Design for Achieving Strategic Business Objectives

by

[nee Melissa G. Edmands] Marsh, Melissa Edmunds

B. A. Architecture and American Studies
Barnard College, Columbia University (1997)

Submitted to the Department of Architecture
in Partial Fulfillment of the Requirements for the Degree of
Master of Architecture

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Massachusetts Institute of Technology

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Signature of Author: _____
Department of Architecture
January 16, 2004

Certified by: _____
Francis Duffy
Thesis Supervisor
Visiting Professor, Department of Architecture

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

Accepted by: _____
Bill Hubbard, Jr.
Adjunct Associate Professor of Architecture
Chairman, Department Committee on Graduate Students

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by

Melissa G. Edmands

Thesis Reader: M. Diane Burton
Title: Assistant Professor of Management

Thesis Reader: Mark Jarzombek
Title: Associate Professor of History and Architecture

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ABSTRACT

The workplace is simultaneously functioning as a site of personal productivity and social interaction. As such, the contemporary work environment demands a multiple functioning architectural space, for which our current understandings of process, program and even building type are insufficient. As organizations become increasingly complex and their competitive environments less stable, progressively higher demands are placed on work environments. In an attempt to reframe some of our current workplace design challenges, this thesis looks to neighboring fields of research: organizational management, urban design and planning and the field of environmental psychology. This work looks to discover a more empirical understanding of success and failures in office design approaches, new modes of investigation, and new approaches to communication within an architectural intervention. Some of these hybrid components will then be deployed for making recommendations on the reconfiguration of an office of fifty educational consultants located in Boston, MA. This sample implementation is then used to evaluate the relative usefulness of tools for different purposes within the analysis and design process.

Thesis Supervisor: William L. Porter
Title: Muriel and Norman Leventhal Professor of Architecture and Planning
Professor of Architecture

Thesis Supervisor: Francis Duffy
Title: Visiting Professor, Department of Architecture

Massachusetts Institute of Technology, Cambridge, MA
Master of Architecture expected February 2004, Cumulative GPA: 4.6/5.0

Barnard College, Columbia University, New York, NY
Bachelor of Arts in Studio Architecture and American Studies received May 1997
Honors: Graduated Cum Laude, received Departmental Honors for American Studies and the Marcia Mead Award for Excellence in Architectural Design, College Dean's List 1995-1997, Cumulative GPA: 3.4/4.0

WorkingSpaces, MIT Cambridge, MA 2003-2004
Research team leader. Initiated research project to develop unique curriculum for use in architecture, management and executive education programs. Secured institute funding, recruited and interviewed undergraduate research assistants and developed semester long research initiative. Lead acquisition of case studies including scheduling and coordinating of conferences and events.

Architectural Alliance, Inc. Santa Fe, NM 2002
Summer Design Intern. Designed steel and glass spiral illusion staircase for Swig nightclub in downtown Santa Fe. Responsibilities included programming, schematic design work, parking and usage diagrams, and construction observation. Other work incorporated feasibility studies, land purchase opportunity assessments and site evaluation for commercial development and small office parks.

Ove Arup Partnership London, UK 2000-2002
Research and Development Intern. Developed web based presentation materials for internal learning and client information. Researched, designed and produced content for prototype communication tools. Work focused on ways to demonstrate value added by design teams and regional offices especially successful implementation of sustainable development projects. Initiatives included emerging technologies, e-business, new materials, contemporary refurbishment and facade engineering. Millennium Bridge pedestrian testing included test planning, data collection, monitoring, data transfer and analysis.

Martin E. Rich Architect New York, NY 1997-1999
Project Manager. Designed interiors for residential and office buildings in NYC. Responsible for preparation of construction documents, material and finishes specifications. Facilitated client-contractor relations; coordinated mechanical, electrical and plumbing, millwork and specially trades. Supplied corporate clients with resources for facilities management including as-built drawings. Initiated synchronization of office wide digital drawing standards. Provided technical support including digital communications and organization of symbol and detail libraries.

Boston Society of Architects, volunteer and member; New York Architectural League, volunteer and member; Royal Institute of British Architects, associate member; MIT Architecture Student Council, class representative; MIT Architecture Design Faculty Committee, student representative.

table of contents

list of figures

Corporate organizations are a unique client type for architecture. Unlike other architectural projects which may assume a predominantly well focused, coalesced if not singular client entity, corporate organizations are complex compilations of individual needs and interests. Corporate organizations are characterized by their strategies for seeking competitive advantage within their own industries, and by their scale and complexity. They are for the most part diverse, competitive and often rapidly changing. These characteristics make can make standard approaches to architecture ineffectual at either aligning with their strategic direction or at analyzing their complex social and spatial characteristics. Contemporary architecture practice has been reasonably well adapted to accommodate the increasing size and variety of building projects. The standard approaches to architecture are found lacking when either the organizational complexity is high or the environmental instability high. The solution to workplace design, therefore, requires the integration of a broader set of fields, a larger range of architectural considerations than typically used.

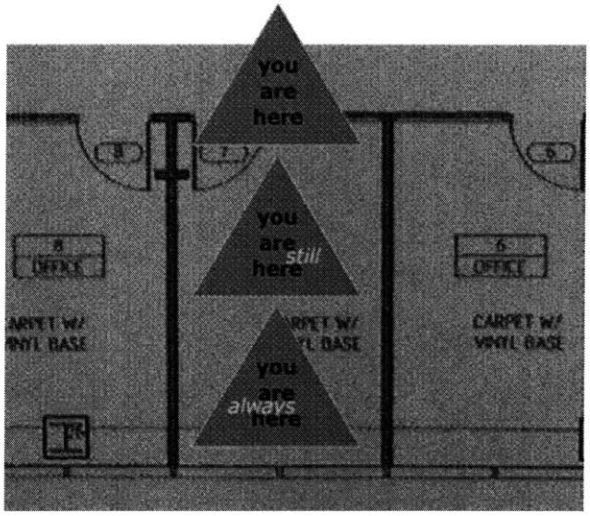

Figure 1

The types of buildings around which architects have traditionally focused their skills and interests tend to be those of stable institutions like museums, churches, schools and hospitals. As companies are challenged by rapidly changing competitive environments, the prospect of a building's permanence may be more daunting than exhilarating. With building lifetimes calculated at thirty to a hundred years and even interiors considered to change only every seven to ten years, architecture's challenge to address the rapidity of organizational change is apparent.

Regarding business objectives, there are quite often many ways to achieve the same outcome. It is often a matter of the particular culture or context within which these activities or work occur that makes the difference. In the context of a less diverse, competitive or rapidly changing environment the architectural programming logic of 'what do you do' might be sufficient. Now, rather than following assumptions about building type, building a bank for bankers or a law office for lawyers, architects must think in the context of their clients. Functional similarities between projects of a common building type, for example an office building, do not apply.

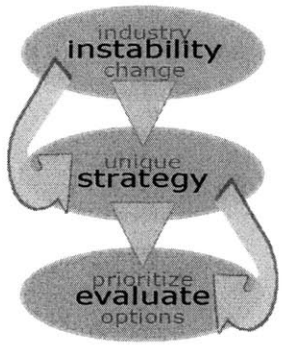

Figure 2

The speed of change within modern industries demands that individual businesses adopt their own unique competitive strategy. These strategies establish the guidelines for larger sets of decisions throughout the organization. This often means the prioritizing of one direction or activity over another. Strategies are then in some sense the way that businesses choose to deal with change. In order to make a successful partner to business, architecture must recognize these unique strategies and use their framework to guide design.

Meanwhile, the increasing complexity of organizations demands new ways of collecting and manipulating data within the design process. The typical programming skills of the architect do not work in the case of the more complicated organization. Unless, as seen in many of the successful case, there is a dominant architecture advocate among the leadership of the organization the more complex structures of organization obfuscate an architects understanding of the client. Architectural design works well when a singular client identity has a clear idea and direction regarding their architectural intentions. From multi-headed client side to multi-tasked, multi-resource design side the idealized single client and single architect just-hitting it off is a long gone possibility. Increasingly, with the democratization and decentralization of corporate structures it is no longer possible to expect that an architecture project could follow such a

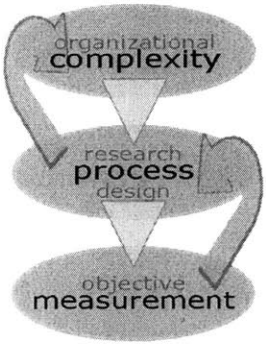

Figure 3

model. Nor is this necessarily the goal. While the urban design process provides a way to mediate between a variety of contributors, it often works against endorsing any particular or individual perspective. Workplace design on the other hand may have as its goal the promotion of a particular corporate culture or identity while it must also establish a means of accommodating multiple interests. By considering the architectural and urban scale investigations, a new hybrid tool by which to accomplish design for organizations operating at this intermediated scale.

A review of some of the ways in which leaders in the growing field of workplace design have approached the challenge of complex organizations reveals two major directions: one focusing on work style typologies while the other focuses on process architecture. Some have focused on ways to vary the physical workspace based on the types of tasks and communications of that space. Others have advanced means of communication between a design team and the future occupants of their spaces. Both directions in the field have made significant contributions to understanding the processes by which multiply functional designs may be achieved. In many cases the important role of strategy within the organization has remained unidentified.

There is not a shortage of designs, or even good designs, rather there is a shortage of ways to compare options on the basis of their potential correspondence to the organizations strategic objectives. The key to achieving strategic solutions with longer range lies in the capability to prioritize, to focus efforts based on a limited set of resources. Programming and goal setting must be focused on both aligning and reinforcing the strategic model of the organization, so that a space may be created that supports this. Assessing the relation between an architecture project and this set of priorities is only achievable through an investigation of the strategic objectives of the organization. The challenge of achieving strategic business objectives through design requires an expanded architectural toolkit.

In order meet this challenge it is necessary to augment the standard architectural investigation, to include ways of assessing complexity and accommodating change. An exploration of design fields which have excelled despite these constraints includes that of urban design where a multitude of constituents must be coordinated and compromises made between them. Urban

designs and plans often establish a basic framework designating general values and recommendations for areas of long and short term change. In this case the design is a guideline, and approach or a plan for infrastructure which can serve multiple constituents in a variety of ways. Other fields including industrial design use rapid feedback between user and designer to increase their ability to respond to change. Both establish design processes in which the details of usage are investigated and observed in order to create lasting solutions and opportunities for future flexibility.

Despite a growing body of work in corporate design, two factors continue to be a challenge to standard architectural practices: environmental instability, the rapidity of change within industries, and the increasing complexity of client organizations. This paper recommends means of dealing with this challenge. First investigating a series of architectural precedents where a corporate strategy can be seen as integral to the design, then by exploring the methods and process of urban design and planning alongside architectural design and sociological investigations. Together, these approaches are then used to explore the current situation and future options for an office of fifty educational consultants.

In historic and contemporary contexts architecture is considered to function or operate as symbol, statement and means of communication. Architecture has been used by individuals and nations to express power, control, wealth, status and values. Space is a constant source of information about attitudes and expectations, informing individual and collective behavior. Spatial experiences demand, control and persuade group and individual interactions. Within a corporate organization space may be allocated to one group or revoked from another. Space is not merely accommodation; it can provide or prohibit one's means of production. It is where one has an opportunity to hold a conversation, concentrate or create. In these ways it becomes apparent that space design has the power to make substantial contributions to the strategic directions of a variety of organizations.

The usefulness of architecture to achieve business strategy appears to be held primarily as anecdotal information by both architects and the individuals who have hired them. This situation makes it difficult to establish factual or reconcilable measures of the impact of space design on business.

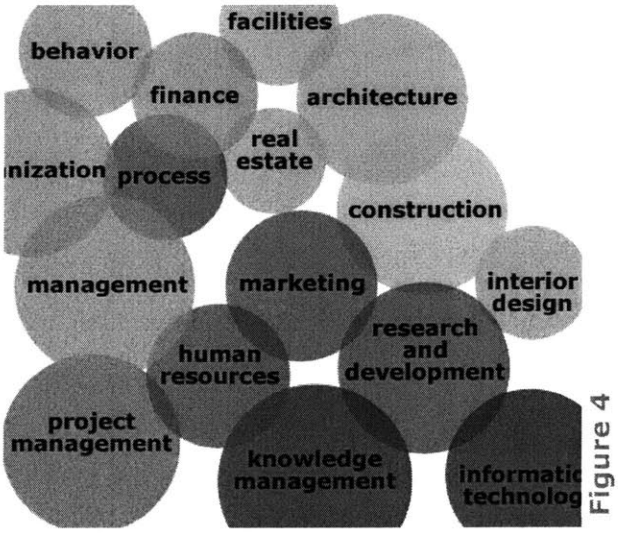

Figure 4

The history of strategic human resources indicates that there is a long road from recognizing a trend to creating verifiable evidence that a certain practice will affect a business, its capabilities and profits. The history of human resources profession also demonstrates that the efforts of research, the vision of enlightened leadership and the remodelling of key corporate strategies could eventually lead to a greatly advanced understanding. This could then be translated into generally held knowledge and rules of thumb (like costs to hire, fire, and retrain employees). Therefore, an exploration of both the positive and negative value of space design

decisions may help us better understand the relationship between a business' objectives and the use of space to help achieve these.

Moving from anecdotal to at least published material required the exploration of tens of books and hundreds of magazine articles. [1] Through this survey of architectural and business press, a subset of articles was found to include anecdotal and qualitative descriptions of the impact of projects suggesting their potential relationship to business agenda, and occasionally to a broader business strategy. When announce, these features were stated to be either the goals or the results of a design and construction project; in no case were these claims proven with data. From this survey a set of six themes was developed which describe the intersection of architecture and business objective: external identity and branding, internal identity and employee attraction, virtual and distributed work, internal and cross functional communication, productivity and creativity, spatial efficiency and performance.

This set of six categories represents the ways in which architecture has been used to work towards accomplishing goals which are sometimes considered strictly business objectives. In the practice of architecture, an understanding of these themes may be used both to explain the potential of architecture and then to focus the limited resources of a client organization. In this way the themes may be used as an outline for thinking strategically about the goals of architecture relative to business objectives. The following is a brief description of each theme, focusing on how it may be used, considered and pursued.[2]

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[1] This categorization of ways in which architecture operates within business objectives was originally proposed by and researched with the workingSPACES research group. Further information on each theme, including methods of the investigation may be found at http://workingspaces.org/paper/theme.htm. The data table showing projects included appears in Appendix A.

[2] This section is intended to establish a standardized terminology for each theme and therefore describes only what is meant by each theme especially as based on initial research by workingSPACES. A discussion of the stakeholders associated with each, along with questions and diagnostics which might be considered for each appears in Appendix B.

external identity and branding: the use of design for developing and controlling a distinct visual identity associated with a company, its products and services, including efforts in marketing and client communications. This theme is demonstrated by companies such as Walt Disney, McDonald's, and Starbucks where this concept is implemented as a method of strengthening corporate identity while providing benefits to both customers and employees. Metrics or indicators of success and failure for this theme include brand recognition, market share, marketing budget, number of customers or clients, and consistency of image.

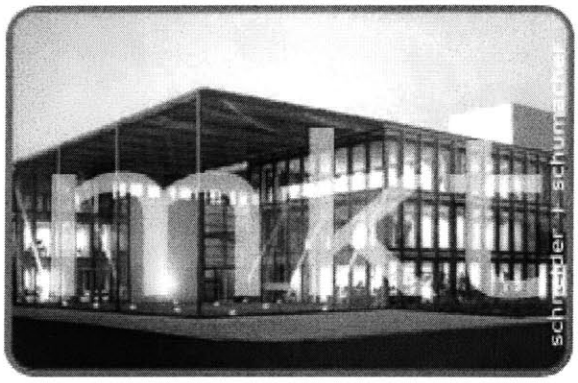

Figure 5

internal identity and employee attraction: the use of design to attract the right individuals and to inculcate them to a way of functioning in a particular environment through the explicit denotation of corporate goals and agenda, to strengthen or promote a broad corporate culture, to maximize employee satisfaction or morale. This may also include the retention of key employees or alignment of individuals within a broader context. Some effective examples include The Gap, UK Inland Revenue and REI where design is focused on the physical health and personal needs of employees. These projects use both visual and physical references to promote corporate culture and attract the right employees. Metrics of success may include employee retention, reduction of churn, high corporate morale, and low occurrences of sick leave.


Figure 6

Figure 7

Information Technology is one of the strongest and most frequent reasons offered by clients for needing to reconfigure space.[3] IT consultants either internally or externally are almost always included on a workplace reconfiguration team. **Virtual and distributed work** includes virtual and global communications as well as the facilitating and integrating of this with local or onsite work. It may be described as the use of design to support the integration of information communication technology (ICT) into business practice, or to increase the flexibility of location in staff work styles especially as this may relate to a potential diminishment of employee culture or strains on corporate knowledge management. This may also include physical facilities for increased telecommuting, advanced telecommunications and the development of non-territorial work spaces. Companies including British Airways and Cisco Systems have completely reconfigured their physical environments in order to accommodate virtual work space. The spaces are open and flexible allowing access and promoting movement. Metrics may include reduced transportation expenses, increase of conference calls, increase phone/email usage.

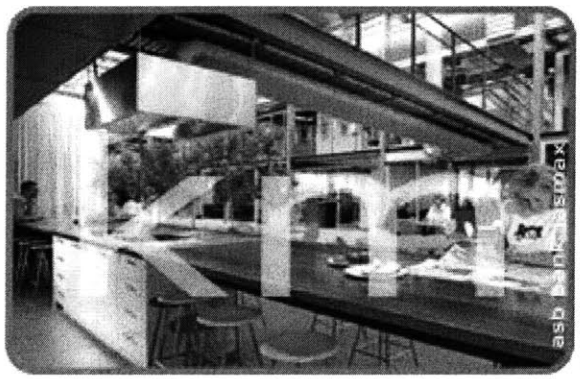

Figure 8

internal and cross functional communication: the use of design to orchestrate interactions between individuals who must work together in order to accomplish a common goal, includes local communications, team, product or divisional coordination and knowledge management, especially when

[3] Duffy, Francis. The Responsible Workplace: The Redesign of Work and Offices. Oxford, UK: Butterworth, 1993.

considering an onsite work group. Companies seen as pursuing this include Gillette, Corning Glass and Astrazenica all of whom have used visual openness, as well as variety in work spaces and use patterns to facilitate cross functional and intra-office communication. Metrics include product development time, speed to market, career longevity and communication across disciplines.

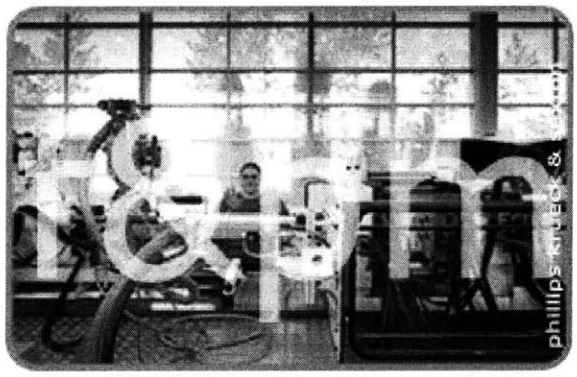

Figure 9

productivity and creativity: the use of space to provide the maximum useful facility for productive staff, to promote creative thought, facilitate productive work habits. From marketing firms, to software companies and consulting offices, space has been used to enhance the intellectual and creative stimulation of employees. Sample companies may include LL Bean and IDEO who have invested in creative environments which are rich in visual and physical resources so that ideas are not abandoned for lack of a means to take the next step. Useful metrics include an assessment of increased revenue per employee, employee confidence, creative product development, sources of employee motivation.

spatial efficiency and performance: includes goals for the maximum or multiple uses of space where size, price and use of space are considered.[4] This theme may be defined as the use of design to optimize spatial performance through efficient planning and multiple uses. This may include using space layout as well as physical and technical elements of a building to cut waste in business practice. Though usually considered a constraint, when pursued creatively these can be positive driving forces behind a design. Companies like Taco Bell and Amazon.com have used space as a medium through which to deliver the highest value to their customers; Taco Bell by allocating 2/3rds of floor space to dining and Amazon by creating the most efficient warehouses to deliver products faster than competitors. Metrics include productivity, cost of production, product per unit area, occupation of space per person per unit time.

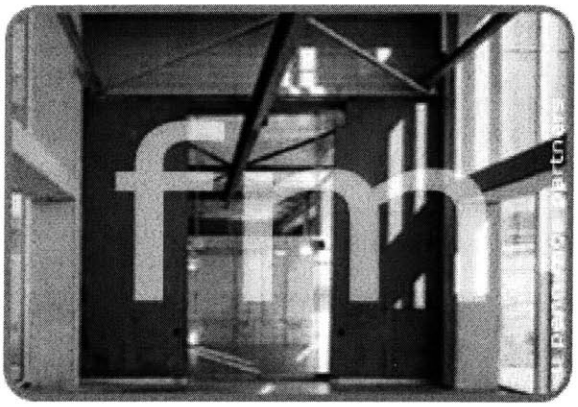

Figure 10

These themes have the potential to play several roles in the programming and design process. Initially both the themes and the example projects which they represent are helpful in broadening the conception of how architecture may be useful to business; the ways it may be used strategically rather than just tactically. Also, a useful checklist for determining the individuals whose contributions should by sought by a design committee may be created by considering the fields of interest and stakeholders within a corporate organization which are represented by the themes: marketing, human resources, recruiting, information technology, knowledge management, functional and project managers, facilities managers. Finally, the themes may be useful in exploring and focusing the strategic directions of a project. They may begin to inform approaches to design, and means of measuring success or failure in achieving those goals.

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[4] For additional discussion on the relationship between HR Blueprints and work space typologies, as well as optimization through alignment of these, see workingSPACES web site. *Physical Implications from Organizational Blueprints.* http://workingspaces.org/paper/bluep.htm

Both in research and in practice, process can often be a useful method of dealing with complexity whether this is the architectural process, the urban design process or even the scientific process. The scientific method is defined as set of "principles and procedures for the systematic pursuit of knowledge involving the recognition and formulation of a problem, the collection of data through observation and experiment and the formulation and testing of hypotheses." The empirical approach of the scientific method shows the value of using process to control complexity. The rigor of such a process also facilitates learning, from keeping records to measuring results; future work is given a way by which to improve. In these ways, process may be seen to incorporate two significant benefits: that of moderating complexity through organization, and that of learning and improving for future work.

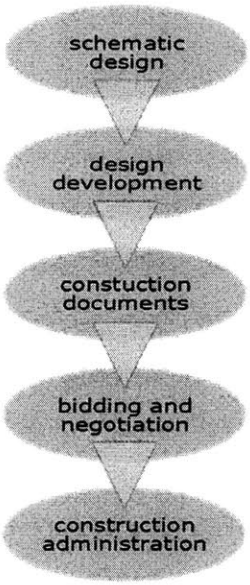

Figure 11

Through the steps of schematic design, design development, construction documents, bidding and negotiation, and construction administration, the standard architectural process functions well to define the financial and professional responsibilities of different individuals in order to accomplish large projects.[5] In this way it is a method of dealing with complexity, however, its focus is construction rather than client. The architecture process is devised for use when a single architectural solution or program has already been defined. It is not a sufficient process for dealing with the complexities of workplace design, nor does it include a means of learning or research. Architecture needs another model in order to achieve design for organizations.

[5] Lewis, Roger K. Architect? A Candid Guide to the Profession. Cambridge, MA: The MIT Press, 1991. Text also includes a discussion of the deliverables at each stage.

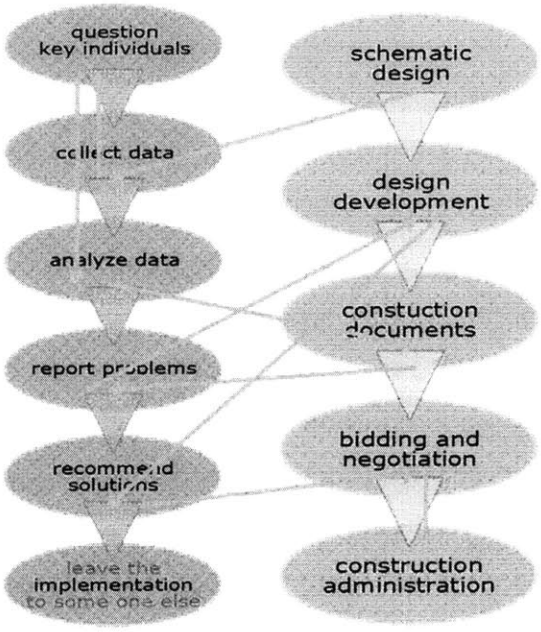

Figure 12

In order to achieve these benefits, an investigation needs to match the assumptions which are being tested. Architecture, research and the scientific process are not currently a working set. However, with an increasing attention to process, research and to rigorously testing each hypothesis, it is possible for architecture to include a process which arrives at such data driven solutions. [6] While the scientific process provides a model for research and learning, the urban design process provides a precedent for a different style of practice, for integrating political, social and financial components directly into the design process as it is explored and investigated.

urban design and office planning

The urban design model presents a possible resource for exploring ways in which architects might deal with the unique challenges of workplace design; complexity of client and instability of environment. Several features of urban design recommend its usefulness for these purposes. While the investigation of themes in architecture and strategy is useful for grappling with the variability and changing competitive environment, urban design offers a model for mediating the complexity of client organizations. Urban design and planning often includes a process of researching situations, developing and evaluating solutions, briefing clients and then forming consensus around a particular decision or path. In order to solicit a multitude of inputs, instill a sense of legitimacy in decisions, and to achieve consensus, urban design is often a participatory process.

The urban landscape is benefited by the development shared resources for the use by the group at large. The office, like the urban environment is

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[6] Hamid, Shirvani. The Urban Design Process. New York: Van Nostrand, 1985. (p 116)

heterogeneous, with each individual using both privately and collectively held spaces in order to move through their daily activities and responsibilities. Each individual has a limited amount of control over a larger picture. An office, like the city is an aggregate of many actions and decisions over time. Planning decisions affect different individuals in different ways but work towards constant improvement for the whole. Furthermore, the office is an environment composed of overly closely juxtaposed public, private and interstitial spaces creating a potentially volatile compilation of individuals. They can grow unsupervised into wild beasts of unplanned places, or evolve organically into well functioning democratically driven systems.

In order to evaluate and facilitate these functions, a typical urban design investigation might include a diverse set of investigations. A typical analysis might include observations and mapping of the following situations:

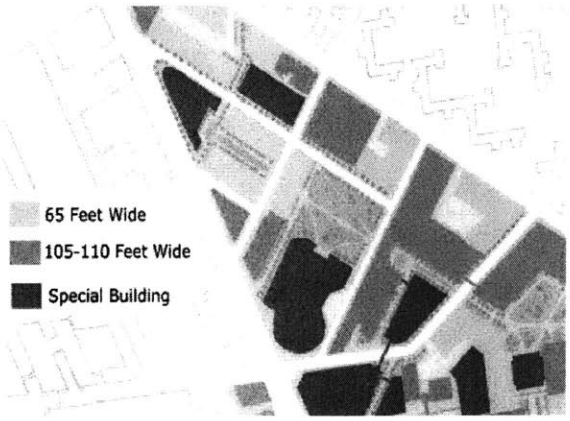

Figure 13

Traffic patterns - including pedestrian crossings and intersections, and rates of flow

Infrastructure studies - service and network analysis showing access to public services including parks, transportation or shopping

Cultural and functional adjacencies - including zoning or and business improvement districts

General maps – political boundaries, demographic conditions, location of significant elements.

Given the need for workplace design to consider a complicated set of systems similar to that which occurs in the urban environment, suggests that some of these investigations could be translated or scaled down for use as architectural investigations of the workplace. In order to address the broad complexity of client organizations this methodology will have to include the mapping of both physical and social characteristics. The communication patterns, social structures and the physical pressures which comprise everyday performance in a particular environment will need to be mapped as they are in urban studies.

planning for changing environment

In addition to presenting an approach to understanding the complex functionality of organizations urban design and planning may also hold clues about ways to consider the lifespan of a project beyond that of building construction and occupation. Urban design has dealt with the discrepancy of lifetimes occurring in the social, political and built worlds. Urban lifetimes are considered in hundreds and even thousands of years. Urban planning, therefore, has been forced to consider the flexibility of the environment, where one building or even a region may be replaced over time, and that the individuals holding power may similarly change.

Increasingly, in workplace design the architect may play a role in organizational change acting as catalyst for a larger shift. In this case the architect becomes consultant and advisor to a much further reaching project than the initial re-imaging of a physical space. In these cases it is necessary to consider, in planning terms, how spaces will be used over time, what are the methods of change, and what components of the system are more or less static. Urban design and urban planning use methods such as design guidelines, master planning and phased work in order to provide both direction and flexibility within a particular design. Successful urban design may be identified as that which provides the flexibility for continued change while providing the infrastructure for each individual to achieve the best possible results within their immediate context.

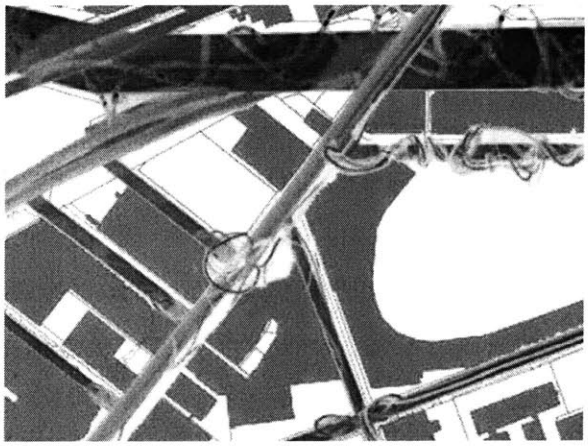

Figure 14

In order to address both the complexity of the organization and to attempt to consider the impact of design on future directions and corporate strategy, architecture and the practice of space design must ask a deeper set of questions in order to help achieve the goals of client organizations within the design process and product. Using the small and intimate scale of interviews common to architecture practice, along side the site observations of urban design and the objective testing

and measurement of a scientific process offers great potential. Workplace planning must consider the increasingly divergent rates of change between organizations and the physical spaces they occupy and help to design systems by which to manage the different rates of change between buildings and corporate organizations. In these ways workplace planning may benefit from the adoption of such methods; by being explicit about the more and less flexible parts of the design, by considering the physical space as the infrastructure for work activities which may change over time, by establishing protocol for the usage of space and providing explicit methods by which individuals may contribute to changing their own environments. Finally, achieving architecture for both complexity and change will require a unique hybrid of known tools.

Since the organization occupies a scale and level of complexity which lies between the intimate questionnaire of architecture and the demographic analysis of urban design and planning there must be a similarly intermediate level of investigation which is created by a hybrid of methods from the two fields. This project is a rigorous pursuit of a strategy for defining parts of this in-between scale. The creation of a new vision, a new type of hybrid space comes from a process of existing conventions recombined. Borrowing from both the micro and macro scales of design this set of tools has evolved from a series of explorations and observations. The reference set includes the approaches and achievements of precedent architectural works (themes), types of site analysis common to architectural and urban design practices (mapping), observational, survey and network studies more prominent in anthropological work, as well as strategic and process analysis used by business consultants. Each of these is imbedded in a process which is derived most significantly from that of urban design. The following strategy for workplace design is a combination individual investigations embedded in a process which suggests the order in which they be carried out. In order that this may be a methodology for both research and practice, it is necessary to document aspects which are more or less successful. Throughout this process the roles of research and design must be explored simultaneously, learning from one another.

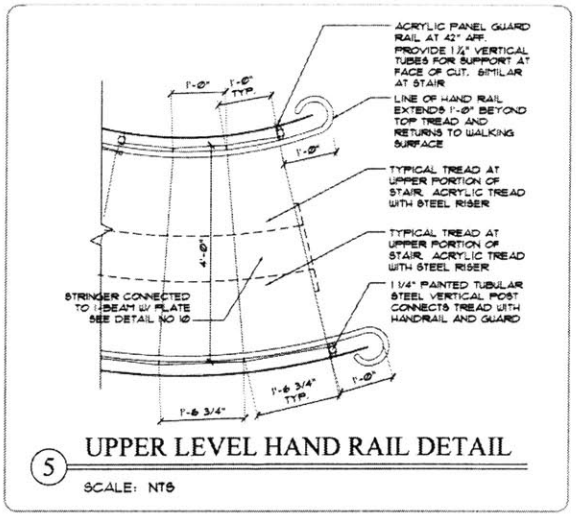

Figure 15

A new model for investigation uses combined conventions to come to increasingly well integrated solutions. Some of these include maps form urban design, social and network analysis surveys, workplace satisfaction surveys,

interviews, organizational charts, program planning from urban design.[7] While management conventions include metrics and data collection to assess performance, social or anthropological conventions including the collection of data from observations, surveys and interviews.

representation for strategic thinking

The evolution of a working hybrid is not just about borrowing and mixing tools of observation and analysis, it is also a critical investigation of the means of representation which are used in order to communicate between architect or workplace consultant and client. While standard architectural drawing and design formats do not communicate with client at a strategic level, exploring ways of doing so might also begin the process of educating a client to understand the relationship between physical space and the plan as an information diagram or form of communication suggesting a way of gaining information. Conventional architectural representation is designed to communicate the features and characteristics of a building design so that it may be built, produced, assembled by a group of construction professionals, trades people, and installation engineers. This focus on assembly rather than expression of meaning or use has impaired abilities to communicate strategically with client. In order to begin to improve communications this drawing set must be augmented. Multilingual demonstrations are required in order for the architect to communicate with the client in a way that facilitates strategic rather than tactical decision making. The information must be presented in a way that is both comparative, showing the outcomes of various decisions, and must relate to the goals pursued. The ability to show trade offs or explain options requires a type of communication which is not ordinarily part of the architectural language. They are, however, certainly within the capabilities of such graphically minded professionals.

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[7] These tools are a combination of my own invention and derived from the work of both generalist practice and that of specific individuals. Key contributors include Frank Duffy (architect and workplace consultant), Karen Stephenson (sociologist and network mapping, Mathematical models of human systems Network mapping- scientific measures of culture), Hixson (work process consultants, A&E), Perkins and Will (architects), Approaching Urban Design (urban designers), studio work with John de Monchaux.

It is among the challenges of the workplace designer to be constantly integrating their own investigations with a means of communication which helps clients to think about their architecture options more strategically. In order to maintain a focus on the client's broader business agenda, architects must simultaneously speak multiple languages of design, value and outcome.

measurement for learning process

In some of the same ways that representation of ideas and standards of comparison can be critical to thinking strategically, measurement can be seen as the critical factor in developing a process which is both useful in mediating complexity and a method for learning and improving. The use of measurement provides a verifiable process, facilitates learning, goal setting, benchmarking and objective comparisons from other fields of inquiry. Measurement also facilitates tightening the relationship between architecture's hypothesis and testing, providing a means of feedback within the process and allowing for modifications and improvements. For example, if physical space is a means of communication, one must begin the conversing with the client by collecting data to determine what is currently being communicated, then use the existing space to diagnose messages.

In the process of space planning and workplace consulting the people factor has been measured to various degrees. Architects are familiar with ways of measuring space, while managers are more comfortable with ways of measuring people's performance. A better understanding of their impacts on one another, however, requires a hybrid approach to measurement. It is necessary first to become familiar with the measures used in each other's fields, and then to consider spatial measures and people measures in a variety of pairings to explore the managerial repercussions of space. In this way the design process may be about the design both of space and means to measure its effectiveness.

These tools for analysis and communication are an attempt to make visible the multitude of architectural decisions which taken all together are part of the ways in which space may be created in order to shape culture of an organization. An objective understanding of the characteristics of space, displayed in a way as to be useful within a conversation between architect and client especially as necessary

to consider strategic use of space in relation to business objectives.[8] Using both a new process and the hybrid tool set provides a position from which to begin improving our workplace consulting capabilities. The process demands a committed relationship between the architect and client, integrated leadership and exceptional communications. Each step demands two parallel processes, one lead by the architect and the other lead by the client, evolving through the use of graphical communications. Each phase of this process includes client responsibilities, architect responsibilities, data and deliverables as well as recommendations for communication. This is a preliminary set of tools, and if used rigorously may be able to grow in both legitimacy and depth of field.

phase one: data collection

The first step is one of data collection and investigation by both the client and architect.[9] This may include the creation of new materials for the purpose of the project; however, for the most part it is an organized assembly of existing documents from a mix of sources. In as much as an architecture project might usually begin with precedent building studies, a strategic business assessment begins with an understanding of the organizations background, their history and positioning within a competitive environment. This may be done through business press and by discussions with the company. Data collection about the organization may include a discussion of corporate hierarchy and organizational structure through organizational charts, individual job descriptions, review of any programming already done, any data required in order to be able complete a basic strategic assessment. Other materials and information should to be determined and requested upon initial assessment. Whenever possible the translation of these into graphical format can improve communications.

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[8] This is an outline of best practice based on interviews, discussions and reports by workplace consultants including conversations held between September 2003 and January 2004 with Karen Stevenson, Frank Duffy, Cam Roberts, Michael Pearce, Barry Austin, Jim Prendergast and Robert Luchetti. Some of the tools owe more or less of their logic and inspiration to one particular field of study, architecture, urban design, environmental psychology. When the design of a test or study is based on the logic of a particular precedent investigation this is explained in the text.

[9] In urban design this is referred to as a survey of the existing natural, built and socioeconomic conditions.

The client is responsible for self reflection, assembling the appropriate advisory team and creating a list of interviewees. In addition to a preliminary discussion of the project, the architect may also want to provide client with strategic guidelines for selecting team members. The key to selection of a team to develop design ideas is that it must be indicative of the goals which one wishes to achieve in the design process. Discussion between the two also includes an introduction to the potentials and possibilities of architecture. The themes may be considered at this point in order to get broad representation onboard.

Once a baseline of understanding has been reached and an outline of documents has been exchanged, interviews serve as the starting point for a strategic investigation. Interviews were held with nine forum employees over a span of roughly three weeks. From this series of interviews a set of corporate goals and challenges creates the framework for all future investigations. This process is also helps to prioritizing features designated for further investigation. Interviews may be tailored to the size and type of organization as well as to the individuals who are being interviewed. (Theme/stakeholders may be used as a checklist to assure contributions from each department.) Questions should cover categories including individual and group work styles, corporate vision, descriptions of culture, goals and desires for the workplace. This type of client data collection may include an investigation of the following system features:

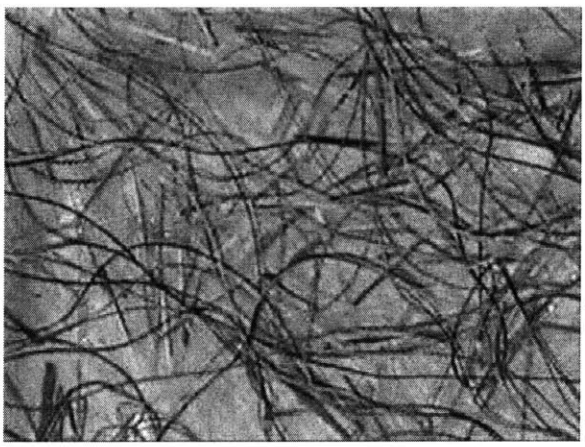


Figure 16

How is information relayed within the organization?

How are individuals achievements assessed?

How is work evaluated or supervised?

What are the professional commitments between individuals?

This preliminary data collection is an opportunity the architect to survey existing space and uses, including an explicit discussion of what space says to both internal and external environment, both observational data may be used to show

how individuals are currently using space while surveys can explore how they would prefer to use space given the opportunity. Presentation of these findings will include maps, space description surveys translated onto plans and the like. The following studies are developed primarily from urban design and could be considered strategic sketches. They are means by which an architect might demonstrate abilities to the client while simultaneously exploring characteristics of the existing space; they are ways of seeing space and organization in a single term.

Figure ground drawings, which in urban design usage are "produced by shading in the buildings in plan form in black, thereby revealing the public and semi public realms as white" may be used in several ways.[10] Unlike a typical furniture plan, a figure ground drawing of an office floor is more suggestive of the space experienced while moving through hallways and corridors. This type of drawing may also be used to show the portion of floor area designated for individual versus group use. Floor wide percentages of public and private space may be shown both graphically and numerically. This type of density or land utilization may also indicate groups with different work styles or prioritizations of group activities. In urban design terms, this sort of land utilization study is "a measure of how land in an area is divided between public and private use. Since most land in public ownership is open space in the form of circulation of pedestrians and traffic, parks and other public open spaces."[11] A figure ground drawing showing structural and building systems indicates the portions of the building which are available for configuration or reconfiguration.

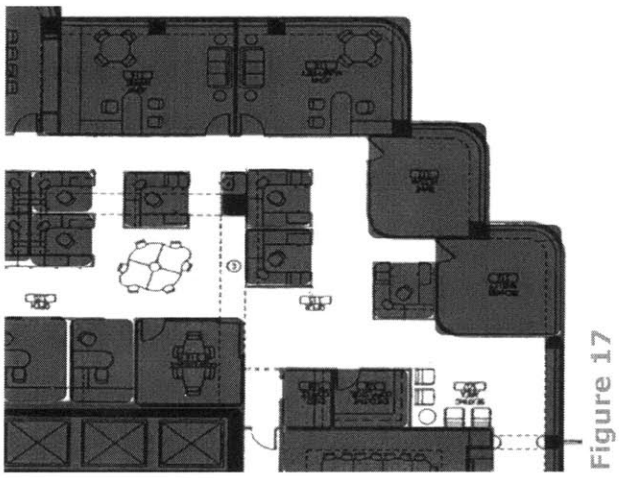


Figure 17

[10] Roberts, Marion and Clara Greed. Approaching Urban Design: The Design Process. England: Pearson Education Limited, 2001.
[11] Ibid.

As in urban design a hierarchy of circulation paths may be seen to order the spaces of work. Recognizing these with indications like primary, secondary and tertiary circulation systems may be useful in understanding relationships between and within groups. Whether a group of introverts or extroverts, a covertly located information technology group, or unique locations for programmatic elements and functional and working groups a brief study of where they are located may often show a great deal about priorities within the organization.

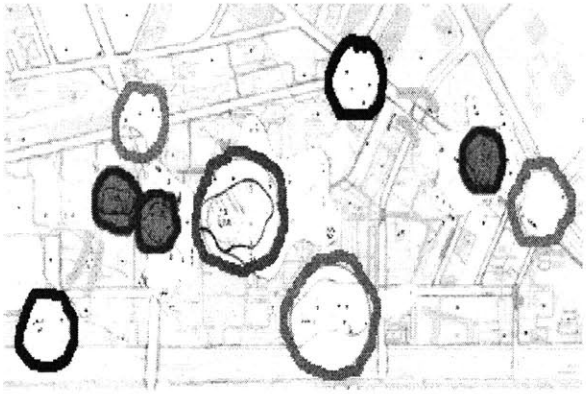


Figure 18

Navigational components from nodes and paths to landmarks and routes may be mapped a cross the workplace. When considered at an urban design scale, nodes are referred to as a point of interchange "a point to or from which an observer might be traveling and which provides an event on the journey." It is characteristically a major junction or interchange. It can also be a meeting of paths. Landmarks are places that it must be entered. In workplace design terms this map might include a CEO's office, a café space, more and less preferable hallways, a particularly loud group on the floor, or a special meeting room.

Depth and permeability describe the degree to which movement is possible or permitted between outside and inside of spaces or between sections of urban areas. In urban design terms this includes lines of sight, publicly accessible corridors, and is limited by a busy street or a disconnected street grid. The sense of permeability may be constructed through physical access or paths, visual access at the scale of corridors and connections whether these promote or limit their use. In an office space the same kinds of relationships are established by the way spaces are treated and the organization of partitions and office furnishings. A sense of accessibility might be created through lighting, while the location of a bookshelf or filing cabinet could create significant limitations.

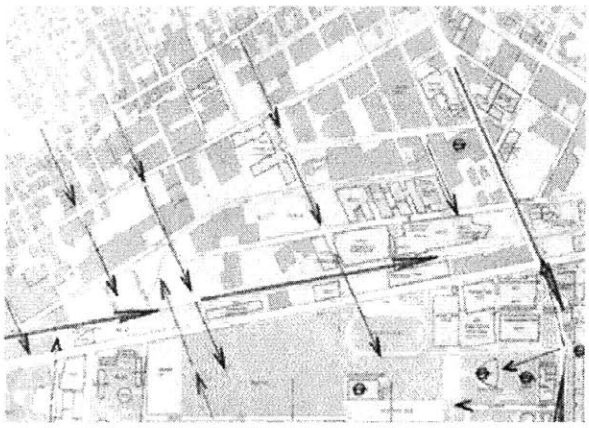


Figure 19

In addition to the observations made about the configuration of space, data may also be collected on the activities and behaviors of people occupying these spaces. A variety of inventories may be taken; assessing occupancy rates, use of space for storage or meetings, sources of noise or other sorts of disruption, popular or unpopular corridors. These observations can help to corroborate or to refute hypothesis about how people are using or affected by the spaces around them.

Before the conclusion of phase one, all data and preliminary assessments should be summarized and reported back to the client organization and assessed for clues about new paths, directions or to recommend additional areas of investigation.

phase two: data analysis

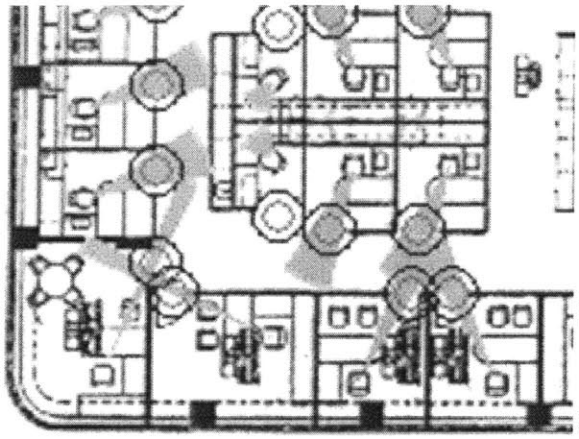


Figure 20

The second step is an opportunity to analyze the collected data, when done graphically this data may also be a part of the communication between architect and client, furthermore it may also establish a baseline by which to begin design. This period of identifying potential opportunities and limitations may include conducting interviews or surveys regarding expectations, existing conditions and diagnostic of patterns identified in phase one. The reporting of collected data in an intelligible and engaging format is then the first step in communicating about new possibilities and design agenda to a client. Reports to Forum have included both summaries of interview data and that of observational data. The preparation of these reports is an exercise in the display of multiple sets of data and a means by which it may eventually be possible for Forum to better know their own space needs and the implications of the many decisions involved in a corporate relocation.

building diagnostics

As mentioned previously mapping may be used to explore possibilities for example a figure-ground drawing showing structural and building systems indicates the portions of the building which are available for configuration/reconfiguration. The particular investigations carried out at this point will depend on the client's site and whether or not this is a predetermined factor (or if the goal is to identify a set of spatial preferences for use in selecting a site). An investigation of the maximum capability of the space based on the given exterior or building shell conditions may include much more than square footage. It could include such valuations as; linear feet of window access, depth of building relative to ceiling height ratio, percentage of internal spaces with opportunities for view or the need for a particular hallway configuration. Communicating these alternate measures to a client advances the conversation in regard to understanding a building's potential. Maps and

investigations similar to those used in step one may be repeated in order to investigation options for new space alternatives.

spatial adjacency studies

Studies of social relations when seating or housing where assigned by government and institutional authorities, have indicated that the physical proximity between individuals effects friendships, political views, and courses of action. An understanding of this has significant impact on achieving (architectural and managerial) results especially in the areas of corporate culture and knowledge management as discussed above.

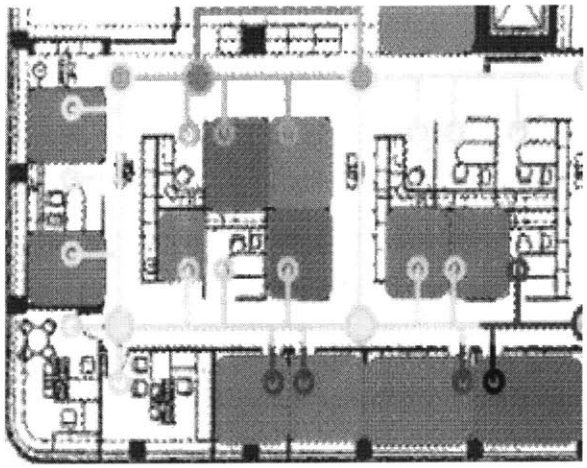


Figure 21

organizational diagnostics

As the architect works to identify the physical opportunities and limitations, including a thorough building investigation, the client may work to explore some of their own opportunities and limitations. The first part of a strategic analysis of an organization is an investigation of their industry and their own environment. Each company or organization is constantly operating within a unique external environment. The organization also has a set of means by which it may chose to organize or position itself. During this phase preliminary data analysis may use the themes as a filter to determine the areas which merit a deeper investigation, including recommendations for further data collection. Tools for this investigation may include problem goal triangles, strategy (space reflection) and the theme filter.

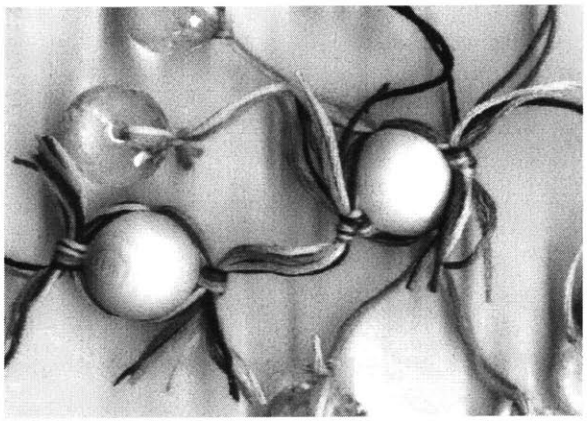


Figure 22

The use of surveys in this process plays two significant roles. Surveys are both a way of collecting information and of distributing information. As such, surveys are a powerful information tool and must be dealt with appropriately. It is necessary to decide upon a means of communicating with the entire audience on the topic of the space design or relocation before a survey can be administered. Survey data can then be used to make decisions throughout the design processes, as well as a means of establishing an understanding of successes and failures afterwards. (With increasingly interactive ways of surveying a group of people this is becoming an ever more powerful tool and should be used more in architecture.)

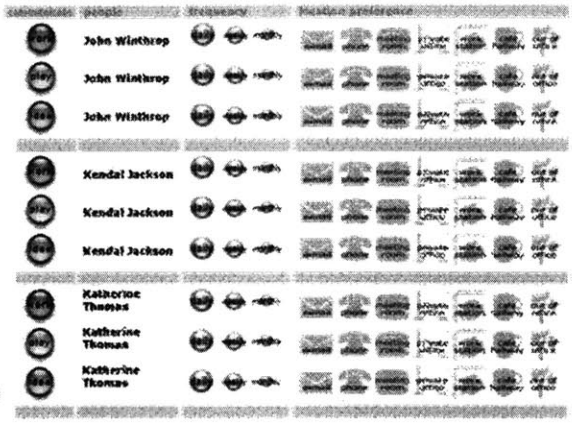


Figure 23

phase three: formulating of goals and objectives

After the framework of desires and intentions is established and the physical condition of the office is generally understood, there is an opportunity to begin goal setting. This is a critical juncture for leadership as it suggests a need to decide whether the process will be one that is democratic and involves a large portion of the company or if the process will be led by a small number of individuals within the corporation who are given the authority to proceed on behalf of the group at large. Either approach is legitimate as long as the options and impacts have been weighed and that the decisions are in line with the broader management style. In either case the roll of communication and deciding on a clear communication strategy to keep everyone informed is critical.

Now that enough investigation has been done in order to understand the basic components of the client organization and its strategic direction and the general requirements and characteristics of the proposed building or location assessed, design intentions may begin to be evolved. However, a project cannot proceed without commitment to goals and statements in some form. An agreed upon way of soliciting information, responding to challenges. This is about clearly

delineating the goals and strategy of the project, it forms the guiding principles for the remainder of the project from weighing options to evaluating success.

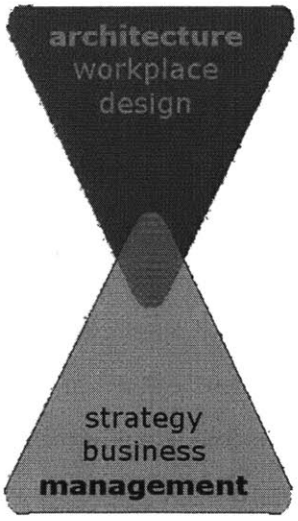


Figure 24

Leadership is critical from day one but plays a major roll at this point. Furthermore it is difficult if not pointless for the architect/consultant to continue beyond this point without clear leadership established and an understanding of the ways in which project information will be both communicated and collected. It is arguably of equal validity to have a project which is lead by an individual, team of representatives or all inclusive. The choice between these three, however, is of critical significance to the style and execution of the design project and must be considered strategically and intentionally.

Executive level consensus building develops a method for future decision making and prioritization. This formulation of goals and objectives includes explicit value statements delineation of values by which future solutions may be evaluated. Leadership is the first filter for refining these observations and collected data into goals and objectives. This step is critical for leadership and can barely be accomplished without it. Begin a process of soliciting contributions regarding the process in a way that is concomitant with leadership desires and directions.

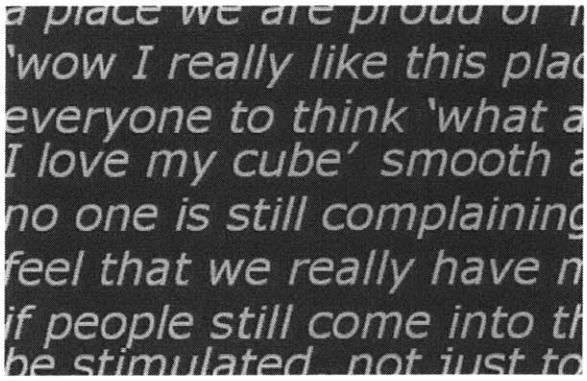


Figure 25

Business concept value statements may follow the formats similar to the following: "we want to appear. . . to have a reduced hierarchy and flattened structure," "we hope to be more be innovative and flexible," "we want to enable dynamic reactive, to support frothy knowledge." These statements provide a basis for metaphor development which helps to make connections between physical features and conceptual components. This is a process of exploring the

components of the intersection between the new business path being explored and the architecture which will facilitate this. These may even be translated into architectural concept models or translational objects. With the illustration of goals in concept cards such ideograms can help communicate the architecture and business goals broadly through the organization.

Metaphor development provides a means of communicating and exploring goals, creating an object of commitment and a language for translation.[12]

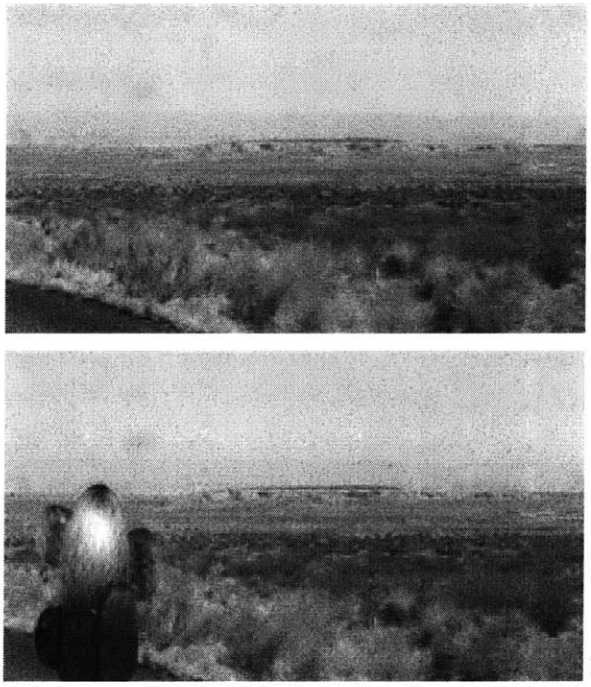


Figure 26

Metaphors are used to discuss qualitative measures of space (rather than quantitative) and as a way of aligning agreement around solutions. The metaphor is a translation of strategic into architectural goals. [13] The process of metaphor development has two benefits; one is that of making the translation from strategic goals to that of describing the characteristics of space that support this.

The second benefit is that by identifying types of space, and communicating this with future users, the benefits of such intervention are reinforced. A significant portion of the way in which people understand and interpret space is through the sum-total of all previously experienced spaces. Since people create internal typologies which help them identify types of spaces based on their form and contents, the design of space and the components used are always significant. These understandings also have a direct impact on the social norms and behaviours that people are inclined to act out in these spaces. There are two significant impacts of this work for architecture and business. First, in understanding the clues which space provides for influencing behaviour we are better able to design spaces in which a particular behaviour is expected. Secondly,

[12] Bonnes, Mirilia, Terence Lee, and Marino Bonaiuto (eds). Psychological Theories for Environmental Issues. Burlington, VT: Ashgate, 2003.

by knowing the sets of assumptions which people make based upon spatial and physical clues, we can better align our corporate messages with our spatial messages. In these ways the power to orchestrate corporate culture through space designs becomes apparent.

An understanding of this schema phenomenon is also critical within the design process. Because of the depth of these schemas in each persons understanding of space, the use of metaphor during the design process is critical to the acceptance, adoption and appropriate use of new spaces. For example, if the metaphor of library is used in the design discussions of a new office space. Then this becomes not only a useful design reference but also a way for employees to begin understanding how to use the space and adopt it as their own, library. Otherwise the visual clues of library may seem out of place in the office environment and despite the designer's best efforts, the use of space is out of synch with its intentions.

phase four: program and design

Establishing project contents and their relationship to successful outcome is the stage similar to traditional architectural programming. This step considers the actual spaces and the activities they have the potential to contain. It calls into use the original value statements in order to assist in make decisions about alternatives and trade offs. It is in this part of the process that the design group is able to understand the impacts on the end product which are influenced by decisions which have to be made in order to work within the limits of scarce resources. Therefore, this step may include the use of financial estimating and a discussion of cost benefit for the various recommended interventions (resources limited in regard to both

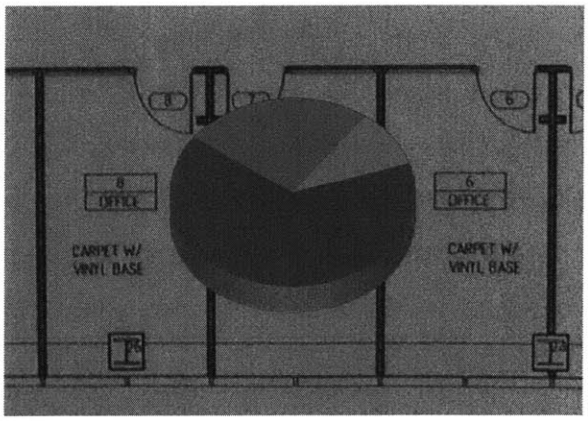


Figure 27

[13] Ibid.

square footage and financial out lay). This step may also include general notions about trade off alternatives including percentages of open space, public space, etc.

% Open offices

Atria / transparency

Café/cafeteria/public spaces

Evaluate alternative solutions includes vetting, need to consider established goals against quantitative measures understood here for the first time because they are embedded in trade offs. Need for prioritization and option sets.
Framework for choice making (options survey)- after some options have been developed, serves also to inform broader audience of trade offs.
Uses tools to compare possible solutions in conventional terms and by new means of objective analysis.

design development

Once goals have been set, the means of communicating about them and recommendations for how decisions will be made has been established; program development may begin. This may be done by the designer with little impact from the client team, it could be lead by the designer during a charrette with the client team or with multiple focus groups, or it could be nearly entirely client driven. The location of any organization or design project on this continuum is a matter of the style and preferences of the client group as well as that of their designers.

Architects, urban designers and planners concerned with the involvement of the end user in the design of their spaces have explored extensively the options for making this a participatory process. Some would argue that the optimum solution would be for the user to be involved in this part of the process through workshops. However, it is necessary to anticipate this step when originally deciding who to include in the design process. It is most important that the appropriate team is assembled to work with the architect in translating the metaphorical and strategic goals into a program which suits the organization and provides an appropriate amount of flexibility. In some cases it would be appropriate for this to include every member of the organization, while in other situations the strategic needs of the organization are best met by having only a single member of the design team.

What is important is not the number of participants, but that the decision is made consciously.

Similar to the schematic design phase of traditional architecture practice the next step includes the elaboration of each concept into workable solutions. Though designs for this may be primarily prepared by the architect, is necessary to continue developing qualitative and metaphorical descriptors alongside quantitative goals and measures of success. Strategies may be based on assessment of preferences and outcomes of survey work. This is also a critical moment within the organization to begin promoting the new program and design. As various designs are elaborated, the design team may also work to consider protocol which will be part of how the space is used and evolves over time. A design workshop at this stage could promote metaphors and translation into work environment including discussions of measurements for success, if and then scenario planning, thereby drafting policy and design solutions simultaneously.

phase five: documenting and testing

The conclusion of this process will then result in a final report to the client in the form of a planning document which becomes their own tool in leading the design process. Translation of solutions into policies, plans, guidelines and programs is an explicit means of implementing the program which has been evolved. This may be the architectural build out of an office, the relocation of a few individuals, a planning document for the relocation of an entire office, or a proposal for changing the use protocol at a particular location. In addition to explicit recommendations for the implementation of the project, the briefing booklet should also discuss how the successes of the project are to be measured and by whom. As well as ways in which the design may be amended in the future.

This document represents understanding of their own desires and intentions, the trade offs that may be required to achieve these, a process for making these decisions, a way of reporting back to stakeholders, a means of determining their own successes and failures through post occupancy evaluations, and finally a way to approach continuous improvements in their own build world. So that the design project becomes a living entity within the organization the final report should also

include metrics for evaluation, feedback and possibly a means of amending the document.

The goals of this study are three-fold. The project began as an observational investigation; to see how a company would go about relocating themselves. The plan was to follow the process of a standard program, design, build, and move from the client's side. (In a September 2003 meeting forum agreed to participate in this study.) However, it didn't seem fair that Forum should just stumble down the less advisable path, for the sake of observing a 'typical situation.' So an agreement was made to both observe and report on our findings at standard intervals. Therefore, the second goal is about working with Forum to help them understand what the architectural implications of their own needs and desires might be. To help them broaden their understanding of how architecture might be useful within the context of their already begun attempts at redefining their own position, more to advise on possibilities and implications than on design directions or solutions. The third portion of this study is evolving a new methodology for the investigation and design of office environments. This exploration adopts urban design as precedent and uses the physical and social context of Forum's offices as a backdrop for the testing of various methods. Forum's space is used as a field of exploration in which hypotheses about people, organizations, and their use of space may be made and tested.

Figure 28

From this display of information about their own space and work, Forum may then be better prepared to guide their own relocation efforts. In September 2003, The Forum Corporation agreed to share their experiences over the course of their upcoming relocation. Forum's CEO had already established a group of individuals to discuss future possibilities for the new space. They also drafted a program based on the space standards of their holding company. This project observes the physical

space of Forum, the challenges they have experienced in communicating with their employees and the data they have chosen to share with their architects.

Whenever possible, the basic process explained above, and many of the tools are based on ideas and intersections revealed at Forum. The areas in which Forum has been challenged or when events or communications were carried out in an unsuccessful manner create important indicators for (improvements needed in) the architectural intervention process. Overall it has been extremely helpful to have the luxury of observation in this case. As when an architect is constantly focused on the development of various iterations of a design, the actual communication of what for or why is often lost.

background

The Forum Corporation (Forum) is an educational consulting firm. As an educational consulting firm they provide large corporate clients with advice on running internal learning programs. Forum's work focuses on several levels of this including research and development of course material, publication of research on related topics, consulting on educational programs, delivery of courses and associated software. The Forum website explains some of their key functions:

> "The Forum Corporation is a global leader in workplace learning. For more than three decades, Forum has helped Fortune 1000 clients address their most important business challenges with learning solutions.
>
> "Driving growth and profitability, minimizing employee turnover, developing leaders at all levels, increasing sales force productivity, or improving customer satisfaction and retention, Forum aligns your people with your strategy to deliver tangible business results.
>
> "Our research-based content provides learning solutions that meet the unique needs of our clients, with off-the-shelf speed and efficiency. Forum consultants are recognized experts in developing leadership talent, from delivering a Branded Customer Experience, world-class sales to customer service teams."

Forum has been in operation for over thirty years. Originally they were a privately held company. At on time, most of the employees in the company participated in ownership. Forum was extremely successful and about ten years

ago the company went public, its shares were sold on the open stock market and many of the original employee owners were well rewarded for their hard work.

Unfortunately, the forum culture and its work were not scaleable and for other reasons the public venture was not successful. Forum was then acquired by a UK publishing company called Pearson. Though in some ways well aligned because of their similar interest in education, the merge was not successful and Forum floundered under new ownership. (Interactive Media Corporation also part of this deal?) After roughly three years under Pearson, Forum was then acquired by IIR.

IIR is a holding company primarily dedicated to turning around faltering companies. Since their ownership, Forum has suffered through two recent rounds of lay offs in January and March of 2003. Forum and IIR have practically opposite cultures, but there is a possibility that Forum could learn enough about metrics and finances from IIR that they could turn a profit and deliver the exceptional service to which they are dedicated. However, there is a huge project of employee moral boosting ahead to make up for the injuries of recent cuts and continued salary freeze.

Forum has several offices in the United States as well as European and Asian divisions. US offices are located in New York, Chicago, and San Francisco. In addition to these regional offices, many Forum employees work from home, teams of forum employees are located at their client site, and an entire wing of the organization, called Res-net who are responsible for delivery of the product are also at home workers.

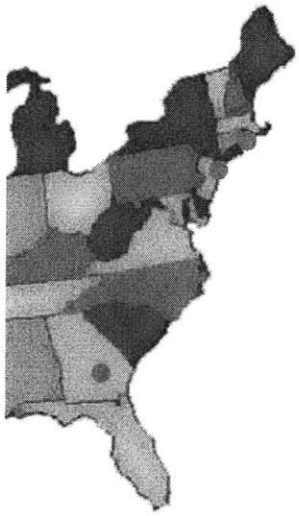


Figure 29

The Boston office of Forum is located in a large black glass building at 53 State Street called 1 Exchange Place. It is very important to Forum to be in this type of an office building with other companies who they perceive to be at an equivalent status as their own; both the designation of class-A space, and the list of companies on the entry register are significant to their sense of status.

Forum enjoys the location close to the State Street T-stop which is convenient to Logan Airport for clients and near South Station for easy employee

commuting. Furthermore, Forum employees enjoy the excitement of shopping and eateries in their down town location. There is some suggestion that employees would not bother coming into the office if it were not in such an extremely central location. Also there is potential for individuals who are generally tele-commuters to stop in for social reasons while in town for other reasons.

At the time of our initial discussions with Forum, CEO and VP had already visited and viewed several available spaces in the Boston financial district. In consultation with their corporate realtor, they had sent out requests for proposal (RFP's) to the owners of the spaces which they were interested in leasing. For most of the properties which Forum was considering, architectural services would be part of the fit-out provided by the property owner/manager. In this type of case architects are contracted by the property owner/manager to draft construction documents for the future tenant based on their physical needs. The property owner then recovers their costs for the interior upgrade and the associated architectural services by including it in the price of the lease. In this way the future tenant pays for the design and services over the course of their lease, but maintains relatively little control during the design and construction of the space. The future tenant, in this case Forum, is responsible for determining their own future space needs and communicating them to the architect. The architect, working for building owner rather than future occupant, has no incentive to complicate matters by asking too many questions. Therefore, the primary communication between architect and future tenant is in the form of numerical spread sheets indicating the square footage required for the working spaces of various members of staff by department, and the sum totals of square footage requirements for public spaces from conference rooms and copy centers, to lobbies and cafes.

When we began discussions with Forum, they were in the process of developing an architectural program, using a spread sheet provided by their holding company. This gave them a goal of programming based on a maximum of 250 square feet per person which they were then at liberty to use how they wanted.

initial presentation and interviews

After an initial discussion of the state of affairs at Forum the basic framework of using architectural precedents and strategic themes to guide a design project was presented to the design advisory group which Forum had already assembled. This group included Forum CEO, Vice President, Human Resources Manager, IT Manager and two regional directors. For the most part, The Forum Corporation chose to include on the design team, those individuals who are highest on the local corporate hierarchy. Some individuals were giving positions on the board to appease their nervousness about the move or in deference to their rank within the organization. It did not appear that the group was selected based on its strategic significance within the company.

Figure 30

At the conclusion of this meeting Forum agreed to participate in a series of interviews regarding the strategy and direction for the new space. The concept of the themes was used to identify individuals to interview. In addition to the initial members of the relocation committee, interviews were also conducted with the recruiting manager, the director of marketing, and a member of client communications.[14]

- What is the general nature of the work you do? And with whom do you communicate regularly in this process?
- What is your current vision of the company? now, new, next? What do you see as the challenges, risks, and opportunities?
- What elements of the current company either culture or work environment would you like to reinforce, or discard during the move? What new features need to be built or created?
- What are different metrics for determining success or failure? At Forum and in your department? What are the critical tasks for your group?
- What is the composition of the company, including their work styles? In what ways do you see this changing?

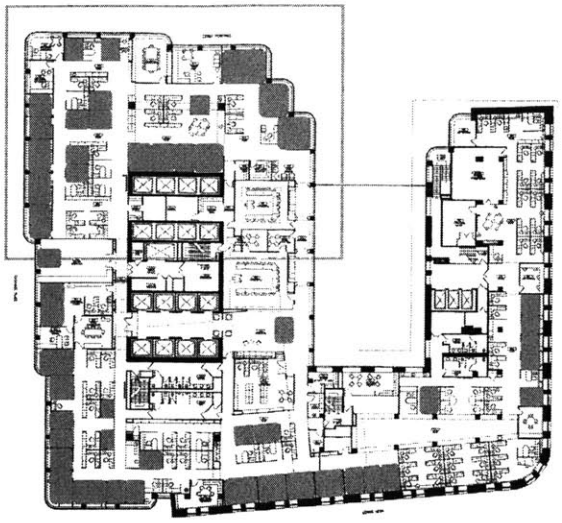
[14] The only segment of Forum not represented in this was sales.

- How would you develop a process for soliciting input regarding the move?
- How will you know that Forum has been successful in creating a new home for itself?

results from interviews

Interviews with Forum employees revealed an intense culture which could largely be described as one of a commitment organization. Individuals operate on a code of closely held beliefs called the Forum Code. At one time, this code was so strongly held that one could often overhear colleagues reminding one another, and pointing out 'code violations.'[15] For many years the most important business agenda at Forum was exceptional product delivery, committed relationships with client organizations, and an almost unquestioned since of how far one would go for a client. Between internal support of peers and external commitment to client, the task of making money was overshadowed. This inattention to finances was made worse when the company went from private to public, was reacquired, and then transferred to a holding company.

Forum is not well. The past year has seen a nearly 60% reduction in staff and more than one CEO. Their current CEO has been brought in from the old-school Forum team. His placement at the head of the organization is part of a strategy to rebuild forum culture and morale. The radical reduction in staff has left Forum wasting away on a very empty floor of a rather expensive building. Forum needs to move quickly both to avoid the expense of so much extra space and the psychological strain of an office full of difficult memories. The forum corporation currently occupies the entire 3rd floor (32,00sf) of One Exchange place in Boston. Due to a combination of serious cutbacks and an extensive number of employees who work remotely, there are only 49 regular occupants of a floor designed for nearly 150. Because of the large portion of commuters the current occupants of the Forum office are actually representative of a much larger group of individuals who use the office as a hub or network centerpiece. In addition, a large portion of Forum's delivery system (Res-net) exists entirely out of the office. Making the situation even more fragmented, many individuals have either direct reports or immediate supervisors who work in other office locations or at home. Forum faces



a critical moment as they have an opportunity to, rebuild themselves and to restructure their culture as part of this relocation.

reporting on data collection

After establishing a general picture of Forum, including their overall work styles and corporate personality, the next task was to begin analyzing the interview responses in order to establish a baseline for thinking strategically about Forum's changing workplace. The first work of assessing the interviews was to determine the current challenges at Forum. Responses were broad, but in the end seemed to be focused around the task of rebuilding corporate culture, advancing capabilities and knowledge base, and promoting themselves in the market place. Some quotes from the interviews included the following: "rebuild ourselves, make a difference and be profitable," "after several years of suffering, we need to rebuild the quality of day-to-day life," "we had the market brain share, we still have a number one brand but we need to rebuild our knowledge and capabilities in order to succeed," "strengthen sales and expand our areas of expertise. . . if this works we are going to need to be able to staff the projects that we sell."

The second tabulation of interview responses was aimed at establishing a design agenda and clarifying architectural intentions. Forum interviewees were rather enthusiastic in their responses about what they were looking for in a new

[15] From interview with Kate Haney, Forum Corporation.

space. However, it was difficult to filter these out from the interviews because, when individuals where asked directly about what they were looking for from a new space, they often answered with descriptions of their personal needs. In addition to the basic programmatic components which they had identified with the spread sheet recommended to them by IIR, they had also identified some additional elements which could contribute positively to the way they work. The responses below are tabulated from the full set of interviews. When similar responses were repeated by several individuals, numbers following the entries indicate multiple of repetition.

- a place with **buzz**. . . a place to **see and feel** forum. . . more color. . . less drab. . .freshness. . . for our clients and ourselves (4)
- spaces to **spread out** and get work done (4)
- a nice place to eat. . . good for gathering. . . a **fun** common area (3)
- lots of **daylight for everyone**, a clean, bright, professional space (3)
- meeting and collaboration spaces. . . with tack-able walls and windows so that you wouldn't mind spending the day in there (3)
- single sized offices or all cubes to promote peer to peer and **flat hierarchy** (2)
- co-location of teams marketing, capabilities, sales & pubs (2)
- we need storage in order to maintain a cleaner, client ready, look(2)

Some individuals were more publicly mined in their descriptions of the types of spaces which Forum needed, in the end a mix of public and private spaces could be identified. It can be seen rather immediately that these are not the types of responses which are elicited by the square footage allocation and spread sheets which are used to communicate their spatial needs to their architect. The spread sheet approach to programming seemed to eliminate the opportunity to propose ideas which they had actually already had. There was not any place on the form for discussing their ideas about collaboration spaces, day lighting, or client accessibility, much less for being able to evaluate the usefulness of any of these spaces in relation to their other goals and objectives.

Headcount by Department

Department	Headcount #	Cubes Large	Cubes Small	Offices Large	Offices Small
Accounting	2	1	1		
Delivery	16	5	7		4
Capability	13		7	1	5
Publications	6		5		1
Executive	2		1	1	
Reception	0	0			
Finance	1	0			1
HR	1			1	
IT	4		3		1
Logistics	0				
Marketing	3		2		1
Sales	2		2		
Tax	0				
Training	0				
IIR Recruiters	3		2		1
East Team	1				1
	54	6	30	3	15

Figure 33

The third area of investigation from the interviews was in establishing an understanding of the ways in which Forum would judge their own success or failure, and that of their architects, at the end of the project. Again these responses were assessed by reviewing all of the interviews. Most of these quotes were in response to the final question "how will you know that Forum has been successful in creating a new home for itself?" however, some are taken from elsewhere in the interview.

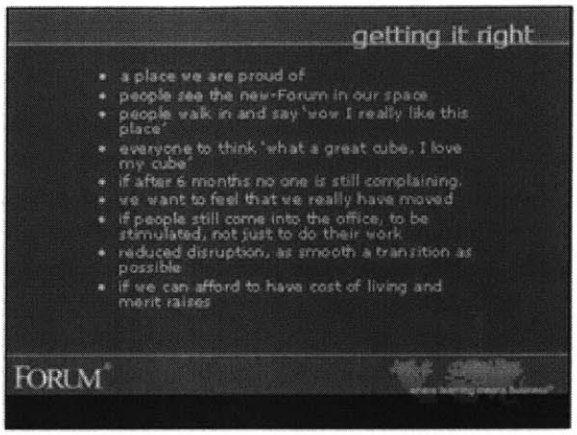


Figure 34

- a place we are proud of
- people see the new-Forum in our space
- people walk in and say 'wow I really like this place'
- everyone to think 'what a great cube, I love my cube'
- if after 6 months no one is still complaining.
- we want to feel that we really have moved
- if people still come into the office, to be stimulated, not just to do their work
- reduced disruption, as smooth a transition as possible
- if we can afford to have cost of living and merit raises

These replies are some of the broadest, showing a desire both to create a space which is accepted and adopted by the group at large but also to remain in budget. Other goals are seen in making a space which is reflective of a changed identity; this corresponds well with the ideas expressed regarding the overall design agenda.

Three significant discontinuities were seen upon summation of the interviews. The, first already discussed, being the difference between the design agenda communicated in interviews and that which was conveyed in the programming documents presented to the architect. The second was that when interviewees were asked about any recommendations which they had for soliciting broad input on the upcoming relocation the general consensus was that the relocation committee did not want to ask any questions if they could not deliver on the answers. Therefore, despite the stated goal of broad acceptance for the new design, Forum remained hesitant to involve any more internal people in the design

process. The third conclusion was arrived at upon comparison of gaps between stated design goals and the corporate challenges. Though valuable on their own, the goals of buzz, fun spaces for all, tack able walls and collocation of groups did not seem to address the current corporate challenges identified in section one. At this point, the themes were used as a filter to consider the areas where Forum's relocation project could be leveraged to impact on corporate challenges currently faced. The following areas were identified and presented to Forum during a reporting session.

- Client Focus
  - Demonstrating forum capabilities to market and potential clients
  - Efficient staffing, on the fly re-scoping and re-pricing of projects
- Culture
  - Developing a hybrid of new and old forum culture to provide highest quality service and maintain profitability
  - Promoting the Forum culture to out-of-office employees
- Knowledge Management
  - Transmitting knowledge of capabilities to new and out of office staff
  - Developing new capabilities and regaining lost forum knowledge

planning an approach

Feedback after the presentation of the material listed above was extremely positive. Members of the Forum relocation committee were extremely sensitive to the numbers of interviewees who considered Forum a non hierarchical peer-to-peer working environment and believed that given the logical limitations of the building, that daylight for all should be a driving factor. Individual members expressed their desire to reconsider the architectural program, including more open spaces and fewer private offices. During the meeting, Forum CEO even began coming up with his own metaphors for the types of space which might be part of the new offices. However, no one recommended sharing the actual findings with their architect. Rather, they were happy to translate their thoughts into a revised summary of office sizes and workstation counts.

On the matter of including more people in the design process, Forum remained hesitant, the major factor being that of not wanting to make any promises about who would get what in the new space. Although the themes and their constituents could be used to establish an appropriate group or team with

whom to develop design ideas, there was no restructuring of the design advisory team base on the interviews results. The active members remained: Forum CEO participated but relied on the Director of Human Resource and the VP who actively sought input from the IT manager. The two regional directors seemed to be involved just enough to ensure their own spaces were satisfactory and the group rarely communicated with other individuals.

At the conclusion of phase one, Forum revised their architectural program and planned to communicate this to their architects, who would begin drafting a layout as soon as Forum confirmed their choice between two floors in a nearby office building. The only other additional piece of information from the interviews which was communicated to the architect was the desire for several adjacencies to be included in the floor configuration: marketing and publications. This information transfer was initiated by a query from the architect during a programming meeting. If the architects were acting as workplace consultants this would be an appropriate time to begin considering metaphor development, moving from the architectural goals defined and the strategic agenda of client focus, culture development and knowledge management into preliminary programming. The items which have been identified as goals and for which a means of achievement seems accessible, could be developed as concepts and options with the client these might include group discussions or design sessions on what buzz, democratizing daylight, flat hierarchy, proximity, and field office mean to Forum employees. The items which had not previously been identified, but appeared through the use of the theme filter, may be recommended for further survey and data collection.

Figure 35

In this case additional studies of Forum's current working environment especially as related to the characteristics of people's usage of space were recommended. Forum agreed to an observational study of their workspace and an internal network survey of the staff based in the Boston offices. The analysis of which would focus on Forum's accessibility to client (via spatial depth studies and

mapping a project path), their physical and organizational culture (through observations & network survey), and their means of communicating knowledge and providing connectivity (space-network survey).

physical assessment

Given the nearly 60% vacancy rate of individual workspaces on the floor and the mass of excess space available to all Forum employees, there is a wealth of information available from observations. People's personal preferences as well as the cultures of individual groups are bourn out in the ways in which they have chosen to organize themselves. There are clues about personal and cultural relationships, as well as spatial needs. There is valuable programming information available to the careful observer. In the absence of any other occupants, certain areas have been taken over for both public and private uses, from group workspace to personal filling. There is also the possibility of gleaning more generalizable information about individual preferences through an analysis of where individuals have chosen to settle.

n.b. At the conclusion of this report, data regarding the observational studies at Forum, as well as the network surveys were still being processed. This report provides a reasonably clear description of the features of the first phase of the recommended workplace design process. The author will continue to study and report on Forum's experience in order to improve understandings of the process and its uses.

There is an almost in finite list of options and possibilities for survey options and observations. However, it is only through the regularized inclusion of social studies and business metrics in the assessment of architectural projects that we will be able to disentangle these factors. If architects make a conscious effort to do so, we could be continually expanding our capabilities and continue to gain a greater understanding of our own impact. The above described processes and tools are not so much systems for approaching design. Rather, in practice they serve two critical roles. First by moving from the qualitative to the quantitative, comparing sensible characteristics of space and how we occupy it, with rigorous descriptions of their physical characteristics we may be able to come up with some understanding of their correspondence. Secondly, they work to expand the topics of conversation and understanding that may be communicated between architect and client. This exploration of tools for commutating about options, comparing alternatives and evaluating successes and failures is an exciting task.

However, if architecture and business do not develop the means to communicate about what is most important; projects are doomed to miss their potential strategic accomplishments. This requires a great deal of work in order to avoid using the default approach. For example, during a planning session at Forum, the architects were concerned with geometric relationships between Forum's work groups, and asked the question. Members of the relocation team explained that there were several groups who shared information. Since the matter of adjacencies was one of the few bits of information shared with the architects, these connections became priorities, by default. Later on, Forum realized that reducing the apparent hierarchy between groups was more important to their strategic goals, than the adjacencies. Here, it becomes apparent that a large part of the work ahead is in expanding the spatial vocabulary necessary to establish useful priorities. Giving Forum a new set of terms meant the ability to consider other priorities and to begin weighing options.

Future researchers are encouraged to read broadly in anthropology, social science and organizational behavior. Exploring not only what architects see as

building's reception, but how these are interpreted by the rest of the world, analyzing architecture projects as they appear in the popular and business press. Researchers and practitioners alike must develop an advanced understanding of corporate organizations and their own points of self evaluation so as to better assess the contributions of architectural accomplishments.

Appendix (A) Theme measures and metrics

01. external identity and client communications

External identity and branding may be seen in the use of design for developing and controlling a distinct visual identity associated with a company, its products and services, including efforts in marketing and client communications. This theme is demonstrated by companies as a method of strengthening corporate identity and may include benefits to both customers and the general public. Within the set of example cases, this theme can be seen to be operating at two scales, one focused on current and future clients the other on a more general public image. This second, more global sensibility is often seen in the desire to satisfy neighbors or other civic constituents.

Internal advocates or stakeholders include professionals in both marketing and sales. Therefore, their metrics may be useful in determining successful architectural interventions. These metrics include brand recognition, market share, marketing budget, number of customers or clients, location and intensity of exposure, visibility within target market, time and location appropriate image presentation, continuity of image including visual connectivity and recognition of elements from stationery to building façade, image correspondence with type and quality of products and services, professional and industry reputation.

Current readings on marketing (MKT) tell us that two significant aspects of investigation should include, image continuity and branded customer experience, and access to market needs. For image continuity it is important for all of the various components of the client interface to match or coordinate. This coordination through several medium is often a challenge, and must also be well aligned with the company's internal values, intentions and policies. The second important component of modern marketing is the idea of a branded customer experience: the continuity of brand during a service experience or at points of face to face interaction. The design of this experience demands attention, regardless of whether your customer interaction is over the phone, at a booth at the mall, or in your own office. In case there is any opportunity for any interaction with your brand, the

customer's experience must be considered. For example, Fidelity Investments has decided that any building which has the Fidelity name on it must offer customers a remote banking opportunity. This has meant that some of Fidelity's buildings around town do not have any sign of their occupancy, in order to protect the clarity of the branded experience. A third component of marketing is the ability to present to potential customers the benefits of working with or purchasing something from your firm. This often means a level of physical or apparent openness which might not otherwise be pursued, both so the customer can see in and so that your development can see out.

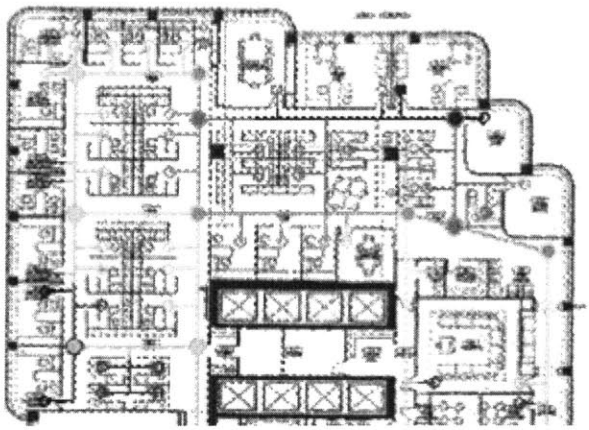
strategic assessment interview questions

- Describe a recent marketing campaign or effort.
- In what ways does your company communicate with current and future clients? How could this be improved?
- What are your (internal) sources of information for developing marketing materials? What are your external sources for feeding back client needs to your development teams? How could this be improved?
- By what means do you interact directly with your clients? Do clients come and visit your space? Or do you go to theirs?
- What are your greatest challenges as marketing manager?
- How do you see this changing in order to reach future markets?
- What message do you think your current space is communicating to employees? To customers? Future, current?
- Please describe your company in the way which you would like it to be perceived from the outside? By clients, by the general public?

formal investigations

After assessing the needs and desires of a company in relation to their own marketing agenda, the following architectural analysis might be use full. In the case of an office renovation a company might consider investigating some of the flowing relationships between spatial characteristics and their external identity.

[A] A **space syntax analysis** may be used to explore how the depth of space within the office is leveraged in order to provide the best possible experience to a visiting customer. Use this analysis to optimize the visitor experience, whether this is in the path to the executive conference room or through a great-clients gallery.



[B] An assessment of the first few points of contact which a new or existing customer has with an organization. These first few moments set the tone for future interactions with client or customer. Content should be immediately accessible within **six clicks.** A parallel study of several different formats of interaction, allows for a diagnosis of any gaps in the experience. Also by comparing, for example, a web experience with an office visit, the continuity of several forms of customer experience may be assessed. [This investigation may also be used to consider the perspective employees experience and to assess whether an appropriate experience is being created.]

program development

After developing an understanding of what is being communicated by their space, and the means by which this is occurring, it is then possible to begin strategizing about alternatives. Client and designer may explore together "what is communicated by the options which you are considering for the design?" And then develop images to be expressed through the portions of the office which are open, visible to the client. Develop the client spaces within an office in the best possible way in order to facilitate promotion of the desired external identity. In these ways it becomes possible for space to be

visually and strategically aligned with directions for client development and customer fulfillment.

02. employee attraction and retention (internal identity and culture)

At the intersection of architecture, human resources and recruiting can be found the theme of employee attraction and retention. This is considered to be the use of design to attract the right individuals and to maximize employee satisfaction or morale. This may also include the retention of key employees. Some effective examples include the use of design focused on the physical health and personal needs of employees. Again, measures of success and failure may be seen in terms similar to those often measured by human resources and recruiting professionals. Metrics of success may include increased employee retention, reduction of churn or rate of turnover, high corporate morale, low occurrences of sick leave. Furthermore, this corresponding set of metrics suggests that employee satisfaction surveys, standard to the human resources practice, could be useful in both diagnosing and assessing architecture.

Lessons from the human resources and recruiting (HR&R) departments are seemingly infinite. Top among them include aspects of hiring and training, and employee satisfaction, as well as maintenance and development of corporate culture. Before you even have employees, it is important to understand the experience that potential hires will have; then to design this experience using people, processes and place. For example, head hunting firms may be ineffective in getting the precise type of people who will work best for your company partly because of the reduced interaction they have with their hiring organization (need for self assessment and direct interaction). Once employees are onboard, several factors point to the importance of keeping them. First, hiring and training a new employee costs roughly the equivalent of six months salary (important to hire and keep the right ones). Second, loss of employees can mean loss of knowledge held by the company. Finally, employee satisfaction and moral may have an extreme effect on the productivity and performance of both individuals and groups.

This employee moral is highly dependant upon both physical and social environment (ways to keep the right ones). Day-lit and environmentally flexible buildings have been seen to cut down on sick leave taken by employees (this may be more about efficiency).

A related but much less well developed theme is that of the use of design to strengthen or promote a broad understanding of corporate culture. This can be seen through the explicit denotation of corporate goals values and agenda in the physical environment. This could also include the endorsement of particular behaviour and attitudes, the use of space to inculcate employees into a way of functioning in a particular environment, and the alignment of individuals within a group. These projects use both visual and physical references to promote corporate culture. Furthermore their proliferation may be seen in times of increased rates of turnover, since this kind of physical messaging system becomes both more powerful and more important when companies are experiencing either fast growth or high rates of turnover.

Corporate culture and moral are also critical elements of this discussion. Corporate culture has been considered in many ways from the most important driving force for an organization, to the key difference between "success and failure," it has been cited as the critical formula for commitment, and the instrument for providing employees "motivation, satisfaction and security." In any environment from the landscape, to the city streets, to the interior of a home or office, the physical setting is a powerful signal of all that culture contains. Physical space is suggestive of strong cultures, it is informative of accepted norms and values, and it communicates beliefs and propagates power relationships. In the corporate environment space can no more be ignored than culture, they are reciprocal.

While the basics of employee satisfaction may be accomplished by compiling a checklist of employee amenities (day lighting, fitness center, café) the support and enhancement of employee culture through physical environment presents a more complicated deign challenge.

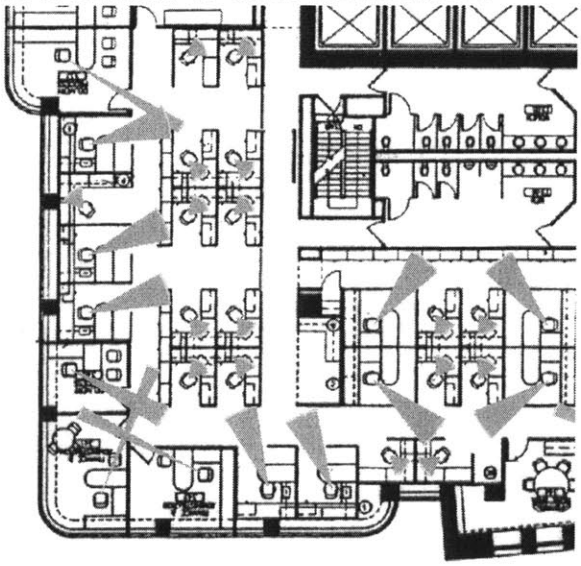
interview questions

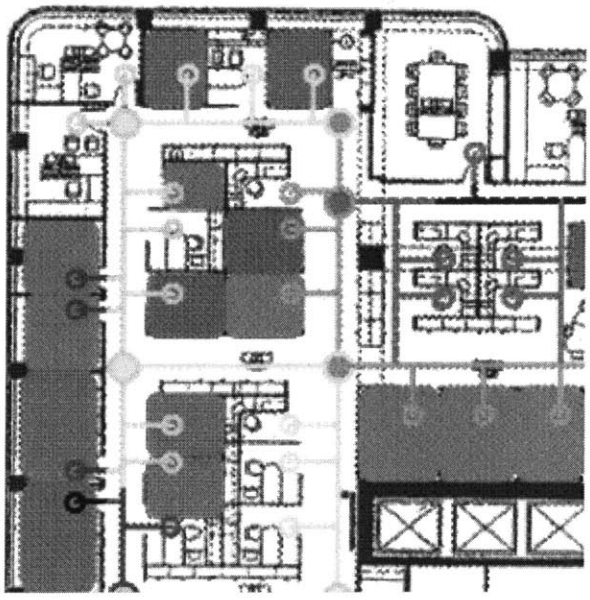
- What is expressed versus what appears of your corporate culture? are you saying what you want to with space?
- What is you space saying right now? What does it say about hierarchy, equality, inequality, valuation of individuals?
- What types of people are attracted and why? Why do people work here? Why do they stay here? Why might some one leave?
- What characteristics does the company look for when hiring?
- How are employees evaluated?
- What is the structural relationship between managers and subordinates?
- What are the metrics which indicate success or need for improvement for individuals or groups? What are your means of soliciting information about how people are feeling or performing within the company?
- What are your greatest challenges as human resources/recruiting manager?

formal investigations

As with other themes and means of using architecture in corporate expression, it is first necessary to identity what is to be presented, then to explore way to achieve this. In the case of a company which desires for their employees to work on a peer-to-peer basis, with a flattened hierarchy and mutual respect of ideas between individuals, an assessment of their physical spatial hierarchy may be extremely valuable.

[C] The hierarchical structure of the organization is most often seen in the size, finishing and proximity to a window of each workstation. However, **cones of vision** show that the extent and directionality of view provided by each individual workspace is also suggestive of several components of the culture of the organization. In addition to employees' classification within the organization, the stations configuration also signifies the intended amount of interactivity of the individual. Generally executives and consultants have offices which provide only a very sliver of an interior view (through an open door into the hallway). They are presumably facing out of, rather than into, the organization. Functional managers have a broader interior view, often with their task chair facing the opening in their cubby wall. Finally, the standard cubicle is configured so that the worker faces into a corner containing a computer, this being the focus of their work. Here we can see that the work station is a physical instruction. Informing each occupant of the task which they are

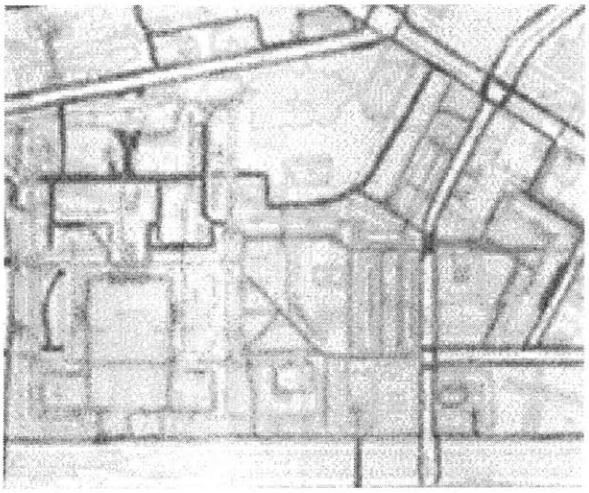




supposed to do. Therefore, in order to change the **instruction** we must change the configuration of space. [See also relationship between cones and individual choices about occupation, as well as how this diagram is used to consider knowledge management in transfer-contact points]

The same **space syntax analysis [A]** may also useful in considering the level of privacy or exposure offered to each individual. Individuals not given the right to determine their own level of accessibility can be detrimental unless replaced by an alternate group culture (see boarders and boundaries). Significantly, there appears to be an effort to regain some of the limited accessibility achieved in offices, by locating workstations in rather circuitous configurations. (Dysfunctional attempts to counteract design decisions?) This level of exposure is a significant component of the culture of an organization, open and exposed versus closed and competitive? Is the openness chosen and collaborative or is it demanded for supervision purposes, the instantaneous configuration would not be able to determine this situation, but the space syntax might begin to show how and why these decisions are being organized and adopted. [See **selection of space** based on extent of exposure]

[D] Identify pathways, nodes, edge conditions, and landmarks within the space. How do these contribute to individual, organizational or group identities?



[E] Identify primary, secondary and tertiary routes. Where are people located on these paths? Does this suggest a prioritization within the organization of one group over another?

[F] Elements of corporate culture may also be seen in such spatial characteristics as percentages of space used for public versus private activities, designation of zones of use by various individuals within the organization (by function or by rank) and their intensity of ownership or differentiation between sets of users, department boarders and boundaries. [see also the proximity and density studies considered in the knowledge management section]

program development

In response to the findings of both the interview and the physical analysis, architect and client may begin to evolve an understanding of the way that space is being used by an organization and the ways in which corporate culture may already be affected by such physical configuration. Collective exercises may then include the following

- Analyze HR blueprint in relation to space layout. Assess for alignment between verbalized and physical hierarchy and control relationships.
- Discuss expressiveness of office as designed in relation to current and future employees.

These conversations may then become the foundation for future designs options.

03. information technology

Information technology like architecture may be seen, not as a goal in itself, but as a means of accomplishing other corporate agenda. In this way architecture and IT can be seen as a team, reinforcing one another. Therefore, the strategic directions of each should be well coordinated. During the early 1990's IT was one of the strongest and most frequently cited (by clients) reasons for needing to reconfigure space. As a result IT consultants either internally or externally are almost always included on a workplace reconfiguration team. The theme of virtual and distributed work includes both virtual and global communications systems as well as the facilitating and integrating of this with local, existing or onsite work. It may be described as the use of design to support the integration of information communication technology (ICT) into business practice, or to increase the flexibility of location in staff work styles especially as this may relate to a potential diminishment of employee culture or strains on corporate knowledge management. This may also include physical facilities for increased telecommuting, advanced telecommunications and the development of non-territorial work spaces. Some companies have completely reconfigured their physical environments in order to accommodate such virtual work space; their spaces are open and flexible allowing access and promoting movement. Metrics for assessing the

successful coordination of IT and space design strategies may include reduced transportation expenses, increase of conference calls, company wide use of intra-net, time to set up virtual conferencing, increase or decrease in phone/e-mail usage, percentage of in-office versus out of office correspondents, rate of usage for virtual options and appropriate use of IT protocol.

Hot topics in information technology (IT) change almost daily, as the technology of communications continue to rapidly evolve. For the past decade people have begun to work increasingly in "informal, ad hoc and agile ways." University students who are at the liberty to determine their own schedules and work styles can often be seen as the forerunners of digital work environments, even if they don't have the money for Blackberries that some corporate executives do. Unlike some other topics, the relationship between changes in IT and corresponding needs for alteration of physical work environments is generally accepted, if not necessarily well understood.

interview questions

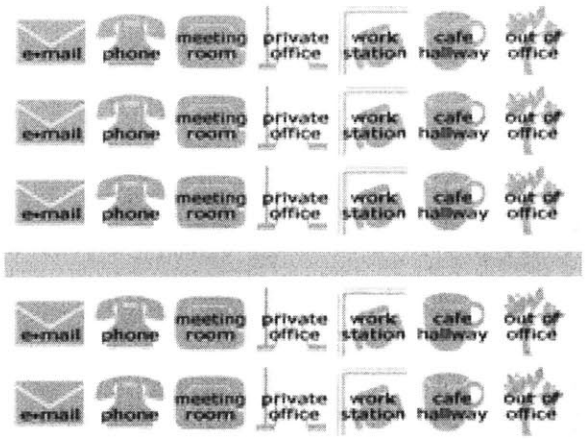
- Describe year out flexibility plans and recommendations? Where are you now? Where are you going? What needs to change, people, space and technology wise?
- What is the corporate wide extent of use of digital communications, between which individuals. Are some groups making better use than others?
- How well are protocols for IT service solutions known and used by the company? How has your office been spatially configured to induce this? What are the costs and benefits of proximity for different services or groups? Can this be accomplished by other means?
- Within your support groups, how is IT rated as a service? versus IT as infrastructure?
- What is the comparative level of physical accessibility versus accessibility by policy?
- Do you see a strain on IT department by remote workers?
- Do you have a corporate plan for the integration of wireless and other up coming technologies in to the office?
- Does your IT strategy include plans for evaluating whether or not a new technology could be useful? How does this include matters of the built environment?
- By what means are industry wide technology changes assessed or anticipated?

formal investigations

[F] Assess proximity of individual workstations to designated IT or service spaces including printers, teleconferencing, etc.

[G] Flexibility map showing regions of space which are configured for upcoming changes in technology, versus spaces with standard configurations. This may also show individual or public workstations and their capabilities.

[H] Virtual network analysis showing multiple forms of communication and locator index.



04. internal and cross functional communication

From the concept of "learning organization" to that of "the creative workplace," the role of knowledge management (KM) is frequently invoked in attempting to understand the internal communications of contemporary companies. For companies increasingly relying on the ability of their talented, intelligent and creative employees to communicate rapidly and productively regarding challenging work goals, this is a critical factor. David Garvin describes the learning organization as "an organization skilled at creating, acquiring, interpreting, transferring, and retaining knowledge, and at purposefully modifying its behavior to reflect new knowledge." This demands dynamism of both groups and individuals, but also an intense coordination of all the potentially available tools of communication from telephones and teleconferencing to the physical arrangement of individuals in relation to one another, propinquity.

At the intersection of architecture and knowledge management the theme of internal and cross functional communication appears. This theme is considered the use of design to orchestrate interactions between individuals who must work together in order to accomplish a common goal,

includes local communications, team, product or divisional coordination and knowledge management, especially when considering an onsite work group. Companies seen as pursuing this have used visual openness, as well as variety in work spaces and use patterns to facilitate cross functional and intra-office communication. Metrics include product development time, speed to market, career longevity, reduction of email traffic between local workers and communication across disciplines.

interview questions

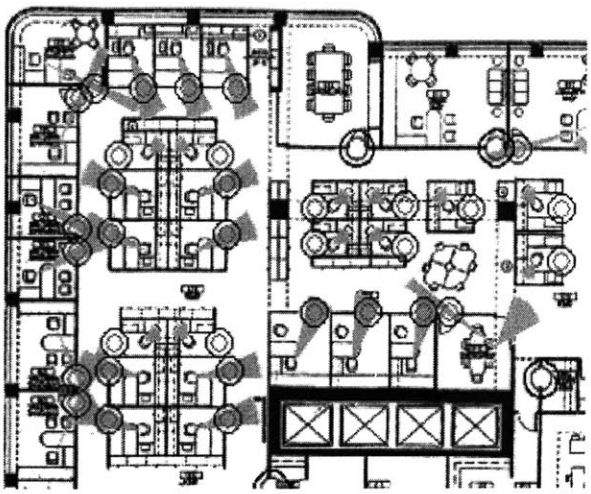
Interview questions not already asked in other sections may include the following:

- What are critical adjacencies? Why are these important?
- What are the goals of these adjacencies regarding the flow of information? Improve input, improve output, and increase total flow or quality of information?

It is important to asses both the quality of relationships desired between groups and the desired directionality of information flow. If this greater degree of detail is not assessed, the danger may be to create generic goals for adjacency. In these cases such proximities may become over prioritized in relation to other components of the design. With increasingly sovereign groups, independent workers and digital means of internal communication, it may be useful to rethink basic assumptions about adjacencies. For example great benefit may be achieved by allowing interlocking spaces, or by managers collected together for strategic communications rather than arranged for overseeing their individual groups.

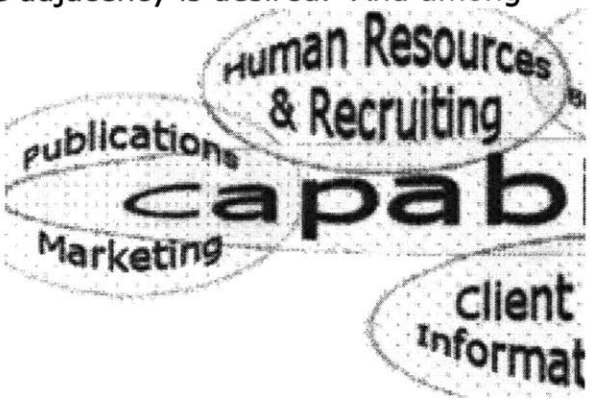
formal investigations

> The previously discussed cones of vision **[C]** investigation may be useful to consider locations where because of a collection of views and proximity of uses a knowledge transfer point becomes possible. There seem to be three components of this occurrence, vision: when several individuals have collective access, visual contact at a particular transfer point.



[J] These **vision cones** may then be compared to overlaps with transition points, when an individual moves from their own space into the larger office, at their doorway or entrance to their cubicle, proximity of these thresholds creates an opportunity for interaction. Alternate usage adjacency, proximity of a location to which some one might go in the course of their work. This could be a copy, fax station or graphics station, a cafe space of a group work desk semipublic or group use space.

[K] Directional **adjacency study**, it is critical to an understanding of adjacencies, to consider why the adjacency is desired. And among divisions with desired adjacency, directionality of information flow is critical. Should the funnel be facing inward or outward in the relationship between the two? it is hardly worth making the effort to create the adjacency if this geometry is not also considered. A rings analysis could get an overall picture of info opportunity, distribution of groups, rings assessment and the total number of individuals or group members who are within a total proximity to one another.



Virtual as well as **local network** analysis **[H]** show intensity, direction and character of relationships between groups and individuals.

The **space syntax [A]** may be used to assess intra- group and inter-group proximity. The effective distance from one individual to another, including relation between leaders or individuals at a mix of levels or specializations.

[L] Through a comparison of individual **group densities** one could asses the tightness of each group - this might also be useful for comparisons of the culture of one group relative to another.

[M] Analysis of **edge, boundary and boarder** conditions. These lines are critical to cultural analysis for the purposes of identity creation the same assessment is valuable in this case to consider intensity and opportunity for information transfer between groups.

program development

In addition to working to reduce rates of turnover, increasing employee moral, establishing visible means of accomplishment and clear expectations, physical proximity can be a valuable tool for knowledge management. It is, however, necessary to include an understanding of both physical and organizational scale when considering the relationship between architecture and knowledge management in terms of proximity. Scale informs both aspects of culture and informs architecture's means of resolving proximity. Within the corporate environment the desire for increasing proximity may exist at the building scale where the goal is to consolidate several divisions into a single building or to locate multiple national divisions in a single corporate campus. Such proximity could also be considered at a smaller scale, involving the collocation of several groups on a single floor, increasing access between individuals on a team or in a particular line of research specialization. This approach has also been seen in the reduction of barriers between individuals already located in the same or adjacent spaces. In this case it is the materials and the internal configuration that become critical to accessibility or transparency.

05. productivity and creativity

The theme of productivity and creativity is probably one of the most well explored areas of workplace design and programming (rhetorically well explored, if not scientifically well explored). Research and design work have focused on types of work, spatial performance and physical provisions for physical and intellectual needs. These studies have often been focused on the individual, and concerned with the task functions of employees. In these studies, ensuring a match between physical needs and individual work styles has been achieved primarily through either the intense personalization of space to meet user needs or by providing workers with a broad mix of

environments that individuals may choose between depending on their immediate needs.

The theme of productivity and creativity is seen as the use of space to provide the maximum useful facility for productive staff, to promote creative thought, facilitate productive work habits. From marketing firms, to software companies and consulting offices, space has been used to enhance the intellectual and creative stimulation of employees. Sample companies have invested in creative environments which are rich in visual and physical resources so that ideas are not abandoned for lack of a means to take the next step. Though often considered the responsibility of functional and project managers, metrics for this theme may be assessed from a variety of sources. Useful metrics include increased revenue per employee, employee confidence, creative product development, sources of employee motivation, workplace satisfaction and performance ratings, percentage of work spaces appropriate to work styles, number of workspace options.

Unlike knowledge management which is often considered from a total organization perspective, the role of functional and project managers (PM) is often responsible for establishing an environment which provides for productivity and creativity. These are actually two rather different concepts; however, both are tightly connected to the ability of the social and physical environment to provide for maximum effectiveness. In the case of creativity this may mean a mixture of different spaces, for different purposes, which each stimulate creativity and provide resources immediately available at any moment in time. For different organizations this may imply either a tight space fitting precise tasks and well endowed with supportive materials or a loose fit of open, reconfigurable spaces and blank surfaces. As, Fritz Steel recommends the relationship to the space, "images and visual cues in the work setting can also set a tone either to inhibit or stimulate creativity." Though he admits that it is impossible to program creativity, Steel continues; "it is possible to influence the *pattern* of experiences over time, increasing the probability that new ideas or connections will occur to people who can do something with them." As knowledge management is about the convenient

connection of ideas and people to one another; creative productivity is a matter of the proximity of people to the means of pursuing their ideas. Furthermore it is a challenge of managing how these might differ between tasks and individual preferences. (See also day lighting and shopping, day lighting and test scores.)

interview questions

- What should the company be focused on doing now and in the future? What types of spaces are needed in order to pursue these goals? How do work styles need to change in order to pursue this?
- What are the spaces that people need in order to achieve individual and group goals?
- Do individuals have constant needs that are resolved by their individual work stations? Is there a need for variation in the work environment?

An assessment of which groups are most productive and then an investigation of how they appear to be working could also be valuable to apply in other parts of the company during the design process.

formal investigations

[N] The ways in which individuals currently occupy their work spaces may be very informative about their physical space needs. The **pirate space analysis** is an investigation of space in use, how individuals have used the space around them. It includes an identification of space use typologies as associated with individual groups, for example storage, public work, private work, project space, conferencing, loud talking spaces.

[P] Space options evaluation is a mapping exercise showing the number of different types of spaces which are available for use by individuals at one time. This study considers whether or not the current configuration encourages employees to leave the office when they need a change of environment, more quite, louder, more bright. Or are they able to seek different accommodations within their office environment?

[Q] An investigation of **edge, boundary and boarder** conditions as discussed in previous section may also be useful regarding group identity and related performance. This could then be followed with a discussion of various personalities of work groups, levels of access and mix of spaces.

program development

In order t progress from assessment to a description of the desired working environment, **[R]** workplace and **work style questionnaires** may be used. Workplace consultants including those at DEGW use such questionnaires to identify how people are working, how they would like to change their work, and how they might work in the future. These studies include the measurement of factors including:

- Descriptions of work functions (work style)
- Satisfaction with work environment
- Prioritizations of key workspace features
- Time and use of space studies
- Adjacency studies

06. spatial efficiency and performance

The final category of consideration is that of spatial efficiency and performance. The theme of spatial efficiency and performance includes goals for the maximum or multiple uses of space where size, price and use of space are considered. This theme may be defined as the use of design to optimize spatial performance through efficient planning and multiple uses. This may include using space layout as well as physical and technical elements of a building to cut waste in business practice. Though usually considered a constraint, when pursued creatively these can be positive driving forces behind a design. Similar to the other themes investigated, spatial efficiency and performance appears to be practiced in several different ways. This type of space optimization may be achieved through reducing the actual costs of space or of running it, increasing the uses of space through timing or flexibility, or finally by improving the control mechanisms by which space is held. Advocates and stakeholders include facilities management but may also be influenced or even controlled by a holding company or corporate real estate. Metrics include cost per square foot, square foot per person, maintenance cost per square foot, product per unit area, occupation of space per person per unit time. Costs benefits in corporate facilities are often achieved as much though creative real estate, tax incentives, write offs and depreciation as much as by design itself. Claims to increased performance of physical space, for example output per square foot can often result from the

updating of outdated equipment. However, creative architecture, with its geometric expertise, can in fact offer unique solutions for improvement.

Key issues in facilities management (FM) today revolve around several factors including the time allocation of space, use of space by groups and individuals with varying needs and on the means and methods of organizing, controlling and knowing space. Regarding time and use of space, the unrecognized changing habits of workers has had a detrimental effect on the calculated efficiencies of space. Observations in several instances show that associates are at their individual workstations no more than 40 percent of the time (FD, unpublished report). Furthermore, since most meetings are actually small, informal, and short; designated meeting rooms are used at most 23 percent of the time (FD, unpublished report). Since these temporal and human elements are more rapidly changing than their physical components, flexibility becomes a critical topic in the occupation and organization of space. The cost of internal relocation of individuals (some times called drop-add) is significant for both IT and FM costing companies roughly $2000-5000 per person per move. As management patterns or project staffing is shuffled frequently, some companies have been known to move individuals several times a year.

interview questions

Many of the questions discussed in previous sections will be useful in considering the efficient use of space. What may be extremely valuable in the investigation of this theme is the potential discrepancy between actual and assumed usage of space. Often the inefficiencies are a result of assumptions about how or when space is used.

- What is the size and price of the space used? (See typical facilities management and real estate metrics.)
- What percentage of space is used, when and by whom? How do these self assessments compare with data from observational studies?

Department Headcount #	Cubes Large	Cubes Small
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3		2
2		2
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3		2
1		
54	6	30

- Is there a tight or loose fit between your space and use? How close to the desired amount of space can be achieved?
- How will decisions be made about the use and management of space?
- What percent of transient, temporary or transitional staff do you accommodate?
- Are there means of increasing the flexibility of space use?
- What is your reliance on standard programming versus questionnaires?

formal investigations

[S] space and time usage maps can be used to show some of the discrepancies between how a space is actually used and the assumptions which are made by typical programming questionnaires.

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Appendix (B) Project data for theme development

Year	Project	Location	Client	Architect	Building Type
1997	**REI Flagship Store**	Seattle	Recreational Equipment Inc.	Mithun Partners	Retail
1997	**Gemini Consulting Office**	Cambridge, Mass.	Gemini Consulting	Thompson and Rose Architects; Reiter & Reiter	Headquarters Office
1997	**Greater Omaha**	Omaha	Greater Omaha Packing Co. Office	Randy Brown Architect	Corporate Office
1997	**Joseph J. Bulmer Telecommunications & Computations Center**	Troy, N.Y.	Hudson Valley Community College	Einhorn Yaffee Prescott, Architecture & Engineering	Academic
1997	**Nortel Brampton Center**	Brampton, Ont.	Northern Telecom Ltd.	Hellmuth, Obata & Kassabaum and Bregman & Hamann Architects	Corporate headquarters
1997	**Brew Moon Restaurant and Microbrewery**	Boston	Brew Moon Enterprises	Darlow Christ Architects	Restaurant
1997	**Miller SQA Building**	Holland, Mich.	Miller SQA (subsidiary of Herman Miller)	William McDonough & Partners and VerBurg & Associates	Office/Manufacturing
1997	**Unitobler**	Bern, Switzerland	Canton of Bern	Pierre Clemencon, Daniel Herren, Andrea Roost	University
1997	**Origen Center of Phillips Plastics**	Menomonie, Wis.	Phillips Plastics Corp.	James/Snow Architects	Manufacturing incubator and training facility
1998	**Gap Inc 901 Cherry**	San Bruno, CA	Gap Inc	William McDonough & Partners and VerBurg & Associates	Corporate Headquareters
1998	**Waste Transfer Station**	Zenderen, Netherlands	Regio Twente	Oosterhuis Associates	Waste Sorting Facility
1998	**McNitt Building**	oklahoma City, OK	KJ McNitt Construction co	Elliot + Associates	Corporate Offices

Appendix (B) Project data for theme development

1998	**The New York Times Printing Plant**	College Point, NY	The New York Times	Polshek and Partners	Printing Plant
1998	**Osho International Offices**	New York	Osho International	Daniel Rowen Architects	Corporate Headquareters
1998	**Praxair Distribution Center**	Ankeny, Iowa	Praxair Distribution	Herbert Lewis Kruse Blunck Architecture	Processing and distribution center
1998	**Futures by Temps**	Reston, VA	Temps & Co	Adamstein & Demetriou Architects	Retail
1998	**QMR Plastics Div.**	River Falls, Wis.	Quadion Corp.	James/Snow Architects	Manufacturing/office
1999	**Alcoa Corporate Center**	Pittsburgh, PA	Alcoa	The Design Alliance Architects	Corporate Headquarters
1999	**N.J. Housing & Mortgage Finance Agency Building**	Trenton, NJ	New Jersey Housing & Mortgage Finance Agency	Ford Farewell Mills and Gatsch/Johnson Jones	Headquarters for state agency
1999	**MIT School of Architecture & Planning**	Boston, MA	MIT School of Architecture & Planning	Leers Weinzapfel Associates Architects Inc.	High-tech school environment
1999	**Republic Inc., Chicago**	Chicago, IL	Republic Inc.	Booth Hansen Associates	Corporate Headquarters and Manufacturing Facility
1999	**Astra France HQ**	Paris, France	Astra France Holdings	Jean Paul Viguier Sa D'Architecture	Pharmaceutical Laboratories Headquarters
1999	**Robert L. Preger Intelligent Workplace**	Pittsburgh, PA	Carnegie Mellon University	Bohlin Cywinski Jackson with Pierre Zoelly	R&D Facility

Appendix (B) Project data for theme development

1999	**La Marina Preschool**	Manhattan Beach, Calif.	La Marina Preschool	Studio 9one2	For-profit school
1999	**Helmut Lang Boutique**	New York, NY	Helmut Lang	Gluckman Mayner Architects	Retail store
1999	**ABB Power Generation HQ**	Baden, Switzerland	ABB Power Generation Ltd., ABB Immobilien (real estate div.)	Theo Hotz	Headquarters
2000	**Mahindra United World College of India**	India	Mahindra United World College of India	Christopher Benninger & Assoc.; Peter Wilson & Assoc.	College-preparatory school
2000	**Ground Zero Headquarters**	Marina Del Ray, Calif.	Ground Zero	Shubin & Donaldson Architects	Office for ad agency
2000	**Saint-Hyacinthe School**	Quebec, Canada	Saint-Hyacinthe, Quebec, Canada	Architecture-Urbanisme	State-of-the-art trade school
2000	**Rose Center For Earth & Space**	New York City	American Museum of Natural History	Polshek Partnership Architects	Planetarium/museum
2000	**Valeo Technical Center**	Auburn Hills, Mich.	Valeo Thermal Systems	Davis Brody Bond	Headquarters
2000	**Hanjin Container Terminal**	Los Angeles	Port of Long Beach	Robert Stewart Architect/Caldwell Architects	Shipping terminal entry-gate complex
2000	**Sticks, Inc.**	Des Moines, Iowa	Sticks Inc.	Herbert Lewis Kruse Blunck Architecture	Commercial artists' building
2000	**Iwataya Passage**	Fukuoka, Japan	Iwataya Dept. Store, NT&K Kyushu Dev. Co.	Walker Group/CNI	Underground passageway
2000	**The Children's Place Headquarters**	Secaucus, N.J.	The Children's Place	Davis Brody Bond	Corporate headquarters
2000	**Fukuoka Prefectural & Intl. Hall**	Fukuoka, Japan	Daiichi Mutual Life, Mitsui Real Estate	Emilio Ambasz, Nihon Sekkei, and Takenaka	Office space
2001	**SAP Global Marketing HQ.**	New York, NY	SAP	HLW International, N.Y.	Marketing offices for a software giant
2001	**Corning Museum of Glass**	Corning, NY	Corning Inc.	Smith-Miller + Hawkinson Architects, New York	Glass museum
2001	**LVMH Tower**	New York, NY	LVMH	Atelier Christian de Portzamparc, Paris	U.S. offices for the luxury-goods marketer

Appendix (B) Project data for theme development

2001	**Wieden + Kennedy HQ**	Portland, Ore.	Wieden + Kennedy	Allied Works Architecture, Portland, Ore.	Office for ad agency
2001	**Custom-Molding Facility**	Phillips, Wis.	Phillips Plastics, Phillips, Wis.	Krueck & Sexton, Chicago	Manufacturing plant for plastic components
2001	**Chesapeake Bay Foundation HQ.**	Annapolis, Md.	Chesapeake Bay Foundation	SmithGroup, Washington, D.C.	Offices for nonprofit environmental organization
2001	**Saitama Super Arena**	Saitama, Japan	Saitama Prefecture	Nikken Sekkei, Tokyo; Ellerbe Becket, Kansas City, Mo	Multi-use sports arena
2001	**Pedestrian Bridge**	New York, NY	The Rockefeller University	Wendy Evans Joseph Architecture, N.Y., Heidlinger Associates Inc., N.Y.	Walkway connecting housing and laboratories
2001	**Dulwich Picture Gallery**	London, UK	Dulwich Picture Gallery	Rick Mather Architects, London	Art gallery
2001	**Kuhonji Buddhist Temple Gate and Ossuary, Sasebo, Nagasaki, Japan**		Kuhonji Buddhist Temple	Furuichi & Associates, Tokyo	Buddhist Temple
2001	**Water Plant, Philadelphia**		University of Pennsylvania	Leers Weinzapfel Associates, Boston	Chilled-water plant
2002	**Gateshead Millenium Bridge**	Gateshead, England	Gateshead Council	Wilkinson Eyre Architects, London	Pedestrian bridge
2002	**Texas Children's Hospital Clinical Care Center**	Houston	Texas Children's Hospital	FKP Architects, Houston	Clinics for children
2002	**Toys'R'Us Flagship Store**	New York	Toys 'R' Us	Gensler, New York	Toy store
2002	**Abercrombie & Fitch HQ**	New Albany, Ohio	Abercrombie & Fitch	Anderson Architects, New York	Corporate offices

Appendix (B) Project data for theme development

2002	**UPenn Department of Facilities and Real Estate Services**	Philadelphia	Univ. of Pennsylvania	MGA Partners, Philadelphia	Offices for university's department of facilities and real estate
2002	**Allsteel HQ**	Muscatine, Iowa	Allsteel	Gensler, Chicago	Manufacturer's corporate offices
2002	**Celluar Operations HQ**	Swindon, U.K.	Cellular Operations	Richard Hywel Evans Architecture & Design, London	Corporate headquarters/ call center
2002	**Valeo Electrical Systems Plant**	San Luis Potosi, Mexico	Valeo	Davis Brody Bond, New York	Auto-parts manufacturing plant
2002	**Paul Brown Stadium**	Cincinnati	Cincinnati Bengals	NBBJ, Marina del Rey, Calif.	Football stadium
2002	**Trumpf Customer and Technology Center**	Farmington, Conn.	Trumpf	Barkow Leibinger Architects, Berlin	Machine-tool builders' customer center
2002	**ASB Bank Multi-Use Centre**	Auckland, New Zealand	Dominion Funds Ltd.	JASMAX, Auckland, New Zealand	Single-tenant office building
2003	**Apple SoHo Store**	New York, NY	Apple Computer, Cupertino, CA	Bohlin Cywinski Jackson, Berkeley, CA	High profile retail sore in historic building
2003	**Inn at Price Tower and Copper Restaurant**	Bartlesville, OK	Price Tower Arts Center	Wendy Evans Joseph, New York	Hotel with restaurant and bar
2003	**Gannett/USA Today Corporate Headquarters**	McLean, VA	Gannett Co.	Kohn Pedersen Fox Associates PC	Corporate headquarters for a newspaper and its parent

Appendix (B) Project data for theme development

2003	**Image Net Scanning and Imaging Facility**	Oklahoma City, OK	BMI Systems	Elliot + Associates Architects, Oklahoma City	Production work space
2003	**Sekii Ladies Clinic**	Hurukawa, Miyaga, Japan	Hidetaka Sekii	Hitoshi Abe, Atelier Hitoshi Abe, Sendai, Miyagi, Japan	Birthing Clinic
2003	**Hotel HABITA**	Mexico City, Mexico	Moises Micha	Taller Enrique Norten Arquitectos	Boutique hotel
2003	**Orange Innovations, Innovation Center**	Cambridge, MA	Orange Innovations	Anmahian Winton Architects, Cambridge, MA	US Center for UK based mobile phone company
2003	**Trumpf Start-Up Offices**	Grusch, Switzerland	Trumpf Grusch AG	Barkow Leibinger Architects	New space for startup businesses
2003	**Darwin Centre Museum**	London, England	Darwin Natural History Museum	HOK International, London	Museum and research center
2003	**Sealth/Ogilvy Spec Offices**	Culver City, CA	Samitaur Constructs	Eric Owen Moss Architects, Culver City	New office for media businesses

Appendix (C) Observation reporting form

_____ **date/time**
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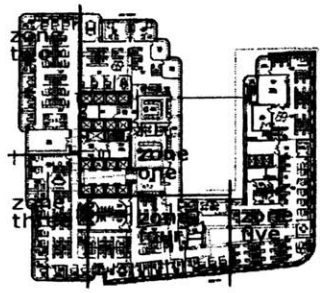

space utilization survey form
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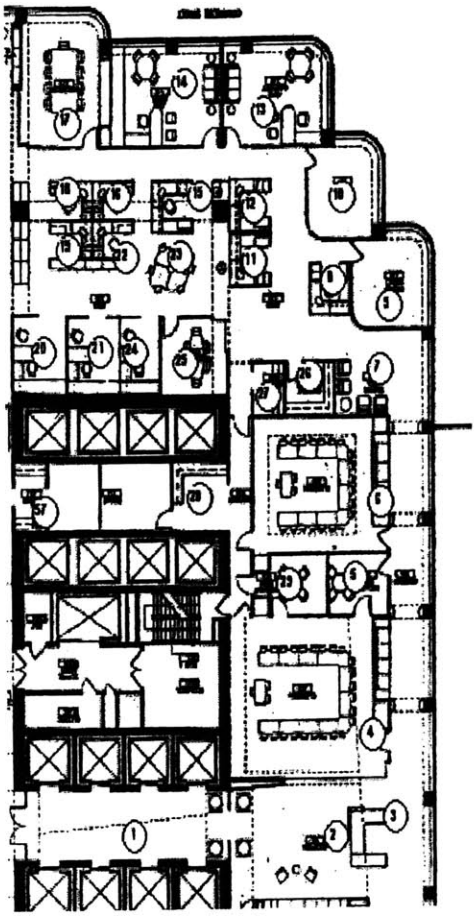
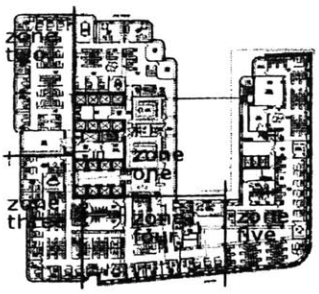


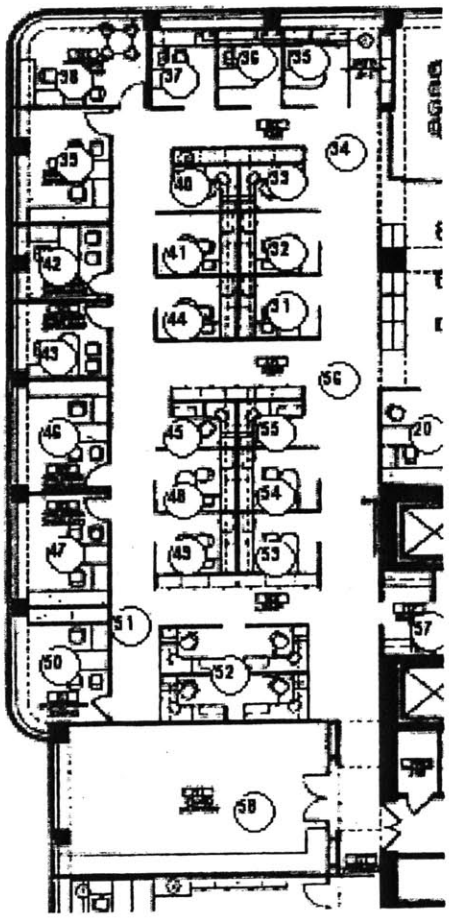
ZONE ONE

Key to abbreviations:
A = away from desk | **X** = no apparent occupant | **S** = used for storage
C = computer work | **T** = telephone | **P** = paper or desk work | **M** = meeting
W = work surfaces used extensively | **DC** = door closed | **DO** = door open

_____ **date/time**
_____ **name**

space utilization survey form
the forum corporation | 53 state street





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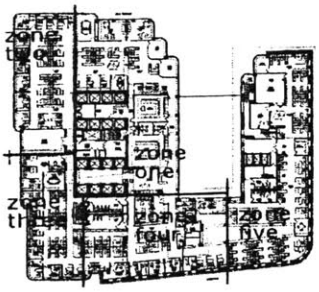
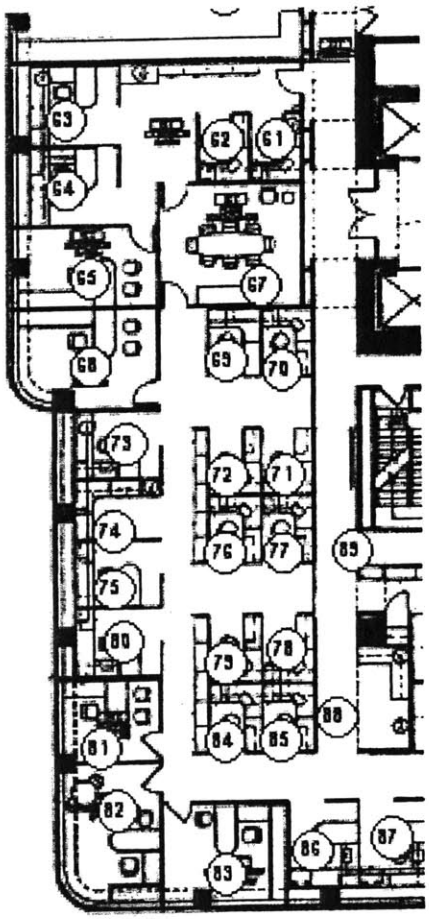
Key to abbreviations:
A = away from desk | **X** = no apparent occupant | **S** = used for storage
C = computer work | **T** = telephone | **P** = paper or desk work | **M** = meeting
W = work surfaces used extensively | **DC** = door closed | **DO** = door open

_____ **date/time**
_____ **name**

space utilization survey form
the forum corporation | 53 state street





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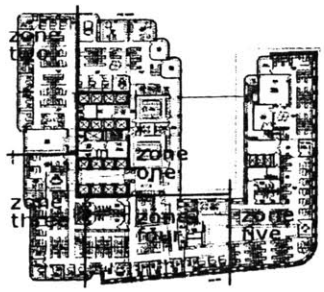
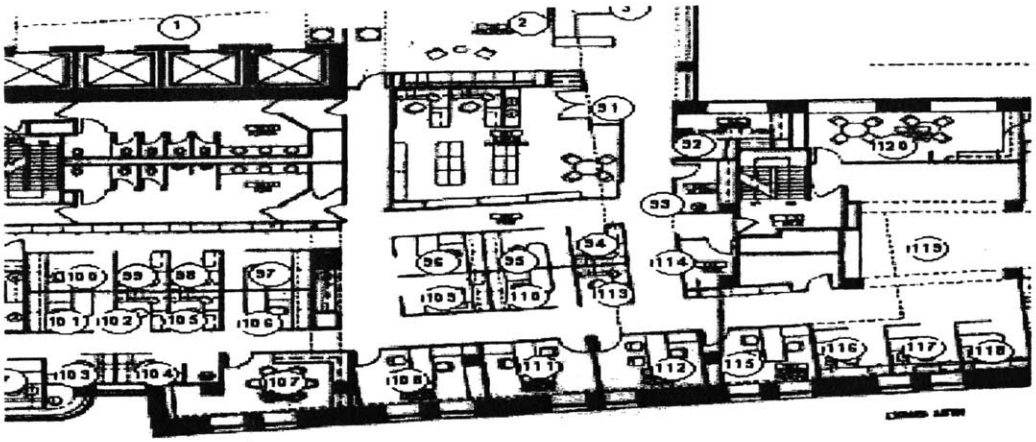
ZONE THREE

Key to abbreviations:
A = away from desk | **X** = no apparent occupant | **S** = used for storage
C = computer work | **T** = telephone | **P** = paper or desk work | **M** = meeting
W = work surfaces used extensively | **DC** = door closed | **DO** = door open

_____ **date/time**
_____ **name**

space utilization survey form
the forum corporation | 53 state street





ZONE FOUR

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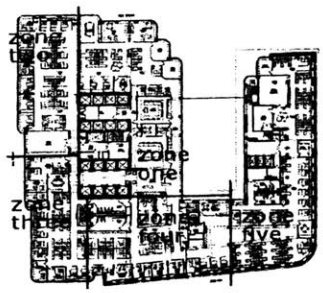
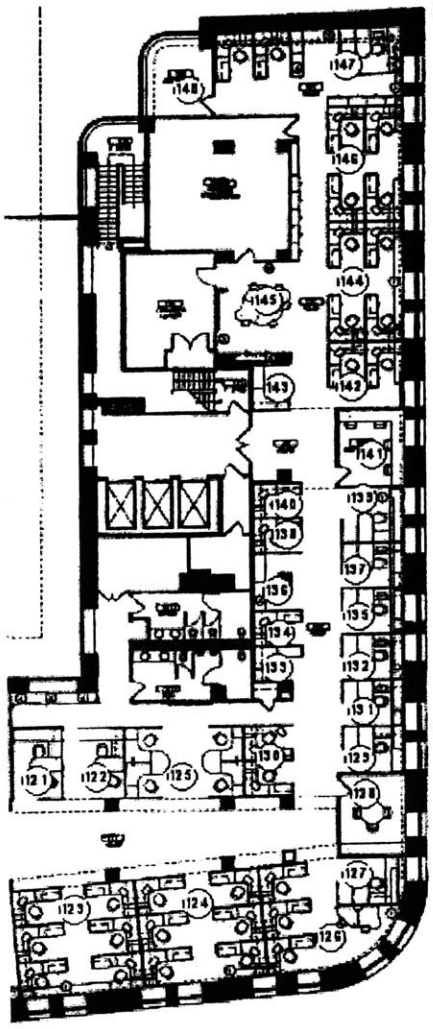
Key to abbreviations:
A = away from desk | **X** = no apparent occupant | **S** = used for storage
C = computer work | **T** = telephone | **P** = paper or desk work | **M** = meeting
W = work surfaces used extensively | **DC** = door closed | **DO** = door open

_____ **date/time**
_____ **name**

space utilization survey form
the forum corporation | 53 state street





ZONE FIVE

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Key to abbreviations:
A = away from desk | **X** = no apparent occupant | **S** = used for storage
C = computer work | **T** = telephone | **P** = paper or desk work | **M** = meeting
W = work surfaces used extensively | **DC** = door closed | **DO** = door open

Appendix (D) Observation report data

data point	group/use/notes	% occs	observe 01	observe 02	observe 03	observe 04	observe 05
[001]	Elevator Lobby	20%	X	X	FP	X	X
[002]	Reception	40%	M (1)	X	M (3)	X	X
[003]	Receptionist	100%	T	M (3)	CT	T (LOUD)	C
[004]	Conference	20%	X	X	DC	X	X
[005]	Not Used	0%	X	X	X	X	X
[006]	Conference	40%	GUESTS (2)	X	DC	X	X
[007]	Not Used	0%	X	X	X	X	X
[008]	Storage/Workspace	0%	X	X	S	W	S
[009]	Human Resources	60%	DO,C,P	DO,A	A	DO,C	DC
[010]	Caps- Executve VP	20%	DO,A	DC,A	A	DO,TC	DO,A
[011]	Guest Use	20%	X	X	X	X	GUEST
[012]	CEO Assistant/Recpt	60%	A	T,C	CT	X	T,C
[013]	CEO	40%	DO,TC	DO,A	A	TM, 2	DO,A
[014]	Not Used	0%	X	X	DC	X	DO,A
[015]	Guest Use	20%	X	X	GUEST	X	X
[016]	Guest Use	20%	X	X	GUEST	X	X
[017]	Conference	20%	X	X	X	X	DO,A
[018]	Not Used	0%	X	X	A	X	A
[019]	Not Used	0%	X	X	X	X	X
[020]	Caps- Publications	60%	C,P	FP	A	X	C
[021]	Caps- Publications	100%	P	C	CT	C	C
[022]	Not Used	0%	X	X	S	S	S
[023]	Not Used	0%	X	X	NO DATA	S	NO DATA
[024]	Caps- Publications	60%	P	A	CT	A, W	T,C
[025]	Caps- Publications	60%	C	DO,A	TC	DO,A	C
[026]	Not Used	0%	X	X	DC	X	DC
[027]	Café- some use	20%	CAFÉ (2)	X	A	X	X
[028]	Not Used	0%	X	X	DC	X	X
[029]	Not Used	0%	X	X	X	X	X
[030]	Not Used	0%	X	NO DATA	NO DATA	DARK PURPLE	NO DATA
[031]	Caps- Publications	80%	C	A	T,C	T	T,C
[032]	Caps- Learning	100%	C	C	CT	T	C
[033]	Not Used	0%	A	X	A	A	X
[034]	Not Used	0%	X	X	X	X	X
[035]	Client Technologies	80%	A	C,T (HEAD SE	TC	T (LOUD)	C,P
[036]	Not Used	0%	A	A	A	NO DATA	X
[037]	Client Technologies	20%	A	A	A	A	C,T
[038]	Not Used	0%	X	DO,A	A	X	X
[039]	Guest Use	20%	DC,TC	DO,A	A	X	X
[040]	Not Used	0%	X	S	S	S	S
[041]	Not Used	0%	X	S	S	S	S
[042]	Marketing	20%	DO,C	DO,A	A	DO, ?	DO,A
[043]	Marketing	60%	DO,C	DO,A	CT	DO, A	DO,C
[044]	Caps- Learning	100%	C	C	CT	C	C
[045]	Client Technologies	80%	T	P	CT	A	C
[046]	Client Technologies	60%	A	DC	A	DO,C	DO,C
[047]	Caps- Research	60%	P	P	A	DO,A	DO,C
[048]	Client Technologies	20%	A	P	A	A	A
[049]	Guest Use	40%	A	X	CT	X	P
[050]	Caps- Leadership	60%	DC,T (LOUD)	DC,T (LOUD)	CT	DO,A	DO,A
[051]	Not Used	20%	X	X	X	FP	X
[052]	Not Used	0%	X	X	X	S	X
[053]	Not Used	0%	X	NO DATA	X	X	X
[054]	Not Used	0%	X	NO DATA	X	X	X
[055]	Not Used	0%	A	NO DATA	X	X	NO DATA
[056]	Not Used	0%	X	X	X	X	X
[057]	Café - not used	0%	X	X	X	X	X
[058]	Document Services	80%	P	P	CT	RADIO ON	C

data point	group/use/notes	% occs	observe 01	observe 02	observe 03	observe 04	observe 05
[059]	Not Used	0%	NO DATA	NO DATA	NO DATA	X	NO DATA
[060]	Not Used	0%	NO DATA	NO DATA	NO DATA	X	NO DATA
[061]	Not Used	0%	X	X	X	X	X
[062]	Not Used	0%	X	X	X	X	X
[063]	IIR Recruiting	80%	C	A	C,T	C	C,T
[064]	IIR Recruiting	40%	A	A	C,T	A	C
[065]	IIR Recruiting	80%	A	DO, M (2)	C	DO,T	C,T
[066]	Not Used	0%	NO DATA	NO DATA	X	NO DATA	NO DATA
[067]	Not Used	0%	X	NO DATA	X	X	X
[068]	Conference	0%	X	X	X	X	X
[069]	Not Used	0%	X	X	X	X	X
[070]	Not Used	0%	X	X	X	X	X
[071]	Not Used	0%	C	X	X	X	S
[072]	Not Used	0%	X	X	X	X	S
[073]	NE Market- Consult	40%	DO,A	DO,A	C	DC,T	DO,A
[074]	Not Used		NO DATA	NO DATA	NO DATA	NO DATA	NO DATA
[075]	E Market- Consult	100%	T (MED)	T (EAT)	C	T (QUIET)	T
[076]	Storage/Workspace		X	A	S	W	A
[077]	E Market- Consult	40%	C	A	A	W,A	C
[078]	NE Market- CSR	20%	C	A	TC	W,A	S
[079]	Storage/Workspace		X	A	S	W	S
[080]	NE Market- Consult	40%	A	P (CONCENTF	A	C	A
[081]	E Market- Consult	40%	DC	DC	DC	P	DC
[082]	E Market- Consult	20%	DC	DC	A	T (LOUD)	A
[083]	E Market- Consult	20%	DO,A	DC	A	A	C
[084]	Not Used	0%	X	X	X	S	X
[085]	Not Used	0%	X	X	S	S	S
[086]	NE Market- Consult	80%	T	C	A	C (TALKING T	C
[087]	NE Market- Consult	40%	A	A,W	C	C (TALKING T	A
[088]	Not Used	0%	X	COPY	X	X	X
[089]	Not Used	20%	X	X	X	FP (COPY)	X
[090]	Not Used	0%	NO DATA	X	NO DATA	NO DATA	NO DATA
[091]	Experience Center	40%	GUESTS (2)	X	X	X	M (2)
[092]	Not Used	0%	X	CLOSET	X	S	NO DATA
[093]	Café- some use	40%	CAFÉ (1)	CLOSET	X	CAFÉ 1	X
[094]	Guest Use	20%	A	GUEST	S	X	X
[095]	Business Ops	40%	A	A	A	A	C
[096]	Business Ops	40%	A	A	C	P	A
[097]	Not Used	20%	X	X	X	X (FILES IN L	X
[098]	Not Used	0%	X	X	X	X	X
[099]	Not Used	0%	X	X	X	X	X
[100]	Not Used	0%	X	X	X	X	X
[101]	NE Market- Consult	0%	A	A	X	A	A
[102]	Not Used	0%	X	X	X	X	X
[103]	Not Used	0%	X	X	C	X	X
[104]	Not Used	0%	X	X	X	X	X
[105]	Not Used	0%	X	X	A	X	X
[106]	Not Used	0%	X	X	X	X	X
[107]	Not Used	0%	X	FILES	X	FILES	X
[108]	NE Market- Consult	80%	DO,P	P	DC	TM, 2 (LOUD	T (LOUD)
[109]	Not Used	0%	S	A,W	S	W	A
[110]	Not Used	20%	W	FP, M (2)	A	W	S
[111]	NE Market- Consult	80%	T	DO, M (2)	C,T	DO,A	DC
[112]	NE Market- Consult	60%	A	A	TC	DO,A	DC, T (LOUD
[113]	Not Occupied	20%	X	WITH 110	TC	X	X
[114]	Not Occupied	0%	X	CLOSET	CLOSET	NO DATA	X
[115]	Not Used	0%	A	A	A	DO,A	X
[116]	NE Market- Sales	20%	A	M (2)	A	X	A

data point	group/use/notes	% occs	observe 01	observe 02	observe 03	observe 04	observe 05
[117]	NE Market- Sales	0%	A	A	X	X	X
[118]	Not Used	0%	X	A	X	X	X
[119]	Corridor	60%	(LOUD)	COPY	X	FP	X
[120]	Lunch room	20%	M (3) (LOUD)	X	X	X	X
[121]	Not Used	0%	X	X	X	X	X
[122]	NE Market- Sales	60%	C	A,S, W	A	C (NEEDS W)	TM
[123]	Not Used	0%	X	S, W	S	S	S
[124]	Not Used	0%	X	S, W	S	X	S
[125]	Not Used	0%	X	X	S	S	S
[126]	Not Occupied	0%	SERVE	P	X	X	X
[127]	Not Used	0%	X	X	X	X	X
[128]	Conference	40%	M (3)	X	X	M, TC (3)	X
[129]	Business Ops	60%	X	X	C	T	C
[130]	Not Used	0%	X	X	S	X	X
[131]	Not Used	0%	X	X	X	X	X
[132]	Info Technology	20%	A	X	A	C	A
[133]	Not Used	0%	X	X	X	X	X
[134]	Not Occupied	0%	X	X	S	W (BOARD)	X
[135]	Info Technology	40%	A	X	C	A	C
[136]	Not Occupied	20%	X	X	S	COPY	X
[137]	Info Technology	40%	A	C	A	C	A
[138]	Not Occupied	0%	W	W	A	W	S
[139]	Info Technology	60%	A	M (3)	C	W	C
[140]	Not Occupied	0%	W	W	S	W	S
[141]	Not Occupied	0%	X	X	S	X	DC
[142]	Not Occupied	0%	X	X	S	S	X
[143]	Not Occupied	0%	X	X	S	S	X
[144]	Not Used	0%	X	X	X	X	X
[145]	Not Occupied	0%	SERVE	X	X	SERVE	X
[146]	Not Occupied	20%	C	X	A	A	X
[147]	Not Occupied	0%	X	X	X	SERVE	X
[148]	Not Used	0%	X	X	X	X	X
[149]	Not Occupied	0%	SPRAY	X	NO DATA	X	NO DATA
[150]	Not Used	0%	X	X	NO DATA	X	NO DATA

data point	group/use/notes	% occs	day light class	view type	client depth	executive depth
[002]	A Reception	40%	20%	D multi	01 red	07 blue
[003]	A Receptionist	100%	60%	B mang	02 orange	06 green
[129]	Business Ops	60%	80%	B mang	07 blue	10 grey
[095]	Business Ops	40%	0%	B mang	04 yellow	09 purple
[096]	Business Ops	40%	0%	B mang	03 lt orange	09 purple
[057]	Café - not used	0%	0%	E none	03 lt orange	05 lt green
[027]	Café- some use	20%	0%	E none	07 blue	05 lt green
[093]	Café- some use	40%	0%	E none	04 yellow	08 dk blue
[010]	Caps- Executve VP	20%	100%	C exec	07 blue	01 red
[050]	Caps- Leadership	60%	100%	C exec	07 blue	07 blue
[044]	Caps- Learning	100%	0%	B mang	06 green	05 lt green
[032]	Caps- Learning	100%	0%	B mang	05 lt green	03 lt orange
[047]	Caps- Research	60%	100%	C exec	06 green	07 blue
[025]	Caps- Publications	60%	0%	C exec	07 blue	04 yellow
[024]	Caps- Publications	60%	0%	B mang	06 green	03 lt orange
[021]	Caps- Publications	100%	0%	B mang	06 green	03 lt orange
[020]	Caps- Publications	60%	0%	B mang	06 green	03 lt orange
[031]	Caps- Publications	80%	0%	B mang	04 yellow	03 lt orange
[013]	CEO	40%	100%	C exec	07 blue	00 dk red
[012]	CEO Assistant/Recpt	60%	0%	A task	06 green	02 orange
[046]	Client Technologies	60%	100%	C exec	07 blue	06 green
[048]	Client Technologies	20%	0%	B mang	06 green	05 lt green
[045]	Client Technologies	80%	0%	B mang	06 green	05 lt green
[037]	Client Technologies	20%	80%	B mang	06 green	04 yellow
[035]	Client Technologies	80%	80%	B mang	06 green	04 yellow
[128]	Conference	40%	60%	C exec	08 dk blue	10 grey
[067]	Conference	0%	0%	C exec	07 blue	10 grey
[017]	Conference	20%	100%	C exec	06 green	02 orange
[006]	Conference	40%	0%	C exec	05 lt green	05 lt green
[004]	Conference	20%	0%	C exec	04 yellow	06 green
[119]	Corridor	60%	20%	D multi	06 green	09 purple
[058]	Document Services	80%	60%	E none	02 orange	05 lt green
[083]	E Market- Consult	20%	100%	C exec	06 green	10 grey
[081]	E Market- Consult	40%	100%	C exec	06 green	10 grey
[077]	E Market- Consult	40%	0%	A task	06 green	10 grey
[082]	E Market- Consult	20%	100%	C exec	05 lt green	10 grey
[075]	E Market- Consult	100%	80%	B mang	05 lt green	10 grey
[001]	Elevator Lobby	20%	0%	D multi	00 dk red	08 dk blue
[091]	Experience Center	40%	60%	D multi	04 yellow	06 green
[039]	Guest Use	20%	100%	C exec	07 blue	05 lt green
[015]	Guest Use	20%	0%	A task	07 blue	02 orange
[016]	Guest Use	20%	0%	A task	06 green	02 orange
[011]	Guest Use	20%	0%	A task	06 green	02 orange
[049]	Guest Use	40%	0%	A task	05 lt green	06 green
[094]	Guest Use	20%	0%	A task	04 yellow	08 dk blue
[009]	Human Resources	60%	100%	C exec	07 blue	03 lt orange
[064]	IIR Recruiting	40%	80%	A task	05 lt green	08 dk blue
[063]	IIR Recruiting	80%	80%	A task	05 lt green	08 dk blue
[065]	IIR Recruiting	80%	100%	C exec	04 yellow	06 green
[139]	Info Technology	60%	80%	B mang	08 dk blue	10 grey
[137]	Info Technology	40%	80%	B mang	08 dk blue	10 grey
[135]	Info Technology	40%	80%	B mang	08 dk blue	10 grey
[132]	Info Technology	20%	80%	B mang	07 blue	10 grey
[120]	Lunch room	20%	60%	E none	07 blue	10 grey

data point	group/use/notes	% occs	day light class	view type	client depth	executive depth
[043]	Marketing	60%	100%	C exec	07 blue	06 green
[042]	Marketing	20%	100%	C exec	07 blue	06 green
[073]	NE Market- Consult	40%	100%	C exec	06 green	10 grey
[080]	NE Market- Consult	40%	80%	B mang	05 lt green	10 grey
[101]	NE Market- Consult	0%	20%	B mang	04 yellow	09 purple
[087]	NE Market- Consult	40%	80%	B mang	04 yellow	09 purple
[086]	NE Market- Consult	80%	80%	B mang	04 yellow	09 purple
[112]	NE Market- Consult	60%	100%	C exec	03 lt orange	09 purple
[111]	NE Market- Consult	80%	100%	C exec	03 lt orange	09 purple
[108]	NE Market- Consult	80%	100%	C exec	03 lt orange	10 grey
[078]	NE Market- CSR	20%	0%	A task	06 green	10 grey
[122]	NE Market- Sales	60%	0%	B mang	05 lt green	10 grey
[117]	NE Market- Sales	0%	80%	B mang	05 lt green	08 dk blue
[116]	NE Market- Sales	20%	80%	B mang	04 yellow	08 dk blue
[147]	Not Occupied	0%	20%	B mang	10 grey	10 grey
[146]	Not Occupied	20%	20%	A task	10 grey	10 grey
[145]	Not Occupied	0%	20%	M	09 purple	10 grey
[143]	Not Occupied	0%	20%	A task	09 purple	10 grey
[142]	Not Occupied	0%	20%	A task	09 purple	10 grey
[141]	Not Occupied	0%	100%	C exec	08 dk blue	10 grey
[140]	Not Occupied	0%	20%	A task	08 dk blue	10 grey
[138]	Not Occupied	0%	20%	A task	08 dk blue	10 grey
[136]	Not Occupied	20%	20%	B mang	08 dk blue	10 grey
[134]	Not Occupied	0%	20%	A task	08 dk blue	10 grey
[126]	Not Occupied	0%	60%	A task	08 dk blue	10 grey
[149]	Not Occupied	0%	0%	D multi	07 blue	10 grey
[113]	Not Occupied	20%	0%	A task	04 yellow	08 dk blue
[114]	Not Occupied	0%	0%	E none	03 lt orange	08 dk blue
[148]	Not Used	0%	100%	C exec	10 grey	10 grey
[144]	Not Used	0%	20%	A task	09 purple	10 grey
[127]	Not Used	0%	60%	B mang	08 dk blue	10 grey
[029]	Not Used	0%	0%	E none	08 dk blue	06 green
[133]	Not Used	0%	20%	A task	07 blue	10 grey
[131]	Not Used	0%	80%	B mang	07 blue	10 grey
[130]	Not Used	0%	20%	A task	07 blue	10 grey
[124]	Not Used	0%	20%	A task	07 blue	10 grey
[072]	Not Used	0%	0%	A task	07 blue	10 grey
[071]	Not Used	0%	0%	A task	07 blue	10 grey
[070]	Not Used	0%	0%	A task	07 blue	10 grey
[069]	Not Used	0%	0%	A task	07 blue	10 grey
[068]	Not Used	0%	100%	C exec	07 blue	10 grey
[038]	Not Used	0%	100%	C exec	07 blue	05 lt green
[014]	Not Used	0%	100%	C exec	07 blue	02 orange
[125]	Not Used	0%	20%	A task	06 green	10 grey
[123]	Not Used	0%	0%	A task	06 green	10 grey
[041]	Not Used	0%	0%	B mang	06 green	05 lt green
[040]	Not Used	0%	20%	A task	06 green	05 lt green
[036]	Not Used	0%	80%	B mang	06 green	04 yellow
[028]	Not Used	0%	0%	E none	06 green	05 lt green
[022]	Not Used	0%	0%	A task	06 green	03 lt orange
[019]	Not Used	0%	0%	A task	06 green	02 orange
[018]	Not Used	0%	0%	A task	06 green	02 orange
[121]	Not Used	0%	20%	B mang	05 lt green	10 grey
[118]	Not Used	0%	80%	B mang	05 lt green	09 purple

data point	group/use/notes	% occs	day light class	view type	client depth	executive depth
[107]	Not Used	0%	100%	E none	05 lt green	08 dk blue
[085]	Not Used	0%	0%	A task	05 lt green	09 purple
[084]	Not Used	0%	0%	A task	05 lt green	09 purple
[056]	Not Used	0%	0%	B mang	05 lt green	04 yellow
[052]	Not Used	0%	0%	A task	05 lt green	06 green
[051]	Not Used	20%	0%	D multi	05 lt green	06 green
[034]	Not Used	0%	20%	D multi	05 lt green	03 lt orange
[033]	Not Used	0%	20%	C exec	05 lt green	03 lt orange
[026]	Not Used	0%	0%	E none	05 lt green	02 orange
[023]	Not Used	0%	0%	D multi	05 lt green	03 lt orange
[007]	Not Used	0%	60%	D multi	05 lt green	04 yellow
[110]	Not Used	20%	0%	B mang	04 yellow	09 purple
[106]	Not Used	0%	0%	B mang	04 yellow	09 purple
[105]	Not Used	0%	0%	A task	04 yellow	09 purple
[104]	Not Used	0%	20%	A task	04 yellow	09 purple
[103]	Not Used	0%	20%	A task	04 yellow	09 purple
[102]	Not Used	0%	20%	A task	04 yellow	09 purple
[100]	Not Used	0%	0%	B mang	04 yellow	08 dk blue
[099]	Not Used	0%	0%	A task	04 yellow	08 dk blue
[098]	Not Used	0%	0%	A task	04 yellow	08 dk blue
[097]	Not Used	20%	0%	B mang	04 yellow	08 dk blue
[092]	Not Used	0%	20%	E none	04 yellow	07 blue
[062]	Not Used	0%	40%	A task	04 yellow	07 blue
[061]	Not Used	0%	20%	A task	04 yellow	07 blue
[055]	Not Used	0%	0%	B mang	04 yellow	04 yellow
[054]	Not Used	0%	0%	B mang	04 yellow	04 yellow
[005]	Not Used	0%	0%	C exec	04 yellow	06 green
[115]	Not Used	0%	100%	C exec	03 lt orange	09 purple
[109]	Not Used	0%	0%	B mang	03 lt orange	09 purple
[089]	Not Used	20%	0%	D multi	03 lt orange	07 blue
[088]	Not Used	0%	0%	D multi	03 lt orange	06 green
[053]	Not Used	0%	0%	A task	03 lt orange	04 yellow
[008]	Storage/Workspace	0%	20%	A task	07 blue	02 orange
[079]	Storage/Workspace	0%	20%	A task	06 green	10 grey
[076]	Storage/Workspace	0%	20%	A task	06 green	10 grey

Appendix (E) Network-space survey form

DIRECTIONS: To complete this survey; begin by identifying the ways in which you communicate with co-workers. Indicating no more than ten of your most frequent contacts in each of the following categories:

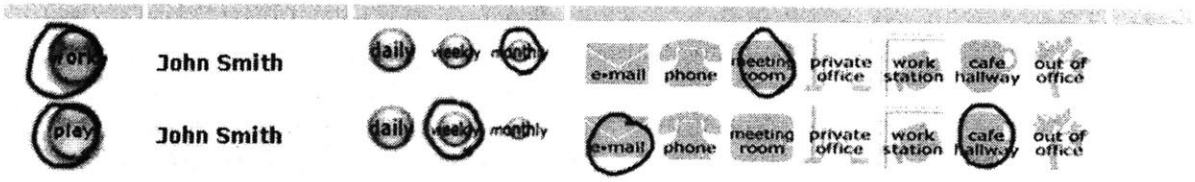
work people with whom you exchange documents and materials in order to **accomplish your work**

play people with whom you **informally discuss** what is going on within the organization

idea people with whom you would speak in order to discuss a **new idea or project**

Please then report the frequency of contact for these purposes, and your preferred mode or location for these communications. Feel free to make note of any options we have failed to provide. Please include Forum employees with whom you communicate regularly even if they work outside of the Boston office.

SAMPLE: John Smith and I meet monthly during the all-stars committee meeting held in the executive conference room. We also exchange emails every few days regarding general activities and events. We enjoy a short conversation whenever we run into each other in the hall way. However, I would be unlikely to discuss a new idea with John.



THE FINE PRINT: By signing below you are consenting to participate in this study and indicating an understanding of the following: participation is voluntary, you may decline to answer any or all questions, and you may terminate your participation in this study at any time, with no adverse consequences.

YOUR NAME: _____ **YOUR SIGNATURE:** _____

Forum people with whom you exchange documents and materials in order to **accomplish your work**

communi cate	forum people	frequency	location preference	note
work		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
work		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
work		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
work		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
work		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	

work		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
work		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
work		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
work		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	

Forum people with whom you **informally discuss** what is going on within the organization

communicate	forum people	frequency	location preference	note
play		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
play		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
play		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
play		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
play		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
play		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
play		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
play		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	

Forum people with whom you would speak in order to discuss a **new idea or project**

communi cate	forum people	frequency	location preference	note
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	
idea		daily weekly monthly	e-mail phone meeting room private office work station cafe hallway out of office	

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