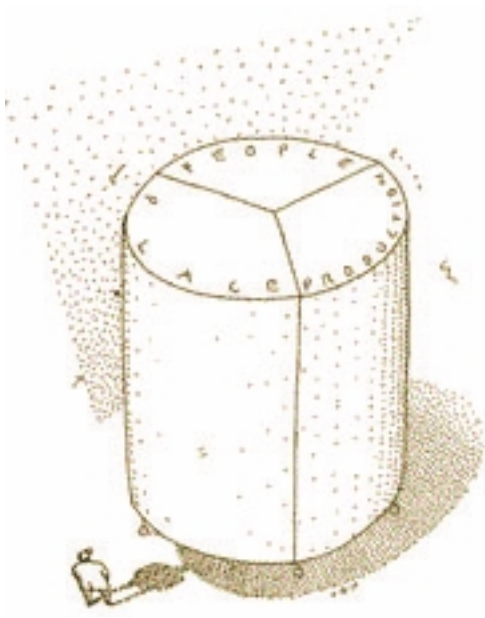


Office Environments

The North American Perspective



Change is rampant in North American enterprises—technological, social, demographic, economic, and political change at both global and local levels. Business realities are more tumultuous than ever before. Today’s organizations are undergoing a fundamental transformation in the way they think about, organize, and carry out work in a global competitive economy. This movement is characterized by a change from large, hierarchical, command-and-control organizations to smaller, more fluid, team-oriented enterprises with greater participation from an empowered work force.

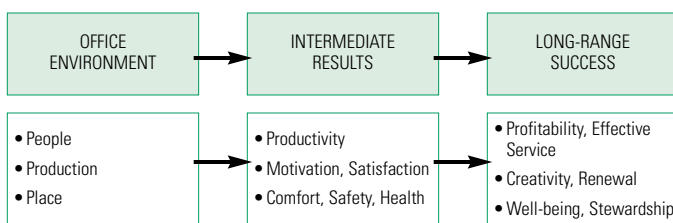
Providing work environments that help people and organizations realize their potential requires an understanding of these changes—of the relationships between external forces, individual and group needs, organizational structures and processes, and the physical environment—and of how these relationships affect business results.

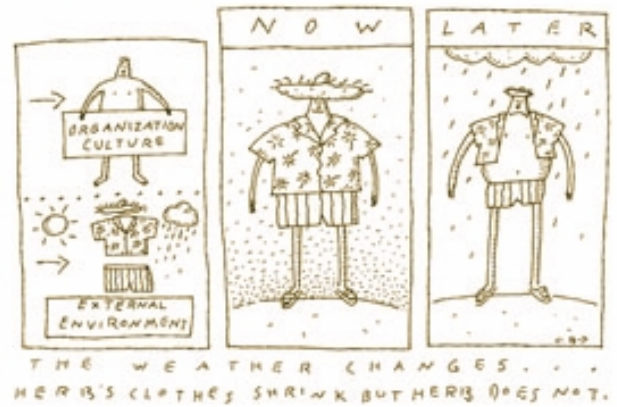
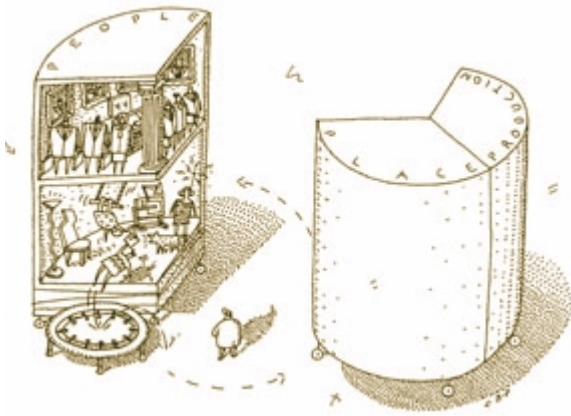
Understanding office environments: A framework

Many people think of office environments simply as physical settings, something quite separate from the people, their work activities, and organizational structures. However, a holistic view of the office domain—considering people, production structures and processes, and place together—provides a better approach for understanding and responding effectively to dynamic problems in the workplace.

In the office environment, people, production, and place come together in continually changing patterned relationships. Ultimately, however, all three must be understood together and orchestrated as a whole in order to achieve effective organizational results, such as customer satisfaction and profitability.

In today’s office environment, dealing with change is a major challenge. Because the core elements (people, production, and place) have an impact on key outcomes such as productivity, satisfaction, safety, and long-term effectiveness, a holistic understanding of the office environment can support positive changes and enhance an organization’s chance of success.





Corporate Culture

Corporate culture is the pattern of basic assumptions and beliefs shared by members that guide their behavior. Through education and participation in work activities, people derive assumptions about “how the world works” and learn satisfactory ways to solve business problems.¹

Corporate culture: Why is it important?

Culture serves to bind and motivate people, and it governs organizational arrangements, shapes values, and influences the way information is processed.² Understanding corporate culture is important because it can be both a catalyst and a constraint.

Regional, national, and global cultures, as well as differing industry cultures, constitute the backdrop for corporate culture. Simultaneously, subcultures form within an organization along functional and professional lines, such as marketing, finance, engineering, and research.

Everyone has had the experience of learning corporate and group cultures when first joining an organization—typically described as “learning the ropes” or “finding out how things are done around here.” In these days of pervasive organizational change, learning culture has become a critical continual process, not just something one learns upon first joining an organization.³

In companies today, new work groups such as cross-functional teams and external alliances are being created with increasing frequency. In the beginning, members often have trouble working together effectively, in part because they come from different subcultures and bring varying assumptions and norms—generally unstated—to the new situation.

As companies have been taken over or merged, downsized, or changed their focus, business leaders found melding or redirecting corporate cultures to be one of the most difficult—and most crucial—tasks of successful unification. While companies have discovered that culture cannot be dictated from above, corporate leadership, both formal and informal, has proved to be critical to the evolution of culture.

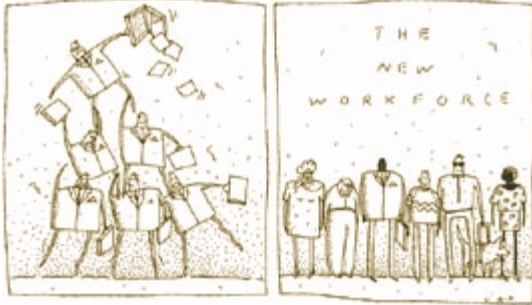
Strong corporate cultures have historically contributed to the business success at companies such as IBM.⁴ However, in the 1980s, technology changed rapidly; competitors’ more powerful, less expensive clones began cutting into IBM’s mainframe and PC businesses. Because initial responses from IBM were slow and ineffective, when the company finally initiated significant changes in the 1990s—downsizing, decentralizing, and initiating joint ventures—they were contrary to its established culture. As a result, workers are having to learn a new culture.

Two points are key. First, there is no universal culture. Second, even enterprises with strong, once-effective cultures can fail when internal cultural realities do not match external competitive demands. Effective cultures address the dilemmas related to adapting to the external environment while maintaining internal integration. Such cultures resolve the tension between the needs for change and continuity.⁵ Today’s successful enterprises are pulling ahead of their more traditional competitors by restructuring according to new cultural values such as flexibility, responsiveness to the customer, and immediate and continuous learning and improvement.^{6,7}

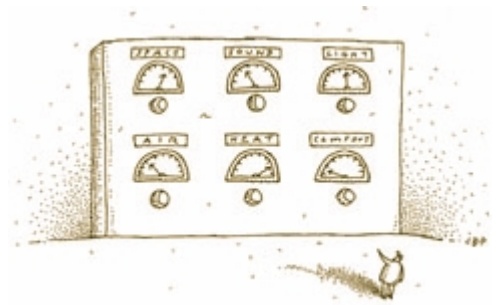
Culture and the physical environment

The “stuff” of culture—shared assumptions, values, and knowledge—cannot be observed directly. However, many aspects of culture can be deduced from members’ behavior within the workplace, from organizational policies and practices, and from the physical qualities of the offices. Such physical manifestations of corporate culture are revealed in the building location, size, and style; in the arrangement of interior space; in the type and quality of furnishings; and in the degree of enclosure and personalization of work spaces.

Organizations have varying attitudes toward space and facilities. Some companies think of buildings and furniture primarily in economic terms, as costs to be contained, expending little effort to make full use of the physical environment to support the social, cultural, and productive processes. Progressive companies, on the other hand, use buildings and furniture to enhance productivity and express the corporate culture. Changing the physical environment is an effective way to signal and support changes in culture.



Two far-reaching elements are vital for achieving effective performance and satisfaction. Comfort, a condition of well-being, and control, the power to decide and act, stand out because they cut across all areas of need and are highly valued. Comfort is central because of pervasive effects on health, safety, and performance. Individual control is important not as an end in itself but as a means by which people address other needs such as ambient comfort, privacy, and adaption to changing conditions.



At Union Carbide, for example, the board chairman wanted to improve company performance, in part by changing the culture—flattening the hierarchy, increasing participation, and decentralizing decision-making. He also reinforced the emerging culture through facility changes. In the new headquarters building, managers and professionals, regardless of job level, got the same size and type of office. In this way, Union Carbide effectively aligned its facilities and space policies with the new egalitarian corporate culture.⁸

While facilities influence business outcomes, they do not determine them. To comprehend culture and make it work for the organization, one must also understand social and management structures and business strategies, and align the physical environment to support them.

Individual Activities and Needs

Understanding corporate culture is only one aspect of the human side of enterprise. Activities and needs of individuals and groups are also important.

Centrality of human resources

Now more than ever, people are the differentiating factor in business success. Organizations must continue to address critical human resource issues: attracting, developing, and keeping good people; adapting to demographic changes; and accommodating a diversity of backgrounds and perspectives.^{9,10,11,12}

The changing demographics of the new work force—greater ethnic diversity, more women, and more older and differently abled workers—create conditions that require organizations to craft new approaches to human resource management. In turn, more sophisticated and better educated workers expect new things from the workplace.^{13,14}

While the physical environment of the office tends to be rated lower in importance than many other factors,^{15,16} research indicates that people often unconsciously adapt to their surroundings in ways that are not always good for them, e.g., by adjusting to inferior seating, ineffective keyboard support, or poor lighting.^{17,18} Regardless of the

importance attributed to facilities by individuals, in actuality the quality of the physical environment does make a significant difference in work performance as well as in satisfaction.^{19,20,21}

Creating office settings entails translating organizational and individual needs into design criteria and priorities. In space planning, for example, people’s needs related to the physical environment are often categorized according to type of worker, e.g., managerial or clerical. This approach assumes that people in the same category have the same needs—when in fact people have needs that differ greatly within each category, yet correspond to needs found in other levels.

Although worker level is an inadequate indicator of individual needs, many companies still operate with stringent worker-level-based space planning standards.²² An improved approach would allow planners and designers to identify clusters of workers with similar patterns of needs—regardless of title, occupational classification, or organizational level.

Framework of individual needs

Effective office environments that facilitate desired results are grounded in satisfying individual needs: physical and social-psychological.

Physical needs—Meeting physical needs in the office environment means sustaining the human body, supporting the work activities, and providing the appropriate ambient conditions. Meeting these physical needs has a positive impact on performance as well as on satisfaction and well-being.^{23,24}

Addressing individual physical needs depends, in part, on knowledge about human factors and ergonomics. Ergonomic applications extend beyond the development of equipment and furniture to the design of work procedures, and thus deal with the social-psychological realm as well as the physical. Increasingly, workplace guidelines or standards based on human factors and anthropometric considerations are being developed by professional, industry, and government groups; and are being adopted by many companies.

A Framework of Individual Needs

Physical Needs

Anthropometric and Spatial Comfort

- Dimensional Fit: fit to human measurements
- Capability Fit: fit to human abilities, limitations
- Functional Support: appropriate furniture, equipment; effective size and layout

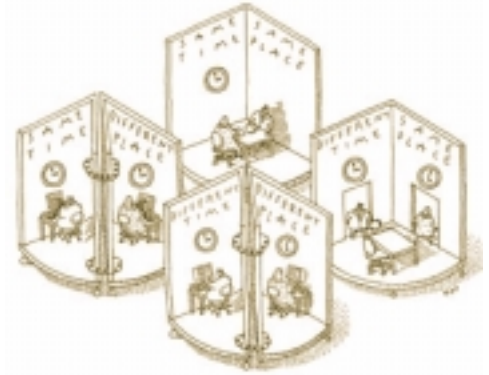
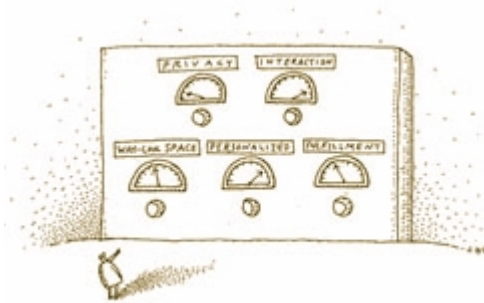
Ambient Comfort

- Acoustical Quality: freedom from noise, disruption
- Lighting Quality: fit with tasks, freedom from glare
- Air Quality: freshness and movement, freedom from pollution
- Thermal Quality: appropriate temperature, humidity

Social-Psychological Needs

Motivational and Cognitive Support

- Choice and Control: options and discretion to adapt to change
 - Privacy—Visual and Acoustical: ability to concentrate, access control
 - Individuality and Personalization: personal expression, tailoring space
 - Learning and Use: ease of learning and use
- Social Support
- Communication and Interaction: face-to-face and remote exchange
 - Belonging and Identification: membership and association
 - Status Recognition: expression of role, accomplishments
- Aesthetic Quality
- Attractive Surroundings: pleasant, enjoyable work setting



Social-psychological needs—People’s primary social-psychological needs in the workplace include motivational, cognitive, social, and aesthetic concerns. As with physical needs, meeting these social-psychological needs has a direct effect on the desired outcomes of performance, satisfaction, and well-being.^{25,26}

While these needs are often planned for in isolation from one another, they are highly related. For example, improving office acoustics may increase a person’s ability to concentrate and improve support for formal communication. Adding enclosure may boost formal interaction; however, it may also curb valuable informal exchanges. Knowing these relationships is critical for balancing needs or crafting an integrated solution to ensure an effective office environment.²⁷ To be most effective in meeting these interrelated needs, however, workers must become active participants in creating and maintaining their own work spaces.^{28,29}

Group Functions and Needs

Under hierarchical organizational models, groups often consist of people working in parallel or in a linear, assemblyline manner, mostly with people of the same job type and level. Such groups are often formed more for administrative convenience than to enhance information flow among members. However, under new organizational models, more work takes place in highly interdependent arrangements, promoting vital information exchange.

Supporting group functions and needs

Group needs are more than a sum of individual needs, and they must be addressed just as explicitly in order to realize a group’s potential. Considering group requirements, however, can be complicated since they are as diverse as the needs of individuals and spring from a diverse set of relationships among individual work, interdependent and collaborative tasks, group work methods and technologies, group culture, and the larger organization and business context.

In trying to meet group needs, corporations are having to deal with not only their diversity but also their fluidity. Groups and how they function change rapidly, as noted by several experts in the field.^{30,31,32,33} Organizations are doing more work in teams; more people are members of several groups at once. People do more work in several locations, both inside and outside the organization. Today’s groups have more fluid membership and structure. Groups are being

granted greater authority. All these factors make it difficult to meet group needs and to make groups work more effectively.

Time and location are two major factors that constrain and shape effective interchange of information in the workplace, a key to effective functioning. A framework for comprehending group interaction and communication, based on the constraints of time and location, provides a way of understanding group needs in a different, more comprehensive way.³⁴

The **Same Time/Same Place** mode of group activity is familiar. People have face-to-face meetings and conferences, both planned and spontaneous. Vital exchanges take place in many locations, from individual offices to project spaces and offices located in the home.

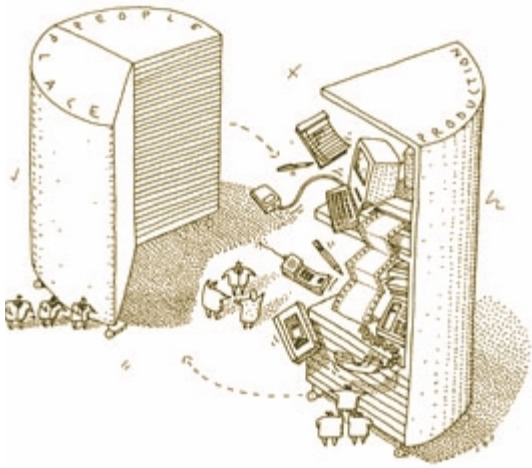
The contrasting **Different Time/Different Place** mode is just as familiar, but communication is asynchronous rather than concurrent and people are in different locations. Despite advances in technology such as voice and electronic mail and facsimile, memos and reports still prevail as the means of communication in this mode.

The **Same Time/Different Place** mode of group interaction is exploding. While the telephone remains important, new capabilities for “meeting at a distance,” such as interactive video and computer conferencing, let organizations reduce travel time and expense.

The fourth mode, **Different Time/Same Place**, happens in locations such as shared offices, team or project rooms, libraries, and shared storage areas that are used by group members working independently at different times to carry out group tasks. Information and tools, as well as space, are shared among group members.

Supporting work Any Time/Any Place is the emerging challenge.

Technology can help groups overcome some limitations of time and distance. Computing and telecommunications hardware get much attention, but new groupware developments (software, such as electronic mail and collaborative authoring, designed to support distinct group needs) offer potential. However, technology alone can’t solve all needs, and it tends to create new problems even while solving old ones. Improvements in physical settings for groups are required as well.



Organizational Design: New Strategies

Heightened competition has spurred North American organizations to develop new strategies. Businesses used to make trade-offs among quality, speed, and cost—perhaps providing better quality but requiring a longer wait, or offering lesser quality at a lower price. Being able to deliver relevant, innovative products and services more quickly and within customers’ budgets was a strategic advantage in earlier days; now it is the baseline for entry. Today’s customers demand all three. And, customers’ performance expectations continue to grow.^{35,36,37,38}

Structure follows strategy

Alfred Chandler, an American business expert, has argued that structure should follow strategy;³⁹ he urges that organizations first select business strategies for their particular competitive arena and then craft structures and processes to support those chosen strategies. Those enterprises that best organize, manage, and develop their people as well as their work processes will have the competitive advantage.

Structural changes companies are adopting include reducing hierarchical levels and cutting white-collar jobs, especially middle managers and staff groups. Cooperative teams, often with cross-functional membership, are replacing groups of people working independently, either in parallel or in linear, “assembly line” ways. Conventional structures are also being challenged with the emergence of “virtual organizations,” in which relationships form and change or disband in a very fluid manner to meet the dynamic needs of the business.⁴⁰

Many restructured firms eventually find they need to do less work in order to do it better and faster. Leading companies also understand that simply flattening the organization is not enough. Successful change also often requires changing the flow of information, redistributing authority, redesigning jobs and work processes, and developing people’s skills, as well as providing groups with the improved technologies and physical settings necessary to engage in their varied modes of interaction.

Work Design: Work in Transition

Most aspects of work itself are in flux as organizations regroup for doing business in the next century, accommodating the transition

from an industrial to an information economy, the shift to knowledge-based work, and the changing expectations of a diverse work force.

In the industrial era, many organizing concepts from the factory were adopted as the model for office work, including a linear flow of work and a high differentiation of tasks. Consequently, clerical and technical jobs, for example, have often consisted of repetitive tasks that encompass only a small part of the product or service being produced. Under this scheme of work, people have had little sense of how their part of the work contributed to the final result.

Moreover, assumptions about human nature and capabilities have also influenced the way jobs are organized. Under old models of work, many managers assumed that people didn’t want to work, couldn’t be trusted, had limited capacities, and needed close supervision. Assumptions like these contributed to the creation and maintenance of hierarchical models of work and management.

In response to competitive demands, however, the nature of work is changing for all workers. Now many technical and clerical workers are benefiting from the redesign of work, garnering some of the task diversity previously accorded only to their professional and managerial co-workers. A quarter of U.S. businesses are experimenting with self-directed teams.⁴¹

The nature of work is also changing for professionals and managers. Many now work in teams as “managing professionals” with responsibility for results of their own, rather than working as “professional managers” supervising other people. Instead of directing and controlling subordinates, managers must now provide leadership and create enabling environments for effective teamwork. This change represents a profound cultural shift that may take years to play out.^{42,43}

Despite new structures, most firms still retain the old reward system. While access to information is critical in the new model of work, individuals have generally been promoted and rewarded for guarding information rather than sharing. Similarly, new structures require superior performance from groups, yet most rewards are still based solely on individual performance. Until reward systems are aligned with structures, it will be impossible to fully realize the benefits of other changes.



Changing job options and opportunities

In many companies, the composition and size of the work force has changed as a result of organizational restructuring and the redesign of work. In addition to thinning management ranks, companies are reducing full-time employees in technical and clerical sectors as a way of cutting costs. More work is being done by service agencies and contract workers.

For the remaining core work force, the workplace itself is different, too. Now, in order to attract and keep good employees and to enhance productivity, many companies are providing workers with new development opportunities or expanded work choices, such as job-sharing, flex time, ongoing part-time work, telecommuting, job enrichment, job rotation, and participation in self-managed teams. Many workers find these choices provide a greater sense of accomplishment and let them strike a better balance between their professional and personal lives.

Also fewer people are “workstation bound”; more people work in multiple sites inside and outside the firm. Managers must learn new approaches for supervising employees who work part-time or away from the main office and for managing team-based work.

Information Technology: Its Role and Impact

Because information is the coin of the realm in contemporary business, information technology is an important focus. Technologies, if applied thoughtfully, can enhance aspects of work and mitigate some negative areas of change. Communicating clearly about technology is difficult, however, because people use the word technology to mean so many different things.

Broadly speaking, technology is the totality of means—knowledge, methods, materials, and tools—used to achieve a practical outcome. Technology is more than telephones, computers, software, and networks; it is also work methods and patterns, information structures, and the ways all of them are used by knowledge workers. Technologies are tools and means—not the primary goals or results to be pursued.

Information technologies have the potential to improve speed, quality, and efficiency. “Yet the tools alone, no matter how sophisticated, do not guarantee high productivity.”⁴⁴ People also need to be

empowered through information access, continual skill development, and authority that matches responsibilities. Realizing the potential of technology often requires shifting the flow of information and revamping power structures. Such changes are often overlooked or resisted. How an enterprise integrates technology, however, influences its effectiveness.

Technology integration

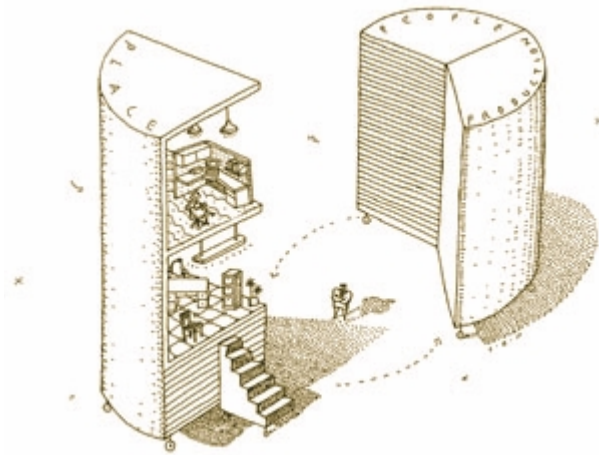
All businesses use information technology; few integrate it well. Successful technology integration is not a onetime event but a continuous process of linking people and technology, applying technologies to old and new business problems, and accommodating the technology physically, functionally, and culturally.

Integration is difficult because technologies tend to accumulate, with new technologies taking their place alongside old ones rather than always replacing them. Despite computers, pens and pencils still abound and the paperless office is nowhere in sight. With sophisticated phones and E-mail, face-to-face meetings still endure.

Even without new technologies, changing business problems require changes in technology solutions and new approaches to integration. As business awareness grows and as companies and organizations advance from elementary to mature stages of technology application, the key issues and implications for the office environment—people, production, and place—change. With experience, the questions grow in sophistication: How can we do existing things more efficiently? How can we do existing things more effectively? How can we do the right things, new things more innovatively? and How can we transform our business and sustain effectiveness?

Over this span of business development, technology integration progressively encompasses concerns for different types of issues:

- **Physical**—accommodating the “boxes” and wires, design layouts, and changes in configurations;
- **Socio-technical**—improving work processes and environments, while addressing health and safety issues; and
- **Cultural**—adapting technology to support new organizational and environmental arrangements that enhance well-being as well as contribute to business success.



To reach and maintain the highest levels of integration, people concerned with physical facilities and technology management will need to work more in tandem with each other and in cross-functional planning and implementation teams with managers and end users.

Changing Locations

Contemporary circumstances compel companies and workers to use different work locations. Catalysts for such changes include the need to be competitive, the quest to improve the quality of life, concern for the natural environment, the cost of urban space, the move to be closer to customers, the need to increase white-collar productivity, and the emergence of new information technologies that permit working in different ways.

Edge cities and remote locations

The contemporary image of the setting for a large corporation is a high-rise building downtown, with workers streaming in daily from the suburbs. The reality, however, is undergoing profound change. Over the past 20 years a new urban form has emerged—the edge city. As an alternative to a downtown core of high-rises, multiple centers are being built between downtown and the suburbs. These new centers blend high-rise and low-rise buildings with green space. While no new large center cities have been built in more than 75 years, more than 200 edge cities have been created since the 1970s.⁴⁵

These changes in location, coupled with other trends and conditions, make the job of planning and managing office facilities increasingly difficult. For example, as companies move to edge cities, many are choosing to occupy leased facilities. These more generic facilities do not always provide as high a quality of support as those built specifically for the organization.

Multiple, alternative locations

In the past decade, home-based work has burgeoned. Satellite offices or telecommuting centers (smaller auxiliary work sites close to employee homes and to customers) are also becoming more common. At the main business location, too, more people regularly work in several locations. Highly mobile people working out of the office—on the road, at customer and vendor sites, in satellite centers, and at home—are the emerging norm.

The same considerations that lead companies to edge cities are behind the push for home-based work and adjunct offices: shorter commute

times, closeness to the customer, fewer disruptions, improved productivity, cost savings from lower corporate space requirements, and more effective ways for workers to balance work and home responsibilities. Alternative work sites are made possible, in part, by more affordable computing and telecommunications technology.

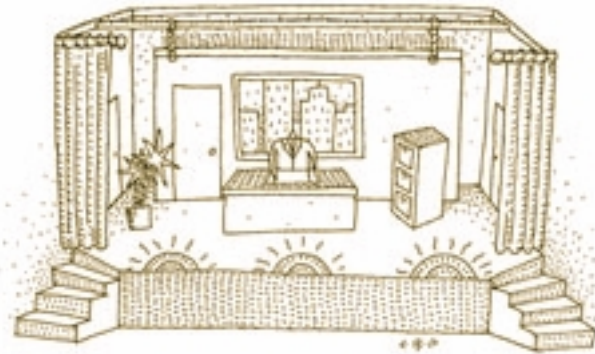
The logistics of working at home do not fit the needs and preferences of all companies and workers, however. Increasingly, satellite offices or telework centers are being used as alternatives to the traditional office, home-based work, or car-based work. Even when home-based and satellite offices fit some worker and organizational needs most of the time, they cannot totally replace centralized settings.^{46,47}

Changes within centralized corporate settings have occurred at the same time—for example, the increase in team-based work. Less bound to a single workstation or facility, team members work in collaborative spaces. Many people are members of several teams simultaneously, creating some need for individual work space in several locations. Working in multiple locations makes some communication more difficult, however, particularly when co-workers don't know where people can be reached by phone or fax. Voice and electronic mail and new wireless technologies help address these problems. People and organizations are beginning to see that "your office is where you are," and increasingly that is in many locations.⁴⁸

Organizing Office Space

As changes ripple through the organization, modifications in the organization of space are also required in order to maximize the benefits of cultural, structural, and technological changes.

Creating and using office environments has been likened to theater design and dramatization.⁴⁹ The office building—a shell with basic services—is like a bare stage with lighting and sound systems. Constructed to last 30 years or more, both a theater and an office building support a myriad of productions and activities. Office "scenery" consists of furniture, furnishings, and equipment, which is expected to last for the tenancy of the work group, or for about five to seven years, before being refurbished or replaced. "Sets" of the office environment—specific, planned furnishings and their arrangements—need to vary by group and person. They must be able to change as the group composition evolves or as an individual's job changes.



Building strategies. Organizations enact different facility strategies—some by default and some deliberately. Consider how building choices affect interaction. In high-rise buildings, because people depend on elevators to get around, they tend to use the same routes and have relatively few unplanned interactions along the way. In contrast, workers in low-rise settings often have more varied, informal contacts because they take varied routes to other places. There is an inverse relationship between interaction and distance; the farther groups and individuals are from each other, the less they tend to interact with each other.^{50,51}

Within buildings themselves, structural changes, job redesign, and new technologies are challenging old organizing principles and enabling different adjacencies between groups and individuals. For example, participants on cross-functional collaborative teams often need to be in close proximity to other team members as much as they need to be near members of their functional unit. Likewise, those with primary responsibility for customer contact have a greater need to be closer to the customer than to many other members of their parent group. On the other hand, technologies such as E-mail, V-mail, and video conferencing support this communication while reducing the need for physical proximity.

The key is to match facility strategies with overall business purposes by providing structures and arrangements that aid, rather than obstruct, companies in their quest for competitiveness. Too often, facility plans lag behind and serve as a drag on the implementation of core business strategies.

Prevailing office models

The terms “office model” and “office planning model” refer to widespread, contemporary approaches to organizing office space. Each is designed to meet different clusters of individual and organizational needs. Conceptually, these models differ in significant ways, such as the type and amount of privacy and enclosure, the type of furniture, the approaches to supporting the work process, and the layout of the group. The most common office models include these:

- **Enclosed or private offices:** single or shared office spaces with four full-height walls, a ceiling, and a door and typically furnished with freestanding furniture;

- **Open-office plans:** office arrangements with partial privacy provided by panels or screens on two to four sides, typically furnished with panel-mounted furniture;
- **Bullpens:** similar repeated workstations providing minimal seated privacy and typically planned in rows of freestanding desks or with low desk-height panels.

In practice, offices planned with the different models also tend to differ in size; in the number, type, and level of workers assigned to the space; and in the amount and quality of the furniture. In addition, office models are often chosen as much to differentiate status and express image as to support the work process.⁵²

There is no singular right way to organize space. Each has valid applications. Virtually all organizations use at least two planning models to organize office space, and three-quarters of large businesses use three or more approaches. More often now, however, these established office models are not meeting the needs of individuals or organizations, and are particularly deficient in supporting new team structures.

New planning approaches

The need to be competitive, to support new structures and ways of working, and to attract and keep a skilled work force contributes to the need for new approaches to office planning. In response, two new streams of space planning and management have sprung up: the development of free-address offices and the evolution of space concepts for collaborative groups.

Free-address spaces

Just-in-time, nonterritorial, temporal, hoteling—and particularly free-address—are terms that all refer to a similar office concept: a collection of work spaces (fewer than the number of potential occupants) not occupied continuously by the same individual but used on a reserve or first-come, first-served basis.

The move to free-address spaces began with the observation that work spaces are unoccupied much of the time when “one person/one space” practices prevail, and it has been fueled by the desire to reduce both the amount and the cost of space. Firms report that they can both upgrade work spaces and gain more than a 20 percent saving in space costs.⁵³ Yet, this free-address approach is more of a



space-management technique than it is a unique planning model, because these spaces may be planned using private offices, open plans, or bullpens.

A free-address approach has been used in a variety of situations—for shift workers, seasonal workers, part-timers, and job-sharers. Also, the pressure to keep more people in the field, closer to the customer, and the choice of others to work outside of the traditional office have contributed to its use among professionals.

Andersen Consulting in San Francisco has established a free-address arrangement for its management consultants and has reduced per-person office costs from nearly \$10,000 to about \$2,700. Each of 70 consultants has a portable PC and a locker for files and personal items: They reserve one of 13 unassigned private offices for “in”-hours work.⁵⁴

Unless initiated thoughtfully, however, free-address arrangements may provide more benefits to the organization than to the individual worker. Moving from their own space to shared free-address areas may make workers feel less valued and less a vital part of the company. How well employees accept such arrangements depends on comparisons between their old and new work spaces, including how well the new one supports their work processes. Going from a private office to a small, open-plan free-address space, however, is not likely to provide the same sense of status or well-being as the reverse situation.

Businesses that have tried a free-address approach find it can be an effective solution for workers and management alike if it is not driven by cost-savings alone, if facility quality and work support tools are improved, and if those affected are actively involved in the planning and have local control of the facility. While free-address offices are not panaceas, they do offer new possibilities.⁵⁵

Collaborative spaces Organizations of the 1990s rely increasingly on group-based work and work in multiple locations. Successful office environments for groups help them achieve the core business performance criteria for serving the customer—high quality, speed in getting to market, and value for the customer. In addition, the requirements for continual organizational learning and change have exploded the need for more effective education, training, and conference settings.^{56,57,58}

Effective solutions for collaborative work are not likely to yield a single model, for the needs are as varied as those of a three-month project assignment and a three-year R & D project. Nor are they likely to result in space savings; if anything, greater space needs are likely. People involved in multiple cross-functional projects may benefit more from having several small individual work spaces near other members of each of their teams than from having a large office in their functional unit. The net effect in group-intense organizations is likely to be a reallocation of space from individual to group uses.

Having generous, well-organized space, including the possibility of several work areas for individuals and groups, may play a vital role in increasing productivity and reducing the time to market. These outcomes are likely to yield a greater return to the organization than direct savings on space.

Achieving Desired Results

Research shows that how space is organized and furnished in the office environment makes a difference in supporting workers and achieving desired results such as increased productivity, satisfaction, well-being, and long-term business success.^{59,60,61,62,63}

Investment in space and furniture is an investment in people and in the mission of the organization. All outlays are not equally beneficial; the factors found by research to make the largest contributions to meeting individual needs and achieving desired outcomes are summarized in this section.

Productivity

Office workers pinpoint spatial comfort, noise control, air quality, and privacy as most influential on the volume and quality of their work. Most office workers also know that privacy affects their motivation, satisfaction, and morale, all of which have an ultimate effect on performance.^{64,65}

Satisfaction

Job satisfaction and satisfaction with the physical environment are affected most by spatial comfort, privacy, lighting quality, and the visual quality of the environment.⁶⁶ Spatial comfort factors affecting worker satisfaction include amount of work surface area, type and amount of storage, and the ergonomic quality of solutions.⁶⁷



Privacy and control contribute to satisfaction as well as to productivity. Just having the potential of control is important to individuals, even if control itself is not exercised.⁶⁸ Access to windows matters a lot, too. People like to see natural daylight, feel the sun's warmth, muse on the outside view for a change of pace, and feel connected to the world outdoors.^{69,70}

Comfort, health, safety, well-being

Worker comfort, health, and safety are strongly affected by ambient conditions such as air quality, thermal comfort, and lighting comfort. They are also influenced by work practices and by the ergonomic quality and arrangement of the furniture and of work tools.^{71,72}

Issues linked to more intensive use of computers (e.g., repetitive stress injuries and vision problems) and problems of workplace stress have also increased. Changes in product design and layout, work process, and job design all play a role in improving comfort and well-being.

Even the best designs will need to be altered as work tasks, assignments, and technologies change. In the long run, individuals need the competency and opportunity to participate in the creation and rearrangement of their office environments.^{73,74}

Research has identified the potential for a direct payoff from improvements in the office environment. This can be contrasted with the importance some companies place on efficiency—an emphasis that is focused on reducing facility expenditures. The annual expenditure for employee salaries and benefits for most companies exceeds the yearly cost of facility operation and the amortization costs by a factor of five to ten or more. This suggests that there is more to be gained by investing in things that improve human productivity and effectiveness, than by strictly cutting space costs.^{75,76,77}

Putting It All Together

In the workplace as well as in the natural environment, we take in our surroundings with all of our senses. We need a way to get beyond business as usual. This is particularly important in light of the turbulent business conditions and the paradigm shift from a large, hierarchical, command-and-control corporate model to a smaller, more fluid, participative form.

This research summary is an effort to help identify, and provide insight into, the issues affecting the North American workplace, to understand

their implications, to envision the requirements for effective solutions, and to understand how these conditions affect business success.

Given these changes, old ways of organizing space are no longer adequate. New concepts and applications of physical settings are required so that people can work more effectively, because strategic investments in physical settings are really investments in people; and it is people who will constitute an organization's competitive advantage in the global economy of the future. The challenge, then, is to support tomorrow's office environment—people working at any time and in any place.

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