mail, I guess, to communicate with people."

Associates are involved more closely with the details of the search and are very dependent on a good computer (database) system. The nature of work is heavily inclined towards paperwork and therefore services found in the equipment room (copier, binding, postage, mail services, etc.) are very important to everyone.

The amount of paperwork involved also puts an emphasis on storing and accessing files. This is especially important to the administrators (administrative assistants assigned to the search) who are responsible for (hard copy) data access and entry.

Annette Gouly, an administrator in the Roberts group, is always on the lookout for cabinets and drawers to store her files and papers:

"Yes. I actually have just in the last month transferred a lot of my last fiscal year stuff. It filled up this whole file cabinet and half of this file cabinet. I use all of these in the kitchen. There's four wooden ones, three-drawer or four-drawer each, plus metal ones that we keep paper items and napkins and forks and things in. But I use virtually all of them. There's also, it's too narrow to tell, but between the work stations and the hallway there's also a good amount of space where we used to have a couch that we have some wooden file cabinets as well that I use part of them and each of the recruiters each has a drawer in them. But I tend to monopolize almost all the space."

Lines and paths of communication:

Most people walk past the reception when walking from one side of the office to the other in the Swanson group. The most likely reason is that they would like to participate in the activities or interaction taking place at the reception and also to track people down by getting information about their present location from the receptionist. The route through the reception seems also to

preferred because the back hallway or the occupants of the back hallway — the other link between the two sides of the office — is less familiar and has fewer opportunities for meeting and interaction.

Beatrice Brady, an associate, prefers to go past the reception as she often meets people there:

"I could use the back hallway but I like going past the reception. I always bump into somebody or the other and I tend to meet more people this way. I don't have much interaction with people in this open space here and so I don't like going this way. Also if I have to go that way I would have to pass Denise and I do that if I have to drop off some faxes or something like that."

Jennifer Milgrom, the receptionist:

"Let's see. Gosh, I seem to interact with everybody. Because everybody's always -- the reception area is such a central area that, you know, people are always flying through there saying "Do you know where so-and-so is" and -- let's see."

Life cycle of a project:

People directly involved in the searches (Vice Presidents, associates, and administrative assistants) describe similar project life cycles. This is consistent between the Swanson and the Roberts groups. Most of those who support the searches (financial officer, research director, receptionist, etc.) do not follow the same project life cycle. However, the life cycles of their projects are not independent from the life cycles of the searches as their workload shifts in relation to the searches.

Michael Swanson, the principal and founder put it most succinctly:

"The search tends to go for four to six months and they have a very clear pathway, there's the launch, scope, networking, interviewing, presentation, second presentation, client interview and close. It's a schedule."

Emily Peters, the director of research, supports almost all the searches. Although the life cycle of her projects do not accurately match those of the searches, it is dependent on the latter:

"Over the course of the search the concentration of research is probably done right at the beginning. Although sometimes there's general research that's done at the beginning; midway through the search they will also find, usually the recruiters will find other things they're curious about or other people they don't know about and so they'll ask for more. And then at the end of the search sometimes they'll want extra research done on the individuals who are being considered as final candidates. So there's a place for research throughout the search process but there's no one method because some recruiters use a lot of research and some use none, they do it all themselves, so it really depends on the individual as well."

Individual and group work:

There is a combination of individual work and group work. A portion of the work on a search in collaborative whereas the rest of the work is done individually by interacting with team members for the purposes of coordination. But since the searches overlap, there is a need for all types of work (individual, collaboration, and coordination) at all times.

Bill Monroe, a Vice President in the firm explains:

"The best reasonable explanation you just provided. It's – initially it's me thinking about it and writing something. Then there's a lot, from that point on, ten percent is me preparing, ten to fifteen percent me preparing something in written form. From that point on it's constant interaction with somebody external

to the organization; that would either be a candidate, prospects or directly with the client. And then certainly interaction with my colleagues internally. So it's a lot of coordination and conversation after fifteen percent thinking."

Interaction with people:

Most people have a constant set of people they interact with and a shifting set of people they interact with. The constant set of people usually include the receptionist, people in support positions (research director, CFO, etc.). The shifting set is based on the searches people are involved in at that particular time. This is especially true of those directly involved in the searches (VPs, associates, admin associates). People with more supportive roles meet and interact with almost everybody continually but tend to have more interaction with a few people. The members of the development team, however, have a constant set of people they interact with.

> Bill Monroe:
>
> *"Internally most of my interface is with my administrative assistant and depending on whether I'm working on a specific search with an associate, that associate, so the hierarchy probably is administrative assistant and then an associate or a stringer, depending on would be an additional person, could be a stringer or an associate."*
>
> Sally Summers, an associate from the Roberts group:
> *"In terms of who I interact the most with it's probably whoever I'm working on searches with. So it's usually Peter Roberts or working with two other people on searches so...Shifts according to the search."*

Likes:

Most participants interviewed expressed a liking for natural light (people on the 5th floor appreciate the light in the reception and in the open space, whereas people on the 4th appreciate the fact that they have offices with windows which gives them access to natural light). All participants would like to have access or continued access to natural light.

> Bill Monroe, whose workspace is located in the open space, prefers working in the open space and is inspired by the light:
>
> *" And, there's -- I like the light and the openness. I can move around the building, there's a lot of space here on this one floor. I don't really do -- I don't really go down the fourth floor for any reason. But I like the light. I'd like to have -- and I don't like a confined area although we're getting so much noise around here that a confined area I could see as becoming more and more important. But the light inspires me as opposed to being in a dark room with no natural lighting."*

5th floor distinct from 4th floor:

There seems to be a shared perception that the 5th floor is separate and distinct from the 4th floor. However, accounting, computer systems and mail services of the 4th floor are tied to that of the 5th floor leading to the speculation that people in the Roberts group are comparatively more dependent on the Swanson group.

> Many people on the 5th floor echo the views expressed by Jennifer D' Angeli:
>
> *"No. No, I don't. I only go down there if I have to let somebody in in the morning if they can't get in or if they're brand-new and they don't have keys. But I went down there the other day and I hadn't been down there in probably two months. So, see what I mean? I'm like, "Oh, wow, this is new." But there's no need for me to go down there. So it's like wasted space almost but...because everything happens up here on the fifth floor."*

<u>Reception area serves as a link:</u>

There is a shared perception that the reception area links the two sides of the Swanson office space. The sketches drawn by people who occupy the side with the cubicles and the closed workspaces indicate that these people use the other side of the office predominantly for support services (library, kitchen, and equipment room). The other parts and elements that belong to this side of the office are not as accurately or clearly defined indicating less frequent use and less familiarity with the space and its occupants.

Dana Adams:

"Sure. Let me grab the pencil here. This being holding the paper horizontally. And having the office split so walking in through the main entrance seeing the reception. I'm really an awful drawer, but let me just try this. There's a hallway here which actually I really don't frequent very much being that I have my own printer. And then the other side of the office is, is not symmetrical at all to the side I work at. And like I said I don't go over to much. And over here, which is to the opposite side of where I work again, is that tiny kitchen I mentioned. And the other room which is the fax room which is a place I spend many hours in, fax/copy room. So it's a -- I think it's a great setup. You know, if I do laps around during the day I don't find myself to be too tired but it is accessible. Of course it'd be great if the copy room were closer to where I sat but it's not even a problem at all."

<u>Awareness of hierarchy:</u>

There is an awareness of the organizational hierarchy among all the people. This hierarchy seems to be perceived both spatially and organizationally. In spatial terms the hierarchy is perceived through: offices without windows, offices with windows, cubicles and open space and in organizational terms: associates, VPs, admin staff and the founder's space. All people appreciate the fact that Michael Swanson, who is "entitled" to an office, chooses to occupy an open space. However, this open space becomes almost territorial since most people consider it to belong to the people who occupy that space and do not impinge on it.

Dana Adams describes the office as follows:

"Having the receptionist in the center and then to, if you're looking at her desk, to the right is where I work having all these perimeter offices with the VPs out here and the happy cube with all the admin. staff right in the middle here."

<u>Perception of a distinction between the development team and the other teams:</u>

There seems to be a common perception that the development team is "different" from the other teams in the Swanson group. The reason for this distinction seems to be that the development team has a constant membership and so certain people are always associated with it. Another reason seems to be that the members of the development team are all spatially co-located, store their files separately, and have regular team meetings.

Pattie Myers, senior associate:

"The senior associates and associates work with the VPs. We would help with more than one search at a time. Except for Manny. He is a VP who is solely in charge of development. He has his own dedicated team - a separate administrative assistant, associates etc. But the rest of the VPs have shifting teams. Senior associates and associates have to work with the VPs and their administrative assistants."

Kim Laurence , member of the development team:

"The filing is not really well organized right now. The development team, we have all our files in Manny's office. Our practice is so -- the universe of candidates with which we work is so kind of confined. We are

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not, you know, we are not looking for people who used to be bank officers. We're looking at people who do fundraising, that's what they do. And so it didn't make a lot of sense to us to have our files all kind of mixed in with the rest of the files; it made sense and we felt that it would facilitate our practice, and frankly everybody else's practice here, if our files were not integrated, if they were separated. And that's not a very popular decision on our part. But so we have all of our files in Manny's office."

Disagreements/discrepancies:

Interaction:

The degree of interaction each person believes is necessary varies from person to person rather than from organizational group to group. That is, Dana Adams from the development group (an admin assistant) prefers a greater degree of interaction while Kim Laurence (associate for dev. Group) does not prefer a high level of interaction. Tanya Becker (admin assistant) does not like to be involved in interaction while Beatrice Brady (associate) likes to pass through the reception area where she knows she will meet "someone or the other".

Dana Adams:

"Unfortunately, not enough social space for a kitchen and time for everybody to step out of work and, you know, be people for a while. And when that does happen it happens around a desk and sometimes it's distracting."

Kim Laurence:

"It's very -- it is a very focused place. People come in, they do their work, they don't have a lot of time to waste. A lot of people here have young families. And I think there are some people who want it that way. And then I think there are some people who kind of wish that they were working in a more, in a place that, that placed a higher premium on community and communication and were more kind of like a, like all the non-profit organizations that I used to work in where, you know, communication and community is the highest value. And so there's a lot of talk here about how we're going to create community and what we do to create community and so on and so forth."

Tanya Becker:

"I go by the reception only if I know that I will be in the conference room or using the equipment room for a long time. I want Jenn to notice me so that she will know where to look for me or forward my phone calls. Otherwise I avoid going through there because you are bound to bump into someone because there is usually some one or the other here or coming out of the kitchen with drinks."

Beatrice Brady:

"I could use the back hallway but I like going past the reception. I always bump into somebody or the other and I tend to meet more people this way. I don't have much interaction with people in this open space here and so I don't like going this way."

Perception of the office:

There is an interesting difference in the perceptions people have of the office. Bill Monroe, a vice president, seems to see it for how it can be useful to him in supporting his work activities. In contrast, many people see it as a place that should afford more interaction.

Bill Monroe:

"I've had a work area and the area, you know, probably has two or three sides to it so I can spread material out because we work with written material and electronics. And I have to have files. So that allows me to have all that. Now, at some point also there's a certain amount of equipment that I have to

have access to and right now the equipment, let's say, is here. Equipment. And that equipment happens to be reproduction, probably the biggest one, reproduction, because we're working with so many hard copies. Reproductions. I also, the computer generally is here There's also postage, we do mail things; postage and mailing. Through Federal Express, those kind of overnight services, so that needs to be set up somewhere. And also there are access to resources; paper, folders, pens, that kind of thing."

Joan Riley, Billing Director of the Swanson group wishes for spaces and opportunities for more interaction:

"You must have heard it from a lot of people but I think we could all use light and open space. I would put all the central services in this middle place and put the VPs along the perimeter. They can have their closed offices if they want to but at least this would give everyone some light. I am not sure how we would get in and out of this place but it would be good to have this large open space. It would also be good we had a place where we could sit down together and have lunch. At present almost everyone goes out and brings back something to eat and eat it at their desks."

Necessity of interaction:

Related to the perception of the office, is the degree to which people at Swanson Roberts perceive interaction and the sense of community. While some people perceive interaction to be an integral part of the work, other see it apart from the requirements of work. The latter group of people, therefore, views interaction more in the vein of a sense of family or community that is set apart from the nature of work.

Katherine Williams, a vice president, belongs to the group that views interaction as being part of the nature of work:

"It is a place where lots of people work on discreet somewhat isolated projects but where frequent interaction is both psychologically and in professional terms necessary. So that as I think about our design moving forward forcing us to be running into each other all the time is an incredibly important way of exchanging information when the work itself isolates us."

Drawing on the interviews, sketch maps, and the analysis of the issues of congruence and disagreements we can speculate on the exiting nature of work practice at Swanson Roberts. We first present our analysis of the nature of work practice and then pose a set of questions that we believe would drive a more incisive inquiry into the nature of the work practice.

EXISTING NATURE OF WORK PRACTICE:

The nature of work at Swanson Roberts is fast paced with the implicit need to "close the search" as soon as possible. In this setting the need for community and interaction is rarely expressed, although it is acknowledged that some amount of communal support is desirable. As one associate explained: "There are incredible highs and equally incredible lows in this business and you need to share both with people who understand what you are going through." Informal communal support and interaction also helps people learn "the trade" from others. The nature of work is dependent upon firm specific skills that have to be picked up from others and honed by experience. However, the workplace only minimally supports this interaction and communal support.

Added to the inadequacy of the space in supporting interaction and communication is the perception among many of the people that interaction and efficiency are polar opposites. A few people recognize that interaction and "chance encounters" can lead to a greater efficiency. For instance, meeting a colleague face to face may help resolve some question which would have taken

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longer had the question been routed through formal means of communication like email or voice mail. However, there is a difference of perception and in the meanings associated with the word "interaction". Some people view it in support of work, others as an integral part of the work, and still others look at it in a more familial and communal sense. This third group of people therefore tends to view interaction as unnecessary and time consuming.

Most of the skills are picked up on the job and therefore the time invested in each employee is valuable to Swanson Roberts, Inc. Firm specific knowledge calls for organizational structures that promote retention of employees in order to retain the knowledge base. Another important aspect of firm specific knowledge is the needed emphasis on learning within the firm. However the firm does not seem to have policies or structures to promote retention and learning. The idea of learning seems to relate back to our discussion of the different perceptions of interaction among the people and also points to the spatial design of the workplace. Many of the people working at the firm have been in the firm's previous workplace that had a completely open office plan. This open plan office allowed for instant communication, access to each other, and the advantage of being able to pick up on skills and expertise. In the present workplace, there is a mix of open plan and traditional office layouts. However, having worked in an open setting before, people seem to realize the advantages and the disadvantages associated with an open plan office layout. Many people would like to have the advantages of being connected that an open plan provides along with the advantages of having private office where they can concentrate on their work. This dilemma or tension is very apparent in all the interviews conducted.

Finally, the pattern of work varies from individual to individual and it also varies depending upon whether the work is individual or in a group. Group or team-work is mainly centered around coordination and is very closely tied to the life cycle of the searches. Individual work predominantly depends upon the organizational hierarchy with the Profit Centers (vice presidents) working with people both internal and external to the firm. The ratio of external to internal decreases proportionate to the hierarchy. A few Vice Presidents and associates are based in other locations and often commute physically or electronically with the firm in Boston.

Our analysis of the work practice through an inquiry into people's spatial perceptions was then followed by another process of evaluation. The second phase of evaluation took the form of a walk through and a slide show[62]. The analysis of the workplace obtained from the second phase of inquiry matched and augmented the analysis from the first phase of evaluation, therefore, validating to some extent the methods of evaluation developed in this thesis.

Problems/opportunities:
In order to explore the issues of interaction and learning, we pose some of our observations of interaction in many locations as questions that will help both the consultants and the organization inquire into the workplace and the work practice. We observed small groups of people stepping

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[62] See Turid Horgen, et al, *Excellence by Design.* (New York: Wiley , 1999) pp. 187-89, 227-67 for a detailed explanation of the walk through and the slide show

outside their offices and forming instant and impromptu nodes of interaction. We enumerate these nodes of interaction:

On the fourth floor: - meeting and interaction space outside Emma's workspace created when come out of their respective offices to discuss issues about the search.

On the fourth floor: Sally Summers, Peter Roberts, Jay and Laura and Alicia congregate in front of Alicia's office at the beginning and the end of the day.
Almost the same situation is created on the 5th floor in front of Dana's workspace with Pattie, Dana and Emily or Pattie, Dana and Kim , etc.

We pose the following questions in order to explore the relationship between spatial location of the nodes and the associated work pattern.
1) Why does interaction take place at these nodes?
2) Is each node always created by the same group of people?
3) Are there particular times, or periods of time, in the day when these interaction nodes are formed?

The Swanson Group and the Roberts Group have separate bookkeeping and accounts. However, the codes for each search and issues related to insurance are under the auspices of the Swanson Group. At present there seems to be some unresolved issues of coordination mainly due to the physical separation of floor divisions. We believe that these issues of coordination could be turned into an opportunity to link the two offices together.

Another spatial location that can bring the various parts of the firm together is the reception. At present the 5th floor reception area not only serves to tie the 2 sides of the office together as a function of its location but it also divides the two sides into 2 distinct portions. Related to this issue of link the various groups together is the nature of the location of the support services. This single central facility, forces people to walk over and therefore increasing the opportunity for interaction. The question we pose is: Can this aspect of a single central facility bring people together or will it hinder efficiency?

Finally, the development team stores its files in the office of the vice president of the group. This creates a problem because others in the group need access to it and it is difficult to access them when the vice president is in a client meeting or candidate interview. Also the separate storage seems to magnify the difference between the development team and the others in the office. We pose the following question: Is isolation of the development group productive and, if not or if there might be benefits from closer association with other searches, what should be done to achieve that?

4.52 Conclusion

By applying the techniques of evaluation at Swanson Roberts, Inc., and analyzing the results we have been able to validate our hypothesis that we can understand the nature of the work practice through an inquiry into the workplace and that this process of inquiry drives further inquiry into the nature of work practice. We have already discussed that an inquiry into the nature of work practice drives the process of change. Therefore we can conclude that an inquiry into the workplace acts as a driver of change. In the next chapter we develop strategies to sustain this change in organizations.

5   ORGANIZATIONAL LEARNING

Organizational transformation and change has evolved in meaning over the past few years. In older models, change implied "adapting" to the changing market conditions. In later models, organizational change came to stress the capability of the organization to proactively design and chart out its own future. However, in recent years, the ever-changing business environment has made it imperative for an organization to sustain change and to continuously evolve in response to it. Therefore organizational change has come to emphasize the importance of an organization learning to adapt, and evolve in response to change. In short, the emphasis is on "organizational learning". In this chapter we examine some of the ways in which learning can take root in the organization so that it can continue to evolve in response to the changing environment.

Organizational learning is often categorized into two types: adaptive learning and generative learning. Adaptive learning is that type of learning in which a problem or a gap between the actual and desired states is identified and an attempt is made to solve the problem or close the gap. In generative learning we discover that the identification of the problem or the gap is itself contingent on learning and perceiving and thinking about the problems[63]. Adaptive learning or the capacity of the organization to maintain itself and grow depends upon the creation of a set of shared assumptions that cut across the whole organization.[64] Adaptive learning is often considered the first step towards creating generative learning, or the capacity for transformation, within the organization. Many researchers have looked at the problem of transferring adaptive learning to organizations and have developed various approaches. One such approach, that incorporates the strategy of intervention that we have adopted to design the techniques of evaluation, is the "learning history" approach.[65]

"Learning history" is an approach which:

> 1)applies the assessment of an organizational change initiative through 2) an effort to develop the capability of the people in the change process to evaluate their program and its progress, in the service of 3) creating materials that will help to diffuse their learning to other interested parties. In combining these three elements of learning history work, we create a feedback cycle at an organizational level.[66]

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[63] Peter M. Senge, *The Fifth Discipline: The Art and Practice of the Learning Organization* (New York: Doubleday/Currency, 1990)

[64] Edgar Schein, Working Paper: *Organizational learning: What is new?* Center for Organizational Learning, MIT

[65] Roth, L. George, Working paper: *Learning histories; using documentation to assess and facilitate organizational learning.* Center for Organizational Learning, MIT. 1996

[66] Ibid.

This approach emphasizes "eliciting, capturing, documenting and communicating learning"[67] in organizations and has focussed on developing a methodology for capturing and documenting learning and change initiatives in organizations over time. For the purposes of capturing learning in organizations, "learning history" looks at both cognitive and behavioral data, and learning includes how people cognize changes and developments in the organization and their reaction or behavior as a response to this perception. In this thesis we have termed this reaction to the perception of changes in the organization as the actual state of work practice.

In the previous chapters we have developed and applied evaluative techniques that attempt to understand the actual nature of the work practice through an exploration of the relationship between perceptions of the workplace and its influence on the work practice. We now look at simple methods in which we can document and represent the information obtained from the process of inquiry at Swanson Roberts. We speculate on two ways in which to represent data so as to help the organization visualize abstract relationships between work processes, people, and the use of space and technology over time. This documentation of the evolving relationships between work practice and work place would therefore be the first step in setting up a "learning history" within the organization.

STORY TELLING

Visual representations of time and space occupancy, as presented in figures 4.10a and 4.10b. can also be useful to document an organization's nature of work practice over time. To complement this information, stakeholders can be interviewed to gather information and "stories" about their interaction and communication with each other in the workplace. This kind of documentation falls into the category of "story-telling" as a method of learning. By conducting a reflective interview conversation, individually or in groups, we begin to document how people in different parts of organizations develop different explanations. In presenting learning and change initiatives from multiple perspectives, a learning history can make visible to individuals what is collectively experienced or hidden. By reporting each perspective in a coherent and respectful way, the stakeholders begin to see elements of their own thinking captured and compared along side the thought processes of others who think differently. These multiple perspectives can be contrasted against "factual" data from the visual representation of the type and location of the interaction. The exercise of developing and discussing multiple perspectives, often raises more questions into the nature of communication and interaction, and hence into the nature of work practice. These questions helps the stakeholders rethink issues of work practice and can help structure adaptive learning about the nature of work practice through a collective identification of the gap between the actual and desired states, and the attempt to close the gap.

WORK PRACTICE AND TIME.

The different phases or stages of a project over time can be represented in a simple graphical format. This representation can help the stakeholders in the organization visually understand the

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[67] Roth, L. George, Working paper: *Learning histories; using documentation to assess and facilitate organizational learning*. Center for Organizational Learning, MIT. 1996

time taken for each phase of the project and can also be used to compare the life cycles of two similar projects. In figure 5.1 we develop a graphical timetable of the life cycle of projects in Swanson Roberts. The data for the timetable can be obtained from an analysis and interpretation of the data from the occupancy logs. At the time of writing this thesis, we are yet to receive the logs from Swanson Roberts, and hence we can only speculate on patterns of time and space utilization for each of the projects. From our data from the interviews, we know that almost all the projects at Swanson Roberts follow a regular sequence of phases: launch, scoping, networking, interviewing, presentations, client interviews and close. These phases of the search project form the vertical axis of the graph. The horizontal axis represents time in weekly units, and each search is depicted in a different color. From this representation, we can begin to analyze the duration of each phase of the project: how can it be shortened? Why, for instance, does the "scoping" phase in search 1 take significantly less time than search 6 in that same phase? These questions can not only help the stakeholders look at the nature of the searches in greater detail, but can also help them identify inefficiencies in the search process. Therefore, the documentation of the search process over time can help identify the gap between the desired and actual states through a process of collaborative participation of the stakeholders.
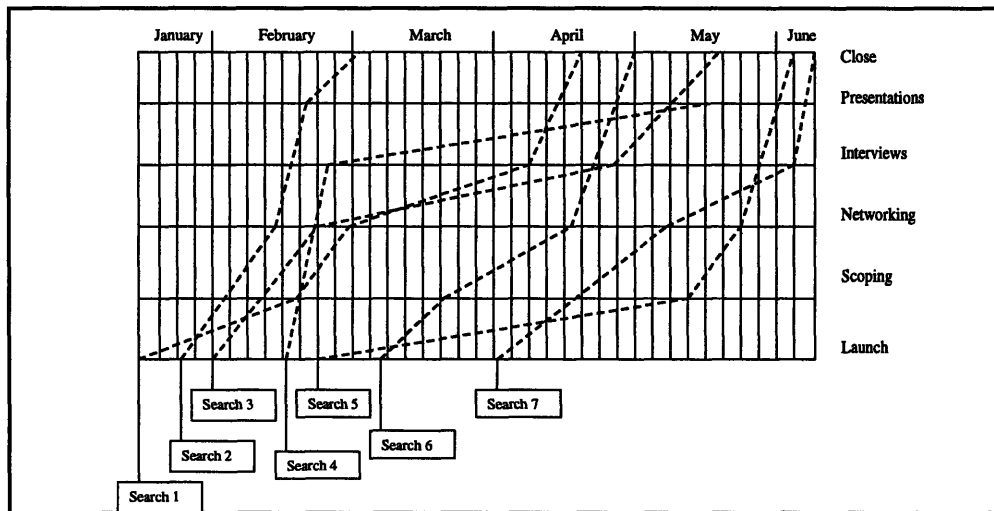
Fig. 5.1 Patterns of Work Practice
Chanrting the course of a project over time

These two examples demonstrate that documenting and representing the relationships between work processes, communication, workplace, and people can help create a "learning history" in the organization which in turn can help begin a process of collective inquiry into the work practices. The examples also demonstrate that in order to represent the relationship between the component parts of the work practice, we need to first understand the existing nature of the work practice. In the previous chapters, we have developed evaluative techniques to analyze and understand the nature of the work practice. We have also demonstrated that methods of evaluation not only help structure an effective strategy of change, but can also drive the process of change in the organization. In this chapter we have examined the role of evaluation in the structuring "learning histories' in organizations and demonstrated that evaluating the actual state of work practice plays a significant role in the

organization's effort to sustain change. Furthermore, the methods of evaluation that we have developed use a process of inquiry into the workplace to understand the actual state of work practice. Therefore, the relationship between workplace, work practice and organizational change is extended to include a dynamic relationship between work practice, work place, organizational change, and organizational learning.

6   CONCLUSION

6.1   Reflections

There is an interesting progression in how the physical workplace has come to be seen over the years. In the beginning, the language of workplace design tended to express workplaces as physical containers for work, and workplace design as dependent on the considerations of cost, the work processes and the organizational structure that it supported. Later, the language began to shift toward stressing the role of spatial design in influencing "how we function, how we communicate and collaborate, our motivation levels and company performance.[68]" More recently still, the language has begun to emphasize the dynamic relationship between all the components of the work environment (spatial, organizational, financial and technological) and between the workplace and work processes[69]; and the effect of workplace design on cultural change and performance. [70] In this thesis we have explored the interdependent and dynamic relationship between the physical workplace and work practices, and have forged a link between the process of inquiry into the workplace and organizational change.

First, in order to explore the relationship between work practice and change, we have developed the framework for workplace change. We applied the framework to the successful transformation of the LX laboratory in order to validate our hypothesis that an inquiry into the actual state of work practice sets up the distinction between "where we are" and "where we want to be" which drives the organization to close the gap between the desired and actual states of work practice. Building upon the hypothesis developed in the framework and validated through the LX case, we developed methods of inquiry and evaluation to understand the actual state of the workplace. These methods used a process of spatial inquiry to understand the existing nature of work practice and we applied them at Swanson Roberts. We were able to gain an insight into the existing nature of work practice from the data obtained from the process of evaluation at Swanson Roberts. This validated our second hypothesis that the existing nature of the work practice can be evaluated through an inquiry into the spatial perceptions and constructs people hold in relation to their workplace. By connecting the two hypotheses, i.e., 1) setting up the distinction between the actual and desired states can drive change, and 2) spatial inquiry into the work place leads to an understanding of the actual state of work practice, we speculate that spatial inquiry into the workplace drives the process of change.

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[68] Galvin Turner and Jeremy Myerson, *New workspace, new culture: Office design as a catalyst for change.* (UK: Gower Publishing House, 1998) p. 1

[69] Turid Horgen, et al, *Excellence by Design* (New York: Wiley and Sons, 1999), p. 8

[70] Galvin Turner and Jeremy Myerson, *New workspace, new culture: Office design as a catalyst for change.* (UK: Gower Publishing House, 1998)

The focus of the thesis has been to explore the dynamic relationship between workplaces, work practices and organizational change. Previous research has shown that there exists a dynamic coherence between work processes and the workplace and that analyzing work process may influence a new workplace design and similarly new concepts of workplace design may influence the work processes.[71] In this thesis, we have built upon these findings and explored the dynamic relationship between work places, work practices, and organizational change in greater detail. By demonstrating that spatial design not only influences the way people work, but that the very nature of work practice can be understood and changed through an analysis of cues and clues in the spatial environment, the thesis attempts to firmly establish the importance of the physical workplace as a strategic element in the organization. The thesis therefore attempts to broaden the scope of spatial design in business organizations. The role of the physical workplace both in influencing the way people work and as a driver of change firmly establishes the importance of the contributions of architects, designers, and the physical workplace itself, in the process of change and transformation in organizations.

The framework and the methods of evaluation have to be considered as a work in progress. We see many challenges that have to be overcome and many rough edges that have to be smoothened in order for them to be applicable in all organizations and in all contexts. For instance, the process of change at Swanson Roberts is still in progress as we write this thesis and only the unfolding of this process would serve to validate our hypothesis that an inquiry into the workplace drives organizational change. Can the framework be applied to other organizations? In other industries? How can the organization learn to use the methods of evaluation so as to continuously evaluate and understand its existing nature of work practice? In order to answer these questions we should begin to apply the framework to other change scenarios and continue to rethink and refine the framework and the techniques of evaluation so that they can be used to structure the process of change in all situations and contexts.

6.2 Future directions

STRATEGIES FOR COLLABORATIVE DESIGN AND INQUIRY
The potential of the framework to drive change in the organization is dependent upon the underlying principle of active and collaborative participation of all the stakeholders in the process of inquiry and change. We have discussed that not only does the evaluation of the actual state depend upon this collaborative inquiry, but also that it is this collaborative participation that transforms the framework from a passive representation of the change process to an active and dynamic representation that drives change. We have drawn upon the work of Horgen, et al, and their concept of the "design game" to understand the roles the stakeholders play in the organization. We have discussed that one of the most important tasks of the consultant is to try and change the status of the game board such that all the players are actively involved in the change process, and that when the consultant is successful in changing the design game, the components

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[71] Turid Horgen, et al, *Excellence by Design* (New York: Wiley and Sons, 1999)

of the framework undergo a process of rethinking and redefinition and new possibilities are brought into the change process. In order to explore the relationship between inquiry, work practices and workplace change in greater detail, we have not examined strategies for achieving active and collaborative participation although it is central to the framework and the methods of evaluation and inquiry that we have developed. Although Horgen, et al, have discussed these strategies through several case studies, the entire burden of "entering a messy situation as an outsider, alone, to think on your feet, generate confidence in yourself and the process, mediate and transform conflict, be both a leader and a participant in facilitating consensus for designs that adapt to fast-paced changes..."[72], is placed on the workplace consultant. However, in order to sustain change continuously in an organization, the process of change should not be entirely dependent upon the knowledge and expertise of the consultant. A further exploration into these issues, especially to discover how these skills can be transferred to people within the organization, is imperative. Transferring skills involves developing methods and skills that are "teachable" and those that can reach a larger audience. This would be wiser than looking to transfer or find all the attributes in one individual. We need to dig deeper to understand the influence behavior, culture, and perception play in structuring an effective change strategy, so as to transfer skills and methods that can begin to influence professional behavior and perceptions among the people in the organization towards active collaboration.

METHODS OF INQUIRY

As we have discussed in the thesis, traditionally, most methods of evaluation do not analyze and assess the actual state of work practice. These methods of evaluation focus on measuring the difference in the design variables before and after the process of change, rather than evaluating the effect of change on the dynamic and constantly changing nature of work practice. The methods we have developed evaluate the actual state of work practice, however, in order to build a repertoire of tools and techniques, more methods and techniques, drawing from many other disciplines have to be developed. We need to dig more deeply into the different dimensions of the workplace to add to this repertoire and we need to " create new tools to help shape workplaces whose dimensions are as yet unforeseen and strengthen workplace design as conditions continue to change and evolve."[73]

Finally, a change in the workplace, or a proposal for change, often brings with it a demand for proof that the change will positively impact productivity and efficiency. However, this puts an undue burden on the workplace, rather than on the business processes and work practices. Rephrasing the question to inquire into how the process of inquiry and design can enable the group to continue to sustain and evolve with change as the external environment changes. Once evaluation strategies are developed, then we can begin to develop a strategy for helping the organization learn to change.

ORGANIZATIONAL LEARNING

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[72] Cited in Turid Horgen, et al, *Excellence by Design*. (New York. John Wiley and Sons, 1999) p. 279

[73] Ibid., p. 280

In the thesis we have demonstrated that an inquiry into the workplace can drive the process of organizational learning, albeit adaptive learning, by setting up the distinction between the desired and actual state of work practice. However, in order to transfer the knowledge and expertise resident in the consultant or in the facilitator, and to transform adaptive learning to generative learning, we need to develop simple and effective strategies. The methods of evaluation developed in this thesis, although relatively simple to use, are still dependent to a large extent on the facilitation skills of the workplace consultant. Developing simple methods of evaluation and analysis that organizations can learn to use on their own, would therefore take the first step towards simplifying the complex process of organizational learning.

7   APPENDIX

This appendix compiles data from the process of evaluation and inquiry conducted at Swanson Roberts It presents a record of the process of inquiry with empirical data in the form of participant drawings and sketches; and our analysis and interpretation of the transcribed interviews and the drawings. The data presented in the appendix serves as a reference against which we check the hypotheses presented in chapters 3 through 6.

We analyzed data collected from interviews with a cross-sampling of people at Swanson Roberts in increasing levels of abstraction to arrive at an understanding of the existing nature of work. First, each individual interview was analyzed with respect to each technique, as discussed in the preceding chapters. That is, each interview was analyzed to "answer" the issues raised in the sketch map exercise and the hypothetical trips exercise. The results were then aggregated to arrive at the responses each participant had to issues such as, individual and group work, communication lines, interaction nodes, likes and dislikes. We present the sketch maps, drawings, and this part of the analysis in the appendix.

The names of the organization and the names of the people in the organization have been changed for reasons of confidentiality.

Sally Summers: Associate - Roberts Group (4th Floor)
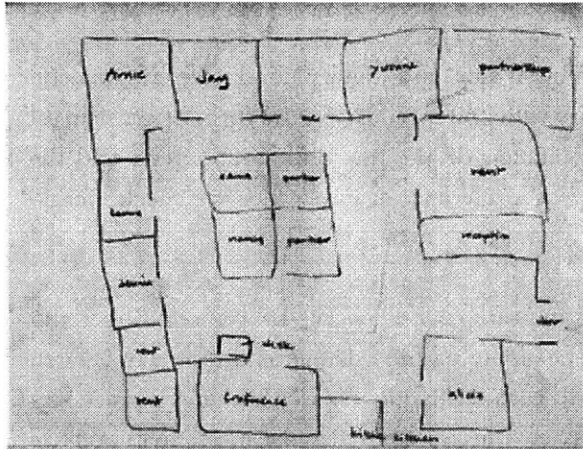
Sketch map of the workplace
Drawn by Sally Summers

Sally Summers: So here's — let me start. All right. Here's the door to the fourth floor. And you walk in and there's a reception area. Then there's April's office which also has a window to the area here. Back behind here is the kitchen. There's an office here that we rent out and there's Annette's office. Next to Annette's office is my office. Then there's Jack's office and then Peter. Peter's office. There's Launa's. Then an office we rent to upstairs. Jenny usually sits in there. And then there are two offices that we rent. And then there's the conference room. And I guess this is the kitchen... And there's a desk right here where someone sits. And then there are —
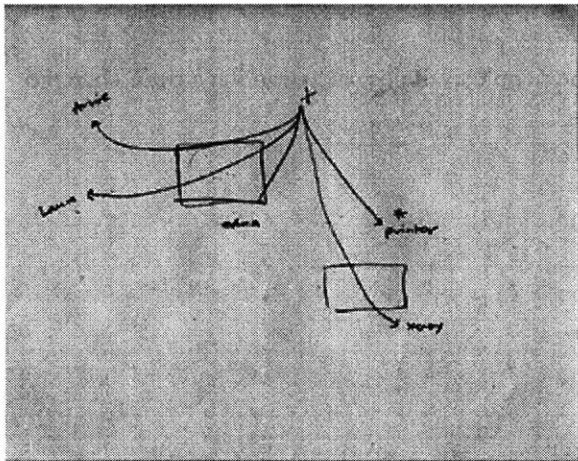
Hypothetical trips
Drawn by Sally Summers

Sally Summers: I go to see Peter a lot. I go to see Launa a lot. I talk with Emma. I go to the printer a lot and I go to the Xerox which is in the kitchen a lot.
Sally Summers: Oh, where do I meet people the most? I probably meet people the most right around here, right outside of Peter and Launa's office, next to Emma. We actually congregate a lot here to talk about work-related software.
Sally Summers: Yeah, April usually will come over, Jack comes out. The other big place — and this actually happens more at the beginning of the day and the end of the day — is right here in front of April's.

From the sketch map exercise:

Nodes: Outside Emma's office, outside April's office

Paths: To see Peter, Launa, and Emma. To the printer and to the kitchen.

Districts: Basis of distinction: Spatial patterns – outer perimeter offices and cubicles
                  Ownership – sub tenant space, owned space

Edges: Formed by floor separation (spatial and organizational)
                  Formed by ownership.

Landmarks: Reception, April's office, Annette's office, Floater's desk, Emma's space

Networks: (from Annette and Sally) movement to and from the copier, printer and fax counter.

Hierarchy: Importance of distinction between Swanson and Roberts.

Importance: Access to computer system, daylight, need to concentrate and therefore important to have an office.

Hypothetical Trips:

Distance cognition: Printer, especially the copier, drawn much closer than they really are indicating frequent use.

Spaces purposely traveled through: walk through the library to meet Emily.

Travel to the 5th Floor – check mail, fax and to talk to Pattie about the computer system. (Travel to the fifth floor comprises those activities that bear on the key components of her work: word processing and communication)

Travel to the 5th floor not among "frequent trips" although it is visited quite regularly and is a part of daily ritual. Hardly any interaction with people in the Swanson Group.

Domain and extent of control:

4th Floor (work involves interaction with almost people in Roberts group)

Nature of Work:

Communication: on the phone, networking with clients and candidates.

Internal communication with team members: usually co-ordination issues.

Organization of work: word processing and data entry.

Symbolism of "office": place where there are lots of people.

Beatrice Brady – Associate –Swanson Group – 5th Floor
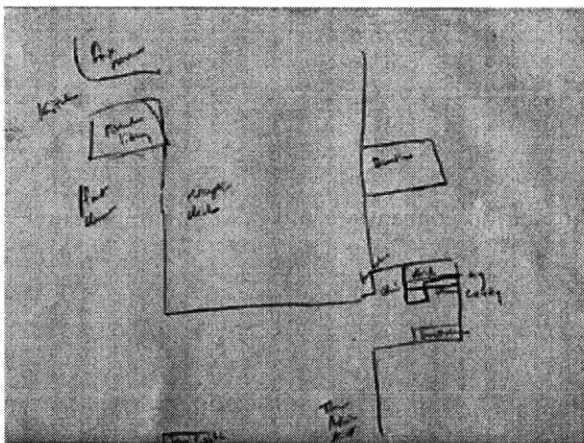
Sketch map of the workplace
Drawn by Beatrice Brady

Beatric Brady: *If I were to describe my workplace and the I places I use for my work....*
This is the front door, this is the reception desk. If you come along this way you would get to my cubby...well it is not a cubby exactly and not exactly an office either. So I'll call it my cubby. This is my desk and this is my bookshelf. Actually me desk is bigger and it is L-shaped. This is my chair and I have another bookshelf on this side. Then further down from the reception desk is the research library and the fax/postage area and also the kitchen. This would cover what I use. Oh and this is where Denise's office is.
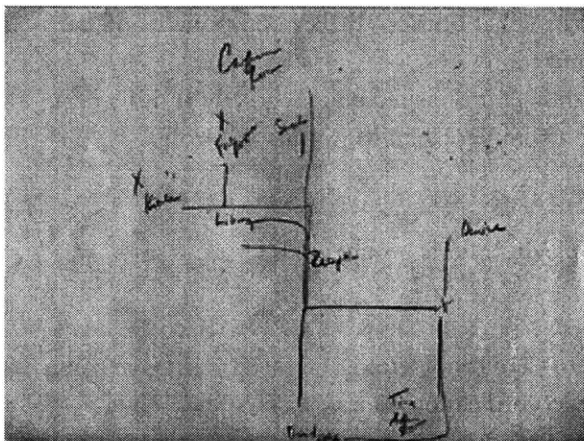
Hypothetical trips
Drawn by Beatrice Brady

Beatrice Brady: *From my cubby hole I usually go to the library past the reception and I also go to the kitchen, the fax room and I go to meet my friend Susan who has an office here. I also have to meet Denise and I go to meet Tanya and when Dennis was here I would go to his office.*

Beatrice Brady: *I could use the back hallway but I like going past the reception. I always bump into some-body or the other and I tend to meet more people this way. I don't have much interaction with people in this open space here and so I don't like going this way. Also if I have to go that way I would have to pass Denise and I do that if I have to drop off some faxes or something like that.*

From the sketch map exercise:

Nodes:	reception, kitchen/fax room. Destination nodes: library, Susan's (friend) office, Denise's (boss) office, Tanya, Dennis Waters
Paths:	To and from places associated with work and to Susan's office. Passes in front of the reception so as to participate in the activities. Passing in front of the reception is preferred to using the back hallway, as that would entail passing by Denise's office
Districts:	basis of distinction: those occupied by people associated with work and those occupied by others

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Edges: spatial: open space, back hallway, 4th floor
                Organizational: travels only to those spaces occupied by people involved with the
                current project (Tina's workspace and Denise's workspace)

Landmarks: Reception, Susan's workspace

Hierarchy: Her workspace (described in great detail)
                Library
                Postage/fax/ kitchen
                Denise's workspace
                Tanya's workspace and Dennis Waters' workspace

Imagability: drawing only shows domain of activity

Boundary: boundaries pertain to domain of activity
Importance: accessibility to tools and people associated with her work

Hypothetical Trips:
Spatial and Distance cognition: accurate perception of spaces frequently traveled to. Other
spaces such as the open space, billing office etc. are not even mentioned or marked in the drawing.

Preference for paths that pass the reception so as to take part in the activities. Uses the back
hallway only if necessary. Shows preference for enjoyable activity while trying to reduce stressful or
unfamiliar trips through the back hallway.

Domain and extent of control:
Restricted to spaces associated with nature of her work, but includes interaction spaces like the
reception, kitchen and the library.

Nature of Work:
Works with the VP and admin assistant associated with the search. Does work on the phone and
networks. Research in the library and on the computer.

Symbolism of "office": "my work and the mess. Lots of paper."

Bill Monroe: Vice President - Swanson Group (5th Floor)
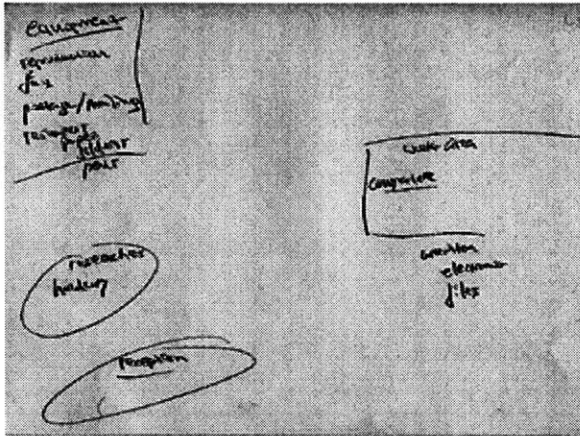
Sketch map of the workplace
Drawn by Bill Monroe

Bill Monroe: *Well, let's do it like this. I've had a work area and the area, you know, probably has two or three sides to it so I can spread material out because we work with written material and electronics. And I have to have files. So that allows me to have all that. Now, at some point also there's a certain amount of equipment that I have to have access to and right now the equipment, let's say, is here. Equipment. And that equipment happens to be reproduction, probably the biggest one, reproduction, because we're working with so many hard copies. Reproductions. I also, the computer generally is here. And then for a variety of purposes we also have to have a fax machine. Although we do more and more faxing out from our computers, I still have to receive fax so some — for the future we'll be receiving faxes in this particular, in this area over here. I don't want to continue to hear the phone ring so it probably makes sense to have it in a segregated area.*
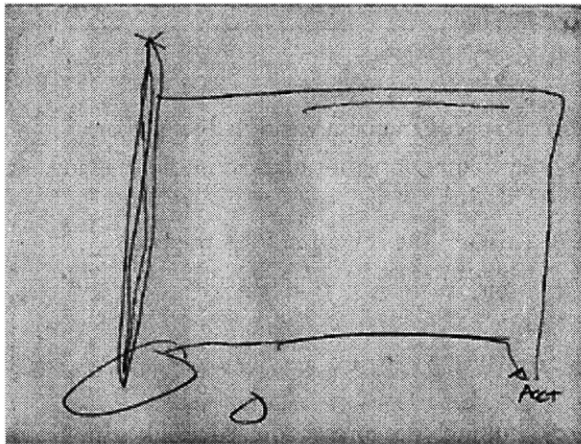
Hypothetical trips
Drawn by Bill Monroe

Bill Monroe: *Um-hum. The equipment room. Back and forth. Back and forth all day. Back and forth all day. Occasionally, once a day I'll go to my mailbox where my mail's accumulated from outside, but the mail could easily be dropped off at my desk, it doesn't have to be maintained up front. And my administrative assistant is right here so I'm talking to her, I have the ability to see her but we are in visual contact with each other so I can talk with her as well as see her. And that's not necessarily an advantage but it does allow immediate communication. I can see when she's busy; if I don't have to talk with her then I can wait when she's not busy and talk with her. But it's all back and forth there.*

From the sketch map exercise:

Office cognized in terms of what is needed and elements to which access is needed in order to get the work done. ~ May be because he uses the office as a base to work – large part of his work involves traveling and interviewing clients and candidates.

Nodes: Workspace, equipment room, Kitchen, reception.

Edges: 5th Floor, demarcated according to needs of work.

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Districts: Defined organizationally – those related to work and that not directly not related to work.

Paths: to and from the equipment room and the kitchen. To the reception.

Landmarks: Building, location, and nearness to T and residence. – All references external than internal.

Hierarchies: Importance governed by relevance to work. Workspace with workable desktop area, access to equipment, research, mail and external meeting.

Imageability: Restricted to what is relevant for immediate nature of work.
Boundaries: Divided according to what pertains to immediate work.
Importance: Pertaining to immediate work.

Hypothetical Trips:
To and from equipment room. Prefers using the back hallway to the front because of convenience (leads right of his workspace) and because he will not disturb people or get disturbed. Would like to be involved in little interaction.

Domain and extent of Control.
Mostly extend to the triangular area: workspace, kitchen, supply room but is not limited to it. More externally oriented than internally.

Nature of work:
External communication – networking by phone or email
Internally – more impromptu and administrative. Most interactions are with the admin. staff.
Phone work and paper work.

Symbolism of "office"
Light, space, not curtailed – should be able to move around.

Dana Adams: Administrative Assistant. – Development Group
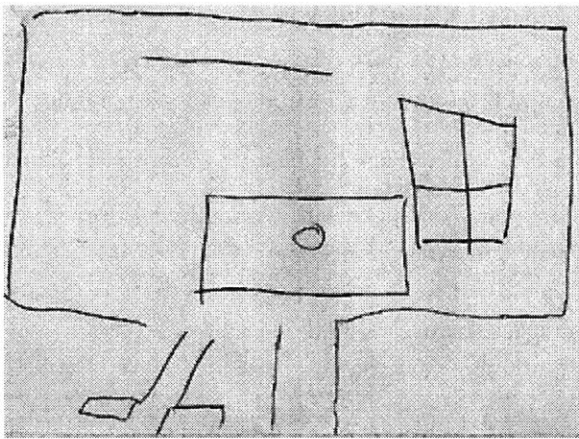
Sketch map of the workplace

Drawn by Dana Adams

Dana Adams: *Having the receptionist in the center and then to, if you're looking at her desk, to the right is where I work having all these perimeter offices out here and the happy cube with all the admin. staff right in the middle here.*

There's a hallway here which actually I really don't frequent very much being that I have my own printer. And then the other side of the office is, is not symmetrical at all to the side I work at. And like I said I don't go over to much. And over here, which is to the opposite side of where I work again, is that tiny kitchen I mentioned. And the other room which is the fax room which is a place I spend many hours in, fax/copy room. So it's a — I think it's a great setup. You know, if I do laps around during the day I don't find myself to be too tired but it is accessible. Of course it'd be great if the copy room were closer to where I sat but it's not even a problem at all.
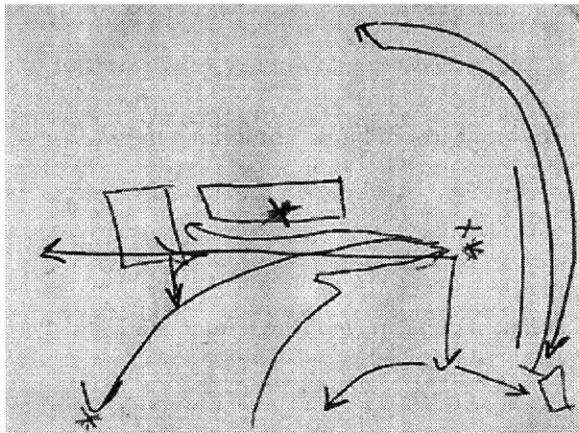
Hypothetical trips

Drawn by Dana Adams

Dana Adams: *In the mornings, "Hi, Jen," and then I go into my office. I often talk to Pattie who is directly across from where I sit, and then Kim who is in the other corner and then there's a long table back here so I walk around that and talk to Maury who is my boss. And I make this path very often. There's also John who is next to Pattie in this corner. The — I don't know, if I need to use a quick copy there's a copy machine in the corner by Finance. Really just do that path. I hardly ever go past Maury's office. And then to come back past Jen, say "Hi" to her again, then go over to the beloved copy and fax room.*

Oh, yeah, I forgot about that. Here's the happy Emily library. I am a "cutter-througher", definitely, yeah. Yeah. Obviously if there is something going on I don't, but mostly just to say "Hi" and because most people don't so quicker way to get there.

From the sketch map exercise:

Nodes: reception area, at workspace, kitchen area.

Paths: From the workspace to Maury's (Boss) office, to the Finance office's copy machine and to the kitchen/copy area through the library to meet Emily

Paths: From the workspace to Manny's (Boss) office, to the Finance office's copy machine and to the kitchen/copy area through the library to meet Eve and because it is quicker.

Districts: Spatial and Organizational.

Spatial: office split into 2 halves

    Perimeter offices

    Cubicles

Organizational: office split into 2 halves – work pertains only to development team which is wholly situated in one half on the office.

Perimeter offices of the VPs with "doors"

Cubicles for the admin. staff "not offices"

Landmarks: Library, the smell of coffee from the kitchen, receptionist's desk, long table around which path travels to Manny's office. Manny's office serves as a landmark since travel path does not continue beyond there.

Edges: Spatial and organizational: office split into two. (Both spatial and organizational)

Within the development team - perimeter offices and cubicles (both spatial and organizational)

Hierarchies: Split in office space – demarcating which side of office her cubicle is located in. Other side of the office which houses the fax/copy and kitchen areas.

Hierarchy based on the cognition of location of workspace and location of tools related to that workspace

Imageability: More accurate on the side of the office where workspace is located. Other part of the office – fuzzy ~ not frequently frequented.

Cubicles, reception and path to kitchen through library very distinct.

Boundary: Part of the office where workspace is located. Reception, Other part of the office, Kitchen area

Importance: Accessibility to development group and to tools (printer, copier, fax, etc.)

Domain:

Part of the office where workspace is located. Domain marked by Maury's office on one side and Kim's office/ Finance office's copier on the other side.

Hypothetical trips:

Spatial cognition not very accurate: especially of the side opposite to where workspace is located. Relation between the library and the kitchen is shifting.

Distance to kitchen/fax room marked much closer relative to the distance between workspace and Pattie/John/Kim's office. Especially noticeable is the distance to Maury's office.

Frequent trips: highlights territoriality and boundary (as paths do not go beyond Maury's office)

Nature of work:

Computer work, printing/copying

Interaction with development team members only.

Symbolism of "office"

Office with a door. A cubicle is not an office.

Emily Peters: Director of Research (5th Floor)
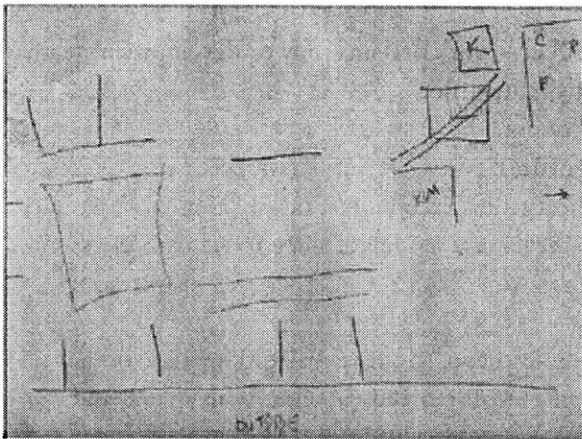
Sketch map of the workplace

Drawn by Emily Peters

Hypothetical trips

Drawn by Emily Peters

Emily Peters: *I think I would start with the main desk, so that's here. And then I would have my area because my area is important. So there's the library and I'm not going to attach anything because I can't possibly do that. And then we've got the kitchen. And then we've got all of our other places where people get together so we've got our copier, fax and postage. This is all big sort of — this is all the social area which is the part that I think is most fun. Forget the rest of the office. And then we've got this big area of cubicles and things over here. And then we've got offices here. I'm not a big drawer. I try to avoid it. And then we've got offices with windows over here and open spaces with windows so the outside world is — I think — I value the outside world especially because I don't have any view of it in here. So we've got other and then we've got more offices in here. I'm just trying to think. Oh, and then poor Kelly is stuck here. You can see how vague this is. And then there's a hallway over here. More stuff and more offices here. Who knows what's in there. Yeah, that's how I'd do it. It's a nice vague thing but that's where I am. But most people — I should make a big path through here because this is where everybody goes to get to the kitchen for the most part.*

Emily Peters: *I try to be everywhere, at least as much as I can. The place I am least is on the fourth floor which is, you know, it's just — sometimes I go down to the fourth floor but it's more for a scheduled something or for a specific request about somebody's computer but for the most part I am up here, I'm sort of here, I'm here, I'm over here, I'm over here, I'm in here, sort of randomly, and then I'm a whole lot right there.*

From the sketch map exercise:

Nodes: reception desk/ main desk

Library, fax/copy/kitchen

Paths: through the library (to and from the kitchen)

Confined mostly to the 5th floor. In the 5th floor paths are not confined to any area or route

Hierarchies: Emphasis on the social interaction areas and on the paths.

Main desk, library, kitchen, copy/postage.

Cubicles, office without windows and ones with windows. Open space with access to natural light and finally back office and back hallway.

Districts: Spatially – cubicles, offices with windows and ones without windows. Open spaces with large windows.

Based on interaction – reception, fax/ copier, kitchen, library

Edges: defined more along where group interaction takes place and where individual work takes place. Has an accurate idea where interaction nodes exist and a fuzzy idea where individual offices exist.

Landmarks: reception, Kelly's office, cubicles, closed office, open offices.

Imageability: Based on frequency of trips to all parts of the workplace.

Workplace cognized more as made up of paths of interaction or leading to interaction nodes rather than as paths created as a result of office spaces.

Boundaries: Closed offices – does not frequent. Only scheduled meetings in these closed offices.

Importance: Interaction nodes and paths that are themselves inclined to stimulate interaction

Ability to hear and pick up on conversation.

Domain or extent of control:
Library, all paths on 5th floor.

Hypothetical trips
Accurate cognition of distances ~ frequently traveled paths.

Nature of work:
Computer, on-line work

Hard copy, fast and impromptu knowledge sharing

Interaction and open space helps receiving and distributing information

Symbolism of "office"
Desk and a computer

Jennifer Milgrom: Receptionist – Swanson Roberts
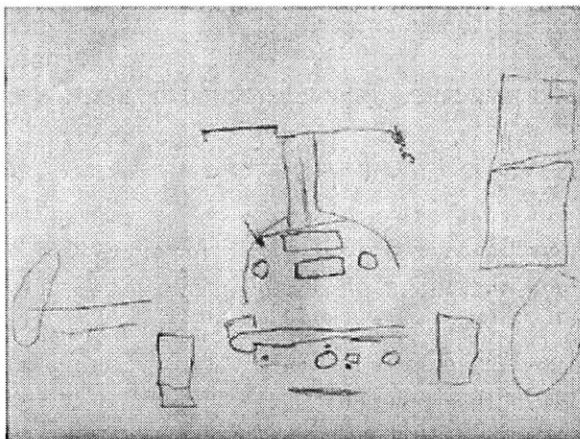
Sketch map of the workplace
Drawn by Jennifer Milgrom

Hypothetical trips
Drawn by Jennifer Milgrom

Jennifer Milgrom: *Let's see. Okay. So you come off the elevator and you're coming into the reception area now. There's just a little walkway into the reception area. And there's a chair here. There's a couch here. There's a long glass window here along, except for the walkway. It should stop there, actually. And then there's a plant here and there's another chair here and then there's a little table that holds all the magazines and newspapers and plant and there's a tissue box. And then... All right. Up here is the reception desk. And here's me and there's another chair over here. And there is a whole bunch of mail — well, they're not mailboxes. There's my little storage cabinet sort of thing, it holds some of the supplies that I like to keep away from everybody just in case people need them and they're my backup supplies. So that's just a little storage closet. All right. And over here are the, I know this is rounded here but, there's mailboxes right here and that holds everybody's mail in the place. Desk. My phone. I know there are lights here. The computer is somewhere in here, the phone's there. There's a door — well, there's a door buzzer right here with a little T.V., lets me see who's coming in and who's coming out which I think is useless because we buzz everybody in anyway so it seems ridiculous to me. and it's an awful waste of space because you always had to reach over and it's, I don't know, it's not easy to get to.*

From the sketch map exercise:

Nodes: In front of the reception desk, kitchen/fax room, Library

Paths: To kitchen, fax/copy room (both through the library). To Michael Swanson's workspace and to track people down in the office

Districts: Basis of distinction: spatial patterns – reception area, open space, alcove, offices
          Organizational – hub of activity, open space where Michael Swanson is, alcove for the printer, offices for the VPs.

Edges: formed by floor separation (4th floor and 5th floor)

Hierarchy: Reception area (described in complete detail) followed by the other parts of the office
office

Imagability: Highly accurate drawing of the reception area àà resulting from maintaining the "look and feel" of the reception area

Boundary: Spatial and organizational boundaries:
       Spatial: Separation between the 4th and 5th floors
       Organizational: Space that belongs to Swanson group and the space that
           belongs to the Roberts group

Importance: Reception as the communication center of the office. Maintenance of the reception area.

Hypothetical Trips:
Spatial and Distance cognition: very accurate in the reception area. Not accurate with respect to other parts of the office.

Trips to the fax/copy room and kitchen and to Michael Swanson's workspace. Prefers to walk through the library (shortest route; since she cannot be away from her desk for too long)

Domain and extent of control:
Reception area

Nature of Work:
Maintain reception. Interface between the outside and the inside. Ensures smooth functioning of the office. Center of communication. Anchors the office.

Symbolism of "office":
"people working together to come to one solution"

Description of workplace:
Communication center.

Michael Swanson - Founder
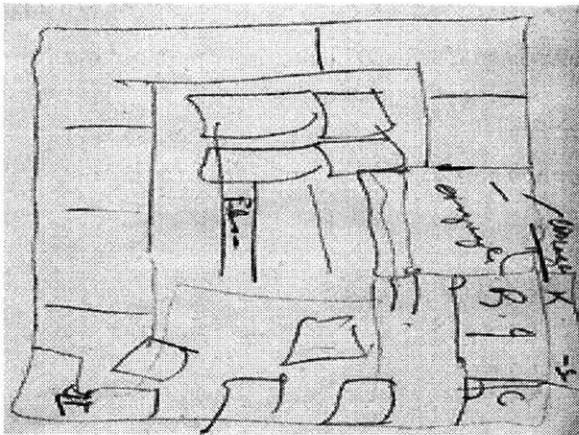
Sketch map of the workplace
Drawn by Michael Swanson

Michael Swanson: *Yeah, this is the entrance territory here. The front desk. And there's a sort of, that's a sort of light and hot, this is, you know, an area, congregating area. Then, this is not — that's too big, actually, but it probably emotionally gives you the sense of why it is too big. This whole back area (inaudible). Kitchen area over in here somewhere. That's our service area, kitchen and service. The kitchen and service. This is research. This is the conference room. So these things are all, you know, off in the — these are buried — these are central core functions that are buried in the back. Then we have, there's a — we must have some way of getting out of here, I don't know what it is. I'm not drawing this very well, I can see that. Then these are perimeter offices. Out to about here. And then this tends, this is all open space. My workspace is actually right here. And then we have workspaces here, here, here, and here, those are all work stations. Then there's a corridor in here. This is all, this is full of work stations at the back in there. These are files. That's the basic structure of the setup.*
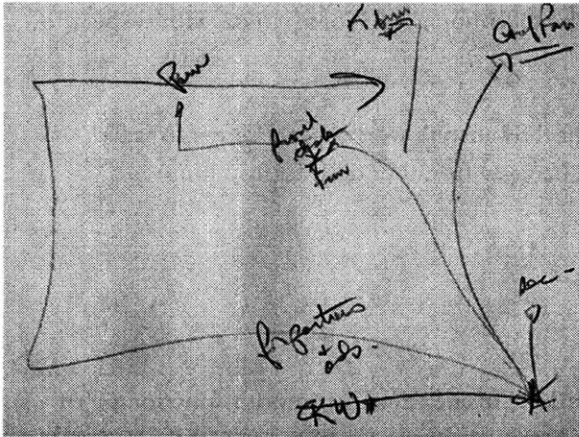
Hypothetical trips
Drawn by Michael Swanson

Michael Swanson: *Yeah. Well, there's my secretary, there's Katherine's office. those are both destinations, routine destinations for me. There's a conference room which is, I don't have an office so I often meet here. Then I travel this corridor. And this is — partners. I'm constantly on the hoof looking for partners and administrators. And once in a while I'll go here to the front desk. I don't use the back service areas because other people do that work for me.*

Orientation of the drawing: drawn as seen from his workspace, which is different from the way the others have drawn their office. The others have drawn their workplace like they would experience it as they came into the office in the morning.

From the sketch map exercise:

Nodes: His workspace, the reception, kitchen, research library

Paths: From his workspace to Katherine Williams' workspace, to Natalie (admin assistant) to the conference room and through the back hallway to meet (track down) the other VPs in their offices

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Districts: Basis of distinction: spatial patterns – reception area (big, well-lit area), open space, perimeter offices, workstations.

Edges: Perimeter offices (interacts mostly with people in the offices in comparison with the people in the workstations.)

Landmarks: Reception, Files storage in the back hallway, workstations, open space

Hierarchy: Entrance and front desk;
                   kitchen/ service areas, research library;
                   conference room
                   Perimeter offices, his workspace
                   Cubicles and the back hallway

Imagability: Highly accurate drawing of the 4th floor resulting from awareness of distinction between owned space and the space that belongs to the subtenants.

Boundary: Spatial and organizational boundaries:
                           Spatial: Separation between the 4th and 5th floors, perimeter offices, open space, and workstations
                           Organizational: Space that belongs to Swanson group and the space that belongs to the Roberts group
                                           Perimeter offices occupied by VPs and partners, workstations occupied by the administrative staff
Importance: openness, diversity of spaces, sense of community

Hypothetical Trips:
Spatial and Distance cognition: accurate perception of distances and relation of spaces

Trips do not include trips to those areas that form areas of interaction to others in the office.
Most trips around perimeter, rarely passes by the reception area.
Domain and extent of control:
The whole 5th floor (particularly the open space), although does not frequent high interaction areas

Nature of Work:
Close interaction with few people. Mostly administrative work with other VPs and mangers. Phone, email and short meetings.

Symbolism of "office": protected space; sense of community

Joan Riley: Billing Director – Swanson Group (5ᵗʰ Floor)
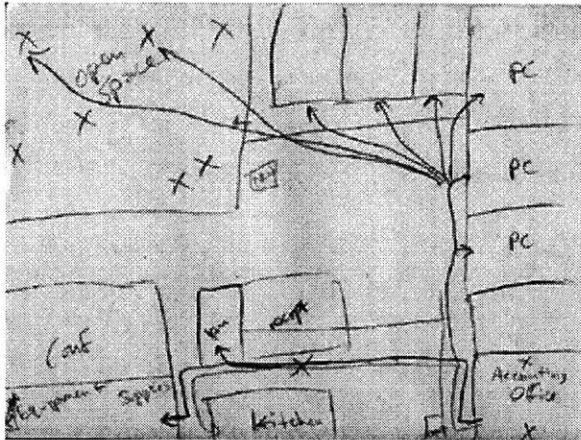
Sketch map of the workplace
Drawn by Joan Riley

Joan Riley: *This is my office - accounting. It is far away from everything else and I feel a little excluded from the rest of the activities. I should be placed more centrally considering that I have to interact with a lot of people and a lot of people come to my office. These are the Profit Centers and this is the reception, this is where Jenn sits. Then past that is the kitchen and the equipment room. I have to send a lot of mail and I especially use postage quite a lot. But the equipment room is far away from my office and I would have liked it closer. Then this is the conference room and this is the big open space with John and the others. Then back here is the back hallway with the offices of the Vice Presidents. Well that's it I think.*
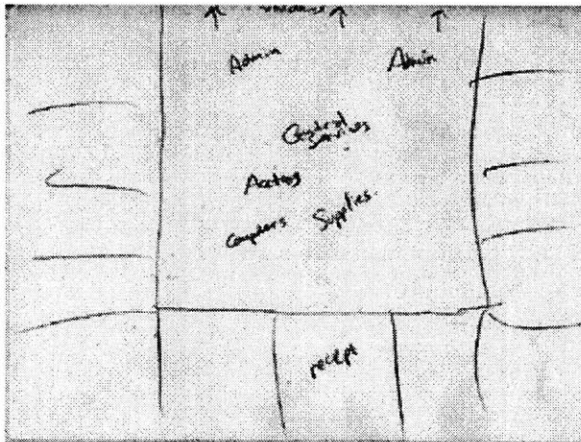
Hypothetical trips
Drawn by Joan Riley

Joan Riley: *Well from my office I go to the equipment room past the reception. Then I go to the Profit Centers and sometimes but not as often to the other VPs. Then I go to the kitchen which is down the same hallway as the equipment room. I go to meet Kelly who is my new boss. Kelly's office is next to the reception.*

Joan Riley: *I don't have much work with people in the back hallway. Yes, you can say I use this route more often. Sometimes I go to the network alcove which is all the way here, through the back hallway. But most of my trips are to the equipment room and the kitchen area.*

From the sketch map exercise:

Nodes: reception, workspace

Paths: from the workspace to the profit centers
To the equipment room past the reception

Districts: Organizational: offices of the VPs and offices of the profit centers.
Spatial: open spaces and closed offices

Landmarks: reception, hallway to the kitchen and the equipment room

Hierarchies: workspace (billing office)

Profit centers

Reception

Kitchen/ equipment room

Imagability   Diverse spaces (spatially and organizationally) ~

profit centers and VPs, open space and closed offices, etc.

Boundaries:

Back hallway. Paths do not pass through the back hallway

Importance:

Feels excluded as workspace set away from the activities

Domain:

Accounting office and surrounding area (with copier) and the offices of the profit centers.

Hypothetical trips:

Kitchen/ equipment room marked closer relative to the distance between the accounting office and Kelly's office

Very frequent travel to the equipment room and kitchen

Nature of work

Needs to interact with everybody on the 5th floor. Should need to interact with the CFO of the 4th floor closely, although this is not mentioned.

Katherine Williams: Vice president - Swanson Group (5th Floor)
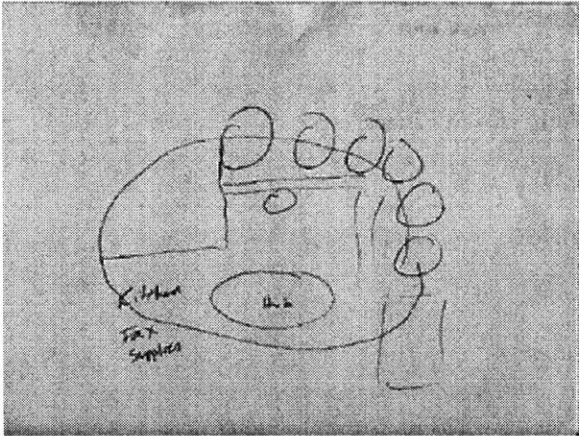
Sketch map of the workplace
Drawn by Katherine Williams

Hypothetical trips
Drawn by Katherine Williams

Katherine Williams: *You have an entryway which is the reception which is the hub of all activity. You have perimeter offices around the workspace and a conference room, perimeter offices that are currently – currently house principals in the firm as well as the accounting office in one corner. We have a large open space where a number of people, including the founder of the firm, have chosen , in fact, not to be in walled offices but like to have quick access to each other, and we deliberately made the open space have the best view in the firm and the best light in the firm. A second not quite hub but important meeting space is our kitchen area and our — I have this backwards but that's okay — kitchen area and our fax and supplies area which is another place that lots of people travel to. My office itself has the advantage of a great view and being close to the central printer that everybody uses so I get to sort of keep track of what's going on and that I enjoy. We have a collegial company that works under the same umbrella that is in the floor below us. In the best of all worlds we would have closer and easier access to them and integration with them so it wasn't so clearly separated by floors and demarked.*

Katherine Williams: *To the printer, that's to the kitchen; kitchen and mailroom. This is to the reception and therefore to the bathroom. And I often take a fair number of trips to where Michael is and where Natalie, my assistant, is. I also make a fair number of trips to where our new chief financial and administrative officer is. I make — I actually travel around the place a lot. I make trips to where Pattie is and to where our accounting office is. And then periodically to where my other colleagues are.*

From the sketch map exercise:

Nodes: Reception area, network printer, kitchen, equipment room

Paths: To Michael Swanson's workspace, to Natalie (secretary), Kelly Michaels (new
CFO)

   To the printer/copier and the kitchen area. To Pattie's workspace and the accounting office past the reception area.

Districts: Basis of distinction: spatial patterns – perimeter offices , reception and open space
Organizational – perimeter offices of the VPs except for accounting, open space where the founder is located

| **Edges:** | formed by floor separation (spatial and organizational) |
| | Formed my ownership |

| **Landmarks:** | People's offices as landmarks: Natalie's space, Pattie's office, open office people |
| | Printer, cubicles, perimeter offices |

| **Hierarchy:** | Reception (activity hub), perimeter offices, open space, kitchen area, fourth floor |

Imagability:	Highly imagable due to the diversity of spatial patterns
Boundary:	Spatial and organizational boundaries:
	Spatial: separation of office into open space area and the offices area
	Separation between the 4th and 5th floors
	Organizational: offices that belong to the VPs
	Open space where the founder is located
Importance:	Ability to know what is happening in the firm. Privacy + information.

Hypothetical Trips:

Distance cognition: accurate cognition resulting from frequent travel to almost all parts of the workplace

Prefers to walk past the reception than use the back hallway so as to participate in the activities at the reception. Does not interact much with the offices at the far end of the office except for the accounting office

Domain and extent of control:

5th Floor

Nature of Work:

Administrative and leading searches

Therefore constant awareness of the activities in the office and interaction with people both external and internal to the office is needed. External interaction is predominantly over the phone and off-site. Internal interaction is mostly with John Isaacson for administrative duties and with associates in the searches.

Symbolism of "office": whole office. The collective office

Kim Laurence – Senior Associate- Development Team –Swanson Group
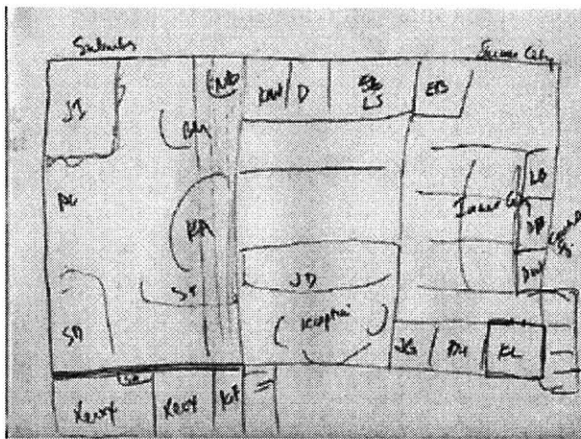
Sketch map of the workplace

Drawn by Kim Laurence
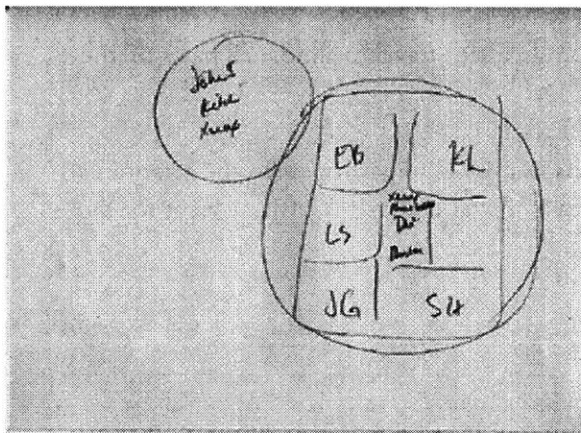
Hypothetical trips

Drawn by Kim Laurence

Kim Laurence: Okay. So I describe the Swanson-Roberts office as being really divided into two sections. The section out here I call the suburbs and it's — there really are hardly cubicles. There are just dividers – there are like scattered around desks, book shelves and half-walls which serve as dividers but you can actually stand in this space and you can lay your eyes on virtually everybody who's working there. So this, there's Michael Swanson, over here is Natalie Crenshaw, here's Sidney Downing — I shouldn't even be drawing walls because there aren't really walls. Then there's Marty Barry, and here's Bill Monroe and here's Karen Abelson and here's stringers. And then there's — I'm sorry, there are these little offices off to the side, little cubicles. Here's the kitchen, here's the Xerox. The Xerox is probably over here. I can't draw. And there's some other little offices over here. Susan Hemmer is in here. Okay. So that's the suburbs. That's the suburbs and then I don't know what this is over here. This is like — maybe this is the country and then this is the suburbs if you're in the Xerox room — no, this is – I don't know what you call this over here, where the kitchen and the Xerox rooms are. Then we have the reception area which is really like the country, you know, light pouring in from above. The incredibly ugly furniture that we have in the reception area but, you know, I think it's a nice, presents kind of a nice welcome to people.
Then you enter the inner city. And this is the inner city back here. And I'm in the inner city. Okay. And my colleague Maury Brandon. Maury and I kind of manage and are building the development practice. So we're really partners in crime. He's over there and I'm over here. Okay. And in between is all this inner city, you know, all these cubicles and things.

From the sketch map exercise:

Nodes: Printer, fax/copy/kitchen area; research library, outside Dana's workspace

Paths: From workspace to Maury's (boss) workspace. To the printer/copier/fax area

Districts: Spatial and organizational
                         Suburbs (spatial): open, well lit, bright
                                (Organizational): inhabited by those who do not belong to the
                                development group
                         Country (spatial): lots of light
                         Inner city (spatial) dark cramped, crowded
                                (Organizational): development group

Edges: defined by boundaries occupied by the development team

Landmarks: density of spatial arrangements

Hierarchy: Division in the 2 sides
                         Suburbs, and Michael Swanson's open space
                         Kitchen/ fax/copier room
                         Offices of the VPs behind the reception area
                         Her workspace and the development team's space
                         Other perimeter offices and the accounting/book-keeping office

Imagability: Accurate drawing of the 5th floor àà based on density of spatial patterns and
                         organizational boundaries

Boundary: Spatial and organizational boundaries:
                                Spatial: Separation between the 4th and 5th floors, development team
                                        space
                                Organizational: Space that belongs to Swanson group and the space that
                                        belongs to the Roberts group
                                        The "inner city" occupied by the development team
Importance: having a workspace with walls, but still being able to communicate and interact
                         with team members

Hypothetical Trips:
Spatial and Distance cognition: accurate perception of distances and relation of spaces
Trips to Maury's workspace and to the printer

Domain and extent of control:
Individual workspace and the development team space

Nature of Work:
Phone, computer, interaction with team members needed. Interacts also with Eve and John
                Isaacson. No interaction with the 4th floor.

Symbolism of "office": Team members, Michael Swanson, computer system.

Tanya Becker –Administrative Assistant – Swanson Group 5th Floor
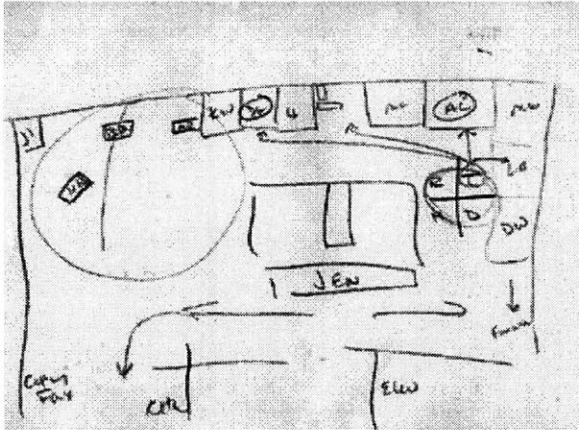
Sketch map of the workplace
Drawn by Tanya Becker

Tanya Becker: *This is one side of the office. These are the offices of the VPs and this goes to finance. This is where the admin. people sit. Dana, Russell and this is where I sit. From here I usually go to LB, AL, DG and poor —— who sits in this alcove all by herself. Well, OK, this is the elevator and this is where Jenn sits. You can either go left or right. If you go right you come to the place where I work. If you go left there is the kitchen and the copy/fax room and this open space where Michael Swanson, Natalie, Marty and Bill sit. And there is all this stuff behind the reception.*
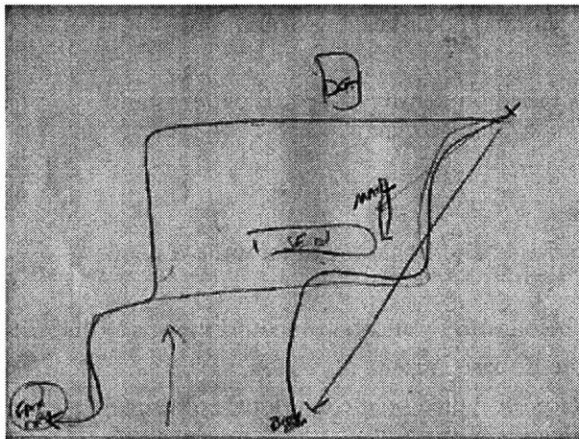
Hypothetical trips
Drawn by Tanya Becker

Tina Beck: *Well this is the bathroom - you cannot forget the bathroom can you? Then I also go to get mail from the mailbox.*
Tina Beck: *I usually go through this (back hallway) and to this area. I go by the reception only if I know that I will be in the conference room or using the equipment room for a long time. I want Jenn to notice me so that she will know where to look for me or forward my phone calls. Otherwise I avoid going through there because you are bound to bump into someone because there is usually some one or the other here or coming out of the kitchen with drinks. I also have to drop off faxes and other copy material at Denise's office. I go through the back hallway and come around and meet Natalie,, another admin. person here. So I usually go around this way.*

From the sketch map exercise:

Nodes: mailboxes, the reception, printer/copier/fax room, Natalie's workspace in the open space

Paths: From her workspace to the mailboxes and to the restroom through the reception. Paths to all other places are taken through the back hallway to avoid "bumping" into people at the reception. The back hallway, also leads directly to Natalie's (friend) workspace and it avoids the interaction and is therefore preferred

Districts: Basis of distinction: Organizational: divided into the administrative staff, the VPs, open space and the general area (general area comprised of fax/copy/ kitchen, the elevator area and the reception area)

Edges: Floor separation (boundary between the 5th and 4th floors)
Open space(does not interact with anyone in the open space except Natalie)

Landmarks: Elevator, Jennifer, the open space

Hierarchy: Part of the office where her workspace is located
Offices of the VPs (define the edge of her workspace)
Administrative staff
The rest of the office

Imagability: Highly accurate drawing of the 5th floor shows distinction that the VPs occupy the perimeter offices and the administrative people are out in the open

Boundary: boundaries are based on whether that part of the office is occupied by administrative staff or by others.
Importance: proximity to administrative staff

Hypothetical Trips:
Spatial and Distance cognition: accurate perception of distances and relation of spaces

Trips avoid high interaction areas

Domain and extent of control:
Areas occupied by administrative staff

Nature of Work:
Supports VPs and associates with the searches. Paper work, data entry. Mostly individual work.

Symbolism of "office": "people interacting and working together"

Annette Gouly: Team Administrator – Roberts Group (4th Floor)
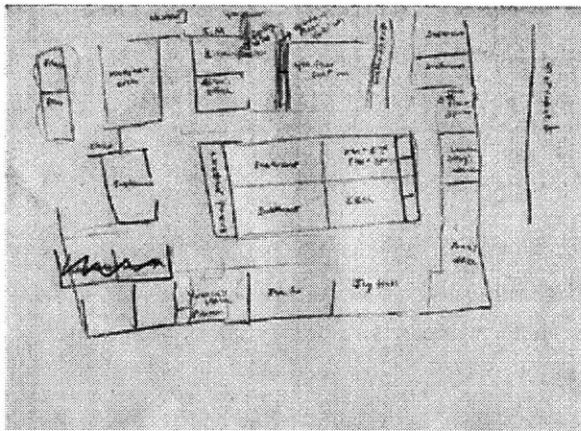
Sketch map of the workplace

Drawn by Annette Gouly

Annette Gouly: *Okay. This is where you get off the elevator, the fourth floor, Swanson Roberts. Fourth floor entrance is here. You come in here and this is a reception area per se. We don't have a receptionist; we use the fifth floor receptionist but we do have support staff that sits there. Reception area. And over here is a closet. Then when you come in here you come this way and if you were to go in here there's an office here that one of the recruiters sits at. This is our kitchen, fax, copier area. Actually it's not fax; it's the kitchen, copier area here. This is an office, a very small office but it's an office. And this is the hallway. Hallway. And then here there's an office here that one of our subtenants uses but we have subtenants in there but we certainly could use the space ourselves. We just double up on space to get the revenue, but we really would prefer to have the space.*
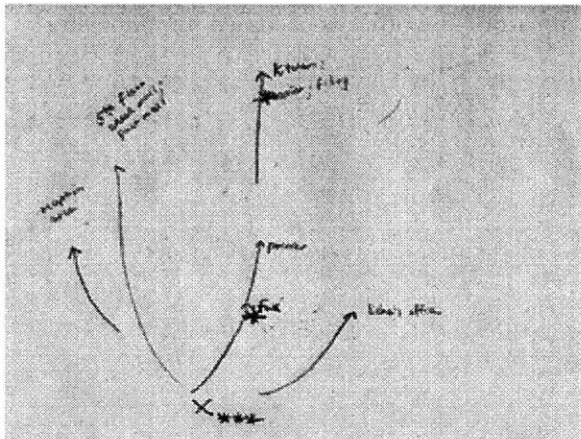
Hypothetical trips

Drawn by Annette Gouly

Annette Gouly: *I'm mostly, once I get in my office, I'm mostly there. I mean, I — I'll go upstairs to post some mail but if I were to go anywhere it would be right — here's my office — it would be right here to the fax machine. I do use the printer to do envelopes because my printer for some reason — I have my own printer — it doesn't seem to — and I, obviously, have file cabinets all the way around, in here, here, here, under my desk. My printer doesn't print envelopes so I do go to the printer. Continue on here, I go into the kitchen frequently. The copier's there. And I do a lot of my — I go into a lot of the files there. I also go out to the front desk, the reception area, to delegate work and to file and to retrieve files and things. And I also go to my secretary, Emma, which is there. Primarily I'm at my desk all day. You know, I try to do like one trip if I know I have a bunch of faxing I try to do it together. And then I would also go up to the fifth floor to check my mail, to post the mail, you know, to put postage on it.*

From the mental map exercise:

Nodes: Workspace, fax/printer counter, kitchen area and the 5th floor mailbox

Paths: To and from the kitchen area, and the fax/printer counter.
               To reception, Emma's workspace, and the 5th floor

Districts: Basis of distinction: spatial patterns – reception area, offices, cubicles
                   Organizational – Roberts group and the Swanson group, districts marked by ownership (distinguished between sub-tenant space and owned space)

Edges: formed by floor separation (4th floor and 5th floor), distinction between owned space and sub-tenant space

Landmarks: 4th floor indicator (from elevator), reception desk, closet, subtenant's offices, Alicia's office, printer/fax counter, awareness of location of Benning street

Hierarchy: Importance placed on storage of files (accurate detail of storage areas present in the office). Importance of having own office (stress on confidentiality while dealing with personnel files)

Imagability: Highly accurate drawing of the 4th floor àà resulting from awareness of distinction between owned space and the space that belongs to the subtenants.

Boundary: Spatial and organizational boundaries:
        Spatial: Separation between the 4th and 5th floors
        Organizational: Space that belongs to Isaacson group and the space that
                belongs to the Roberts group
                Administrative staff and the recruiters.

Importance: importance given to storage (data storage and retrieval)

Hypothetical Trips:

Spatial and Distance cognition: accurate perception of distances and relation of spaces resulting from traveling to all parts of the office to store and retrieve files. Could also result from understanding which areas belong to the firm and which areas belong to the subtenants.

Trips do not include trips to meet people in the Roberts Group. They also don't mention trips to the 5th floor accounting office, although the search codes and the insurance are handled by the 5th floor accounting office.

Domain and extent of control:

4th floor. Especially those area where storage is available.

Nature of Work:

Interaction with everybody on the Roberts side. Interaction with the accounting office in the Isaacson group with whom there needs to be a lot of coordination (since insurance and the search codes are managed by the Swanson office)

Interaction with the administrative staff and a need for a lot of storage and confidentiality

Symbolism of "office": working as a team

Type of work: Individual – Group

Kim Laurence
• Selling the work
  - Writing
  - talking on the phone
  - traveling
• Networking
  - conversation with colleagues on the development team
  - research in the library
• Interviewing
  - traveling to the client
  - bringing in the client/ candidates
	Dana Adams
	• An initial part of the search involves a lot of computer work and tracking to see if the appropriate person received packets sent out.
	• Constant consultation with team members throughout the search.

Michael Swanson
• Selling the work
  - on the road
  - on the phone
• Leading searches
  - Interview candidates
  - In person and on the phone
• Email, voicemail, phone
• Short 5 minute meetings
	Bill Monroe
	• Phone work – intellectual
	• Coordinating paper work, written assignments, schedules, tables, maintenance of records.
	• 10 – 15% of the individual work → preparing documents. Remaining 85% → constant interaction with external clients and interaction (coordination) with internal staff.

Beatrice Brady
• phone calls and networking
  - On the phone
  - With the VPs and the admin. Assistants
• research
	Sally Summers
	• Networking on the phone and with the team
	• Word-processing, maintaining and updating charts and schedules to organize herself and her work.
	• Email for communication

Tanya Becker
• Providing support to the VPs and associates
  - paper work
  - some phone work and networking
	Annette Gouly
	• Administrator and CFO
	• Book-keeping and signing pay-checks
	• Supervising and doing some secretarial work.

Joan Riley
• Book-keeping and accounts
  - Track insurance (for 4th and 5th floors), vacation, travel expenses, etc.
  - Track payments
	Katherine Williams
	• Leading searches
	  - Interact with associates and team administrator to develop search and networking strategy.
	• Administrative role in firm
	  - interact with Michael Swanson and the finance people

Emily Peters
• Research and information –oriented projects
  - research on-line or in the library
  - sometimes out-sourced
  - answer questions → unscheduled and impromptu
	Jennifer Milgrom
	• Interface between the internal and the external
	  - face – to – face
	  - on the phone
	• Maintain reception area and the office

Resources needed to do the work:

Kim Laurence	Dana Adams
• Reliable computer system, database • Printer/copier/fax • Telephone • Word-processing, outlook etc.	• Computer system • Printer • Fax and copy machine • Outlook program as organizer
Michael Swanson • Telephone • Email • Voicemail • Conference room (since he does not have a closed space to conduct interviews) • Services like the fax/copying/printing etc. are handled by his secretary	**Bill Monroe** • Work area with space to spread things out. • Fax • Copier • Postage • Research area (virtual or physical) • Phone • Computer system • An area where he can meet people (external to the firm)

Beatrice Brady
• Computer
   - data entry and access
   - word-processing
• Fax
• Phone
• Equipment room services
	Sally Summers
	• Computer system
	   - data access and entry
	   - word-processing
	   - charts and schedules
	• Email
	• Phone
	• Fax /Copier machine

Tanya Becker
• Equipment room
   - fax machine
   - copier
   - postage
• Phone
• Email
• Computer systems
	Annette Gouly
	• Lot of storage space
	• Confidentiality needed → needs a private office

Joan Riley • Desktop space and more place to spread things out. • Access to the profit centers (VPs)	**Katherine Williams** • Computer • Email, voicemail • Phone • Printer • Mailroom • Access to colleagues, Michael Swanson, CFO (Kelly Michaels) and accounting

Emily Peters
• Files and data in the library
• Computer system
   - database
   - on-line
	Jennifer Milgrom
	• would like a paging system
	• computer
	• phone
	• voicemail
	• email

Place/ nodes of interaction:

Kim Laurence	Dana Adams
• Conference room	• Reception desk • At her own workspace • In the kitchen/ fax room

Michael Swanson
• Conference room
• At his workspace
• Katherine's workspace
	Bill Monroe
	• Mostly external
	• When internal:
	   - conference room
	   - associates' workspaces
	   - kitchen
	   - back hallway

Beatrice Brady • In front of the reception desk in the seating area	**Sally Summers** • Outside Emma's workspace • Outside Alicia's office in the hallway • Some interaction at the printer
Tanya Becker • In each of the VPs' or associates' workspaces	**Annette Gouly** • Administrator and CFO • Book-keeping and signing pay-checks • Supervising and doing some secretarial work.
Joan Riley • At her workspace (accounting office)	**Katherine Williams** • Reception • Kitchen/ fax/ supplies room • Central (network) printer • At her workspace

Emily Peters
• Almost everywhere
• Predominantly in/at:
   - library
   - kitchen
   - reception
   - outside Pattie's office
   - with Dana and Pattie
	Jennifer Milgrom
	• Reception
	• Kitchen
	• Fax room

Communication: Lines and Paths

Kim Laurence	Dana Adams
• To and from Maury Brandon's office	• To Pattie and Kim's workspaces • Around the table to go to Maury's (boss) workspace • To fax/copy room past the reception and through the library

Michael Swanson	Bill Monroe
• To conference room • To secretary's workspace • To Katherine's office • Through back hallway and around the other side of the office to look for partners. • Occasionally to front desk	• Back and forth from workspace to the fax/copy/kitchen area • To admin. Assistant • Occasionally to offices of the VPs and associates

Beatrice Brady	Sally Summers
• To the kitchen/ fax area past the reception • To the library past reception • To meet Susan Hemmer (friend) past the reception • To meet Denise (boss), Tanya (admin. Asst.) and Dennis Waters (VP)	• To meet Peter Roberts, Launa and Emma (admin. Assistant) • To the copier located in the kitchen

Tanya Becker	Annette Gouly
• To mailbox and rest room past the reception • To the other side of the office through the back hallway instead of going past the reception (to avoid "bumping" into people) • Goes past reception if she knows that she will be in the mail/fax/copy room for a long time so that Jennifer (receptionist) notices where she goes so that Jennifer can forward Tanya's calls to her voicemail	• To the 5th floor mailboxes and the equipment/postage room • Back and forth to the fax machine and printer → dedicated office printer is not compatible with envelopes • To the kitchen/copier area • To the front desk to retrieve files and to delegate work • To Emma's (admin. Assistant) workspace

Joan Riley	Katherine Williams
• To the kitchen and the equipment room past the reception. • To the offices of the Profit Centers and less often to the offices of the other VPs. • To meet Kim (CFO and boss)	• To the printer, kitchen and mailroom • To the reception • To the restroom • To meet Michael Swanson and Natalie (admin. Assistant) • To the CFO, Kelly Michaels • To meet Pattie and to go to the accounting office

Emily Peters	Jennifer Milgrom
• To the kitchen → to track people down • To the fax room • To Pattie's office past the reception • Back hallway • Occasionally to the 4th floor	• To give messages to Michael Swanson when he is busy on the phone. • To the fax/kitchen area through the research library (shortest route to the kitchen/fax area)

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Dislikes:

Kim Laurence • Computer systems and information systems as they do not function properly because they are unreliable • Not being able to print to the printer across her office and having to print to the communal printer • Spatial configuration does not support teamwork • Lack of light in her part of the office • Copier/ printer too far from workspace	**Dana Adams**
Michael Swanson • Central core functions like the kitchen, fax, copier etc. are tucked away in the corners • Reception takes over as the central core territory	**Bill Monroe**
Beatrice Brady • Having to "float" and not having a dedicated workspace. Cannot work efficiently without a dedicated workspace since she is not very organized and most of the day is spent is gathering relevant work material	**Sally Summers** • Computer systems are unreliable
Tanya Becker	**Annette Gouly**
Joan Riley • Workspace located far away from activity and so feels excluded.	**Katherine Williams**
Emily Peters • Not having access to natural light	**Jennifer Milgrom**

Likes:

Kim Laurence	Dana Adams
• To have a workspace with walls • Michael Swanson's workspace has no walls and is open and approachable. Likes his style of working. • Sense of community in combination with work focus among people in the workplace <u>Would like:</u> • Separate dedicated team space for the development team	• Proximity to the administrative staff
Michael Swanson	**Bill Monroe**
• Mix of open spaces → create a sense of community • Closed spaces serve as retreats.	• Building accessible from home in the city • Natural light and openness • Space to move around →does not like to be confined
Beatrice Brady	**Sally Summers**
• Having a dedicated workspace • Appropriate (not too far, not too close) distance from the VP and the admin. assistant. • Working with everything spread out around her (Dilemma: clean/dirty)	• Access to computer system • Having an office • Window
Tanya Becker	**Annette Gouly**
• Proximity to the administrative staff	• Having an office → for reasons of confidentiality (since she deals with the personnel files) and for purposes of storage.
Joan Riley	**Katherine Williams**
• Accessibility to the profit centers <u>Would like:</u> • To be placed more centrally since she interacts with almost everyone in the office • Open well lit space for all the core services with individual offices along the perimeter • Place where people can sit and have lunch together • To have the equipment room closer to her workspace	• Light • Located in a well-trafficked area but having private office • Close to network printer → lets her keep a track of what is going on in the office • "Terrific view"
Emily Peters	**Jennifer Milgrom**
• Likes the awareness that comes from being in an open, well-trafficked area → is able to answer questions faster than if they were to go through a process. <u>Would like:</u> Access to natural light	• Light • Likes maintaining the reception

Interaction with:

Kim Laurence	Dana Adams

• Constant set:
  - members of development team
    - Maury Brandon
    - John Goldman
    - Lily Sutherland
    - Dana Adams
    - Susan Hemmer
  - From the office
    - Sally
    - Russell
    - Michael Swanson
	• Constant set:
	  - members of development team
	    - Maury Brandon
	    - John Goldman
	    - Lily Sutherland
	    - Dana Adams
	    - Susan Hemmer

Michael Swanson	**Bill Monroe**

• Constant set:
  - Katherine Williams
  - Natalie Crenshaw (secretary)
  - Kelly Michaels (CFO)
  - All partners
• Shifting set:
  - associates → depending upon the searches
	• Constant set:
	  - Admin. assistant
	• Shifting set:
	  - associates and senior associates → depending upon the searches

Beatrice Brady	**Sally Summers**

• Shifting set:
  - VPs and admin. assistants associated with the search
  - At present: Denise, Tanya, Dennis Waters
	• Shifting set:
	  - VPs and admin. assistants associated with the search
	  - At present: Peter Roberts, Launa and Emma

Tanya Becker	**Annette Gouly**

• Constant set:
  - The administrative staff
  - Natalie Crenshaw (secretary)
• Shifting set:
  - VPs and admin. assistants associated with the search
  - At present: Denise, Tanya, Dennis Waters
	• Constant set:
	  - Everyone on the Roberts side
	  - People in the billing and accounting office in the Swanson group

Joan Riley	**Katherine Williams**

• Constant set:
  - Almost everyone on the Swanson side especially the profit centers
	• Constant set:
	  - VP in Connecticut
	  - Natalie Crenshaw (secretary)
	  - Kelly Michaels (CFO)
	  - Pattie
	  - Emily
	  - Michael Swanson
	• Shifting set:
	associates → depending upon the searches

Emily Peters	**Jennifer Milgrom**

• Constant set:
  - Almost everybody
  - Particularly with Pattie
  - In fits and starts with Michael Swanson and Katherine Williams
	• Constant set:
	  - Everybody
	  - Predominantly with Russell and the other administrative staff

Lifecycle of a Project

Kim Laurence	Dana Adams

- sell searches
- client sends signed contract
- scoping at client site
- intensive writing period to prepare position statement
- schedule for search, interviews and presentations
- telephone networking and data entry
- present 10-12 candidates
- client chooses 5-8 semi-finalists
- interview semi-finalists
- reference check
- client chooses 2-3 finalists
- candidates interviewed by clients
- closing
	- after search is sold
	  - sending out packets
	  - Concentration of work is light in the middle of the search.
	- final part
	  - reference checks

Michael Swanson	**Bill Monroe**
- launch - scope - networking - interviewing - presentation - second presentation - client interview - close	- meet client - write report/ position statement - crafting recruitment and networking strategy with associates and research library - searching databases - phone/ in-person interviews - documentation for client - report with resumes - reference checks - report to client
Beatrice Brady	**Sally Summers**
- approached with offer to work on search by VP - initial meeting with VP to discuss further steps - scoping at client site - send the client a report - research into database to find match - interviews and reference checks - candidates interviewed by client - closing	- meet clients and learn about job - write position description - networking to find candidates - phone/ face-to-face interviews - client interviews - reference checks

Tanya Becker
Marked by increasing amounts of paper work
- retained to do a search
  - send out letters
  - send out report
- when search is won
    - contact candidates
    - keep client informed
  - Incoming letters have to be acknowledged
  - Databases updated
- When search closes
  - Letters have to be sent out
	Annette Gouly
	- sending out material to win searches
	- after winning search
	  - letter of agreement
	  - obtain search code from 5th floor billing office
	- writing schedules
	- scope letters

- Report, network files have to be completed	

Joan Riley
 - Month to month billing cycle
	Katherine Williams
	 - begins off-site
	 - solitary writing of position profile
	 - close interaction with associates to develop networking strategy
	 - midway through the search interact with team administrator to communicate with the candidates by email
	 - half to two-thirds into the search
	   - off-site interviews
	   - periodic meeting with search committees (off-site)
	 - tail end of search
	   - getting letters out regarding outcome of search

Emily Peters
 - Gets requests for specific research by email, voicemail, notes left in mailbox and in person
 - Concentration of research done in the beginning of the search but continues throughout the search. Depends upon the individual style of the VPs and the associates
	Jennifer Milgrom
	 - search begins
	   - lots of paperwork
	   - data entry of open search forms from recruiters
	   - update database
	   - distribute report indicating status of searches
	 - search closes
	   - entry of candidate folders into computer database and network books.

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BIBLIOGRAPHY

Allen, J. Thomas, 1997. Working paper: *Architecture and communication among product development engineers* International Center for Research on the Management of Technology

Batelaan, Volkert J., *Organizational Culture and Strategy: a study of cultural influences on the formulation of strategies, goals and objectives in two companies.* Tinbergen Institute Research Series. Amsterdam: Thesis Publishers, 1993

Bechtel, Robert B., Marans, Robert W. and Michelson, William; *Methods in Environmental and Behavioral Research.* New York: Van Nostrand Reinhold

Becker, Franklin and Joroff, Michael; *Reinventing the Workplace.* New York: Cornell International Workplace Studies Program, 1995

Becker, Franklin; Joroff, Michael; Quinn, Kristen; *Toolkit: Reinventing the Workplace.* New York: Cornell International Workplace Studies Program, 1995

Beckhard, R., and Harris, R.T.; *Organization Transitions: Managing complex change. (2ⁿᵈ ed.)* Reading, MA: Addison-Wesley, 1987.

Bridges, W. Transitions: *Making sense of life's changes.* Reading, MA: Addison - Wesley. 1980.

Brill, Michael; Margulis, Stephen T.; Konar, Ellen and BOSTI, *Using Office Design Space to Increase Productivity.* New York: Workplace Design and Productivity, Inc., 1984

Burtis, Andrew and Gabarro, John J. *Brainard, Bennis and Farrell,* Harvard Business School Cases, Case# 9-495-037: Harvard Business School Publishing.

Carroll, Glenn R. and Vogel, David; *Organizational Approaches to Strategy.* Cambridge, MA: Ballinger Publishing Company, 1987

Chandler Jr., Alfred D. *Strategy and Structure: Chapters in the History of the American Industrial Enterprise.* Cambridge, MA, The MIT Press, 1962

Duffy, Francis; Cave, Colin and Worthington, John (Eds.) *Planning Office Space.* London: The Architectural Press Ltd., 1977

Duffy, Francis; Laing, Andrew and Crisp, Vic; *The Responsible Workplace: The Redesign of Work and Offices:.* DEGW and the Building Research Establishment: Butterworth Architecture, 1993.

Duffy, Francis; *The New Office.* London, UK: Conran Octopus Limited, 1997

Espejo, Raul; Schuhmann, Werner; Schwaninger, Markus and Bilello Ubaldo; *Organizational Transformation and Learning: A Cybernetic Approach to Management.* New York: John Wiley and Sons, 1996

Festinger, Leon; *A Theory of Cognitive Dissonance.* Evanston: Row, Peterson, 1957

Greiner, Larry E., *Evolutions and revolution as Organizations grow.* Harvard Business School Cases, Case# 9-495-037: Harvard Business School Publishing.

Habraken, John et. al., *Concept Design Games, Books One and Two.* Cambridge, MA: Department of Architecture, MIT, 1987.

Horgen, Turid; Joroff, Michael; Porter, William; Schon, Donald A. *Excellence by Design.* New York: Wiley and Sons, 1999

Houthakker, H.S. *The present state of consumption theory: A survey article.* Econometrica 29:704-40 1961

Jakle, John A.; Brunn, Stanley and Roseman, Curtis C. *Human Spatial Behavior: A Social Geography.* North Scituate, MA: Wadsworth Publishing Company, Inc., 1976

Labovitz, George and Rosansky, Victor. *The Power of Alignment: How Great Companies Stay Centered and Accomplish Extraordinary Things.* New York: Wileyand Sons, 1997

Lewin K. *The research center for group dynamics.* New York: Beacon House: 1947.

Lewin, Kurt; *Group Decision and Social Change.* In G.E. Swanson, T.N. Newcomb, and E.l. Hartley (Eds.) *Readings in Social Psychology Rve. Ed.* New York: Holt, 1952

Ley, David F. *The Black Inner City as Frontier Outpost: Images and Behavior of a Philadelphia Neighborhood.* Washington, DC: Association of American Geographers, Monograph Series No. 7, 1974, pp. 224-225.

Lynch, Kevin; *The Image of the City.* Cambridge: The Technology Press and Harvard University Press, 1960

Mancuso, James C. and Adams-Webber, Jack R. *The Construing Person* New York : Praeger, 1982

Milgrom, P. and Roberts J. *Does Organization Matter. Economics, Organization and Management:* Prentice Hall, 1992

Moleski, Walter H. *Behavioral Analysis and Environmental Programming for Office Setting.* Environmental Protection Group: Dowden, Huchinson and Ross, Pennsylvania, 1973

Rand, George; *Children's Images of Houses: A Prolegomena to the Study of Why People Still Want Pitched Roofs.* In William J. Mitchell, Ed., *Environmental Design, Research and Practice* Los Angeles: University of California, School of Architecture and Urban Planning, Proceedings of the Third Annual Environmental Design Research Association and the Eighth Annual A.I.A. – Architects Researchers' Conference, Jan 24-27, 1972, section 6, Paper No. 9

Robinson, Ira M *Trade-off games as a research tool for environmental design.* In *Methods in Environmental and Behavioral Research,* ed. Robert B. Bechtel, Robert W. Marans, William Michelson, New York: Van Nostrand Reinhold Company, 1987

Roth, L. George. Working paper: *Learning histories; using documentation to assess and facilitate organizational learning.* Center for Organizational Learning, MIT. 1996

Schein, Edgar H. *Organization Development: Science, Technology, or Philosophy?* WP # 3065-89-BPS, MIT Sloan School of Management, August 1981

Schein, Edward; Working paper: *Organizational learning: What is new?* Center for Organizational Learning, MIT.

Turner, Galvin and Myerson, Jeremy; *New workspace, new culture: Office design as a catalyst for change.* UK: Gower Publishing House, 1998

Williams, Cecil; Armstrong, David and Malcolm Clark; *The Negotiable Environment* Ann Arbor, MI: Facility Management Institute, 1990

Williams, Cecil; Armstrong, David and Malcolm, Clark; *The Negotiable Environment: People, White-collar Work, and the Office.* Ann Arbor, Michigan: Facility Management Institute, 1985

Zeisel, John; *Inquiry by Design: Tools for Environment-Behavior Research.* Monterey, CA: Brooks/Cole Publishing Company. 1981

All illustrations are by the author unless otherwise noted.