

## Office Environments to Support Future Organizations

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Real Estate and Facility Managers must not only optimize their office work environments for their organizations' employees; they must also plan for future contingencies. Painting with a very broad brush, this paper outlines the most important trends that must be considered and to which organizations must respond as they develop a future vision for their company. One of the best ways to prepare for an unpredictable future where many of the determinants of success lie outside the control of most corporations is to intentionally include a broad, flexible platform of products. Such a strategy allows quick, nimble responses from the real estate and facilities group to inevitable, unforeseen opportunities in ways that preserve the earth's natural environment much better than more traditional construction methods and materials.

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### Background and Introduction

Due to the inordinate number of influences impinging on office design, including economic conditions, architectural & design trends, vendor development, client needs & interests, and relevant standards & regulations, trying to predict the "office of the future" can be extremely risky. Temptations to be merely descriptive and provide critiques of current practice or to be merely prescriptive and spin interesting stories in support of design solutions looking for a problem must be transcended to capture and integrate the relevant societal, technological, and organizational trends.

I will attempt to arrive at as concise an estimate as possible for the kinds of office environments that will be needed by organizations of the future. To reach that goal, a much abbreviated overview of the history of offices will be followed by an outline of the often competing interests that currently influence office design, and the role of research in design. Next, organizational and work trends will introduce

a discussion of the developments that must be accommodated by future office design, followed by some speculation about the form of such offices. Finally, a recent consortium has accepted the task of optimizing office design within particular corporate contexts through subjective & objective measurement of the environment, and defining problems & solutions directly in terms of occupants rather than merely in terms of building performance or facilities mandates. The consortium thus concentrates on integrating "design for potential" with "design for economic constraints."

### Brief History of Office "Trends."

As the old saying goes, to understand where you're going, you must understand where you've been. Some historians have linked the development of modern offices with the railroad industry. As the contracts governing the distribution of manufactured goods by rail burgeoned, clerks became necessary for their timely processing. These early "offices" tended to be vast rooms containing row after row of free-standing desks, with only a few private offices for a sparse management layers. Thus, status-

based distinctions concerning privacy and space accompanied the earliest instantiations of corporate offices. As service industries grew to supplement manufacturing and distribution operations, more managers needing “office space” joined the work force.

Although the point could easily be debated, only two developments have significantly altered these earliest office environments from the perspective of occupants: 1) The Bürolandschaft ideas of the Quickborner team; and 2) Bob Propst’s Action Office. While the “landscaped office” movement included most if not all the elements of the currently popular “green” movement in design, both it and the modular components of the Action Office were almost immediately corrupted to support technology and save space. In large measure, the “white-collar factory” metaphor for offices remains with us—for better or for worse—into the 21st century.

### Competing Constituencies

Currently, the desire of architects & designers to be creative & innovative; the interest of corporate clients for a productive, satisfied workforce; and the need for real estate savings imposed by CFOs, Facilities Managers, and shareholders all compete to determine the outcome of corporate office projects. Up until recently, the economic metrics wielded by real estate and facilities managers have invariably curtailed the creativity of architecture & design firms, and the pseudoscientific “new ways of working” solutions offered with “cubicles” have placated corporate clients’ commitment to productivity. However, in spite of the recent economic downturn, recruitment & retention remains a concern, and corporations planning for the future have begun to explore job satisfaction issues in earnest—along with their economic implications.

### Epistemology’s Role

The struggle among the interested constituencies in corporate office projects frequently revolves around what each of them accepts as evidence of success. CFOs and other “bean counters” can easily demonstrate the “value” of their proposals to increase density and eliminate design enhancements because almost everyone in the transaction accepts a business case (i. e., the profit motive) for decisions. However, in simple terms, profit is the ratio of income to overhead, so an increase in income can be just as salient as a decrease in costs for maximizing profit. However, very few “hard numbers” exist for pursuing knowledge worker productivity with design, and so cost-cutting strategies often prevail.

In this regard, distinguishing among description, explanation, and evidence can be very important. For example, descriptions of how particular products or environments support “new ways of working” do not constitute evidence that those particular products or environments are necessary for “new ways of working” to emerge, nor do they provide evidence that the purported “new ways of working” represent any improvement over the “old ways of working.” Likewise, even explanations of how or why particular products or environments relate to “new ways of working” do not provide evidence for any unique efficacy for those products or environments. As always, only prospective, predictive studies with suitable control groups can provide evidence for any unique value to occupants inherent in the design of particular products or environments. Very little such knowledge currently exists, and so designers and vendors have been free to make increasingly ambitious claims regarding productivity and other enhancements following the adoption of certain products or services. Many of these claims never move much beyond a design story, and

thus for the most part represent solutions looking for a problem.

### Organizational Trends

While more research investigating the impact of office design on individual occupants is needed, some broad, qualitative generalizations at higher levels of analysis (e. g., at the organizational and macroeconomic levels) can be made. Based on secondary research, a convenience sample of high tech executives (N = 10), and a representative sample of facilities executives (N = 100), we have uncovered some underlying dimensions of change that are currently impacting corporations; we feel that these “change continua” will continue to be relevant into the foreseeable future. Although change along these dimensions broadly conceived seems to be uniform, no doubt individual organizations would find themselves at various points along each continuum.

### Changing Corporate Strategies

Internal to External Focus. Up until quite recently, internal considerations such as core competencies, personnel, suppliers, products & services, distribution, process engineering, and other “outside-in” factors could be focused on to improve the business. Increasingly, external considerations such as market share; customer interests, needs, wants & behavior; societal & cultural trends; generational trends and other “inside-out” factors figure prominently in strategies that position organizations for future success. Almost any technique that can reduce cycle time to understand customer issues and meet their needs with timely new products and services will be a great investment to make. Corporations of the future will keep their businesses current by maintaining an external, “inside-out” focus.

### Process to Trends Orientation

Echoing the general “internal to external considerations” theme, corporations of the future will need to do more than just design, implement, and monitor efficient internal processes and their interactions. They will also need to anticipate, understand, and address the broader societal trends that influence their customers and their customers’ desires, positioning their product & service offerings to take advantage of this advance knowledge.

### Fixed to Flexible Strategic Planning

The once vaunted IBM has managed to reinvent itself several times from mainframe computer hardware to PCs to e-commerce applications. In so doing, it has scrapped fixed strategic plans that make rigid assumptions about “revenue streams” and “market share.” In fact, their horizon for a relatively permanent strategic plan reaches only two years ahead. Beyond that, they remain flexible by generating responses to a number of different alternative scenarios. Owens-Corning’s move to fiber optics represents another example of this broader shift from fixed strategies based on linear extrapolation of current trends to the nimble embrace of change and the flexibility to meet unpredictable opportunities as they arise.

### Executive to Customer-driven

Since speed of response (in acquiring customer intelligence, product design & development, product shipping, customer service, and many other areas) represents a primary competitive factor (and no doubt will remain so), whatever can be done to decrease such cycle times will improve business prospects. Future organizations will figure out how to “outsource” their strategic planning to their current and future customers. Many

retail companies now collect customer knowledge at the point of sale, and this information immediately informs supply chains and distribution channels without the need for executive oversight.

Regardless of how gifted the executive team, if they’re interpreting and responding to information filtering up and down within a hierarchy, their company will not match the pace of competitors. A “market research—executive decision—company response” chain can never be as short as a “customer response” chain. Dell Computer reflects this “customers-as-strategic-planners” approach, and although they have been affected along with the entire sector by the recent tech stock slump, many investment firms again include them in their “buy” column.

### Corporate Culture to Society

We still don’t know nearly enough about corporate culture—how it arises, how to influence it, or how it relates to corporate success. However, savvy businesses have already supplemented considerations of their own corporate culture with investigations of the cultural trends within the broader society. Particularly is this true of global multinationals who must respond to a number of different cultural imperatives to ensure their continued growth and success.

### Physical to Mental Environment

Corporate executives, facilities managers, and designers have all begun to recognize the impact of the physical environment on the mental functioning and capabilities of employees. We can no longer afford to evaluate design and building performance issues independently of the preferences, responses, and needs of occupants. Organizations of the future will manage design projects in terms of occupant-centered definitions for both problems and their solutions. While customers will

drive the “front-end” of these businesses, employees will drive the “back-end” and both constituencies will be accepted as critical for long-term survival.

### Changing Organizational Structures

Status to Performance-based. Not “How long have you been here?” but “What have you done for me lately?” will determine space and resource allocation standards for companies of the future. However, the HR (human resource) implications of paying such ruthless attention to creative, innovative productivity will figure just as prominently—if not more so—in any successful transition to performance-based standards for space, resources, incentives, & promotions. Change management strategies will largely determine whether this procedural shift spells success or disaster for first-movers.

### Hierarchical to Strategic (Flat)

Many other much more capable voices have highlighted the increasing shift from the military-inspired “command-and-control” organizational structures to the flexible, “flat” corporate structures of today and tomorrow. This change parallels the gradual shift from products to services within even historically manufacturing companies like GE or 3M—both of whom have managed to remain competitive in today’s unforgiving business climate. (I would not claim that these two organizations have completed the switch from hierarchies to flat structures, but they have been increasingly influenced by this general trend.) Additionally, a layer of managers thinking and making decisions and at least one additional layer of employees carrying out those decisions costs more than one layer of employees all of whom are thinking and making good decisions, not to mention the decreased cycle times thus available.

### Top-down to Local Control

Although somewhat redundant with the last continuum, this trend (to move decision-making and resource-allocation down to lower levels in the hierarchy) has been important even within organizations who have retained an otherwise rigid, hierarchical structure. Again, increased speed of response represents a primary advantage of this change, along with ensuring that empowerment for making critical decisions remains closer to customers—allowing them to have a timely impact on most if not all internal processes and initiatives.

### Organizational Chart to Functional Alignments

Also reflecting the shift from rigid, fixed strategies to fluid, dynamic arrangements, this trend allows companies to change focus and direction much more quickly than the hierarchies of the past would allow. This change continuum has a number of salient office design implications, since the important behaviors and interactions that must be supported and leveraged within corporate office environments cannot be understood simply by studying the official organizational chart. Ideally, programming approaches include observational and other indirect methods to understand exactly where to draw the line between relatively unchanging business sectors and the dynamic recombinations of other teams and processes.

### Departmental “Silos” to Integrated Solutions

This simply represents the need to develop new metrics for ROI and ROA evaluations that relate traditionally separate areas of operations. For example, if facilities management claims to have saved \$1.5 million by increasing density 35%, but employee turnover has increased 10% as a result, representing costs (for recruiting

& training replacements or relocating & retraining other employees) of \$5 million—overall, the company has lost \$3.5 million.

### Office Facilities as Overhead to Strategic Investment/Incentive

Regardless of the recent economic downturn, recruitment & retention of highly productive employees will remain important and difficult for most corporations for at least the next five to 10 years. In economic & historical terms, unemployment rates remain relatively low throughout the developed nations—particularly in the telecommunications and technology sectors—and there are at least 30 million fewer Gen-Xers than Baby Boomers to replenish the workforce in the world’s largest economy—America.

### Changing Nature of Work

Independent to Collaborative. Although several researchers such as Michael Brill have noted that at least in the United States, about 60% of office workers still spend approximately 60% of their time working alone, there has been a gradual, steady shift away from independent, “heads-down” work to more collaborative, team-based activities—even in conservative sectors such as banking & finance. Both generational differences and changes in the delivery of educational services that supply the workforce have contributed to this trend, and it appears it will continue into the foreseeable future based on available evidence.

### Management-directed to Self-directed

As corporate strategies embrace flexibility and hierarchies crumble, individual workers become more responsible for their own contributions—from start to finish. Leveraging this “knowledge work” represents the most important challenge facing organizations of the future according to management guru Peter Drucker. Meeting this challenge requires an integrated approach that includes

adjustable, movable, re-configurable, yet dedicated environments; performance-based incentive structures; shared (group-level) performance evaluations & rewards; and adaptable perks like flextime and ubiquitous access to technology.

### People as Interchangeable Parts to Critically Unique

When workers simply implemented processes planned by others, their function for the organization involved only their brawn. As job descriptions widen and the variety of responsibilities that each job entails increases, workers’ brains increasingly determine their effectiveness. The unique social network and other tacit knowledge acquired by each employee during their tenure represent advantages that sagacious corporations crave and exploit. The most conservative estimates of the costs to replace one employee start at 1.5 times his or her salary.

### Repetitive (Efficiency = Speed & Accuracy) to Creative

Repetitive work ruled in the past, and speed & accuracy for the most part equaled productivity. However, the quality of ideas rather than the quantity of activity has become the new path to success.

### Observable/Measurable to Serendipitous/Abstract

Repetitive work can be easily observed and measured, while creative innovation rarely corresponds in any meaningful way to a unit of time; additionally, the source of important creativity less and less frequently reflects the isolated contributions of single employees. The best ideas integrate several levels of abstraction within the corporation and cut across various sectors and processes, and are thus almost impossible to attribute to a single individual.

## Process Support to Knowledge Work

To reiterate and summarize many of the points made above, office environments to support future organizations must nurture knowledge work rather than large groups of workers simply implementing the processes thought of and designed by management. And since factors external to the organization now provide the most meaningful insights to determine its future course than internal factors, anticipating and designing the ideal environment to support these workers will become increasingly difficult. Flexible, adaptable office designs featuring seamless technology integration can minimize the costs & disruptions of change & transition. Investments such as raised flooring, easily moved wall dividers & partitions, and adaptable, re-configurable technology access & support will become commonplace.

## Offices of the Future

### Generational Influences

A number of recent management books have outlined the essential distinctions among the "Veteran, Baby-Boomer, Gen-Xer, and Gen-Next" cohorts of workers. Since a "lag time" of approximately 30 years separates the peak changes associated with each of these generations, most corporations focusing on quarterly profits don't have the luxury of responding to this level of change. However, organizations planning for long-term viability must anticipate inevitable clashes among these generations, since for individual companies, the practical importance of resolving these disputes overshadows the impact of the wider trends linked with the passage of one generation to the next.

### Regulatory External

Even though President Bush's administration has rescinded OSHA's

Ergonomics legislation, government standards and regulations will continue to have an important role to play in shaping office environments and work styles of the future. Appropriations for road construction, zoning restrictions, air quality standards, and both direct and indirect incentives for telework programs or public transportation can all have an important influence on the location, size, and design of corporate office facilities.

### Technological Developments

Obviously technological advances cannot be ignored when predicting the future of corporate office environments. Technology will soon support the transaction of business in virtual environments on virtual documents with perhaps even some virtual participants. Wearable, wireless technologies might allow meetings among geographically displaced workers who can asynchronously participate in virtual conferences interspersed with more interesting and individually suited activities. However, just because technology is available to support some futuristic vision of working does not mean it will be generally accepted and used. Nonetheless, large monitors will soon give way to flat panels for both desktops & laptops, while data & communications will probably move to fiber optics before wireless becomes the general standard. No doubt fiber optics will support geographically dispersed portions of networks (WANs), while wireless LANs will eventually take over co-located office parks. Reliability and bandwidth are the drivers here, however, so until these other technology platforms can rival advanced cabling systems in these two critical functions, the spatial flexibility of wireless for even local applications won't dominate the market.

### Psychosocial Context

People are social animals, and the rate of change in their tastes & preferences

regarding the form of and opportunities for social interaction does not match that of technology or the marketplace. Therefore, companies who eschew co-location and the biologically & culturally determined advantages of face-to-face communication to prematurely embrace the technologies of "virtual work environments" will continue to be disappointed. Although the superior technological sophistication of Gen-Xers compared to Boomers, and of Gen-Nexters compared to Gen-Xers is undisputed, the replacement of actual locations for corporate office environments by various "virtual" work alternatives violates too many psychological imperatives to be viable into the foreseeable future.

### Conclusions and a Promising Direction

Sponsored by a number of noncompetitive vendors of open-plan office products, the Open Plan Working Group (OPWG) is coordinated by Orfield Laboratories, Inc., in Minneapolis, MN, a world-class product & environmental design consulting firm. The group's self-imposed charter involves optimizing open-plan offices by defining design problems and solutions in terms of occupants' experience of the space. The OPWG has used a number of unique approaches to pre-planning and schematic design that have generally improved accepted practice. A few of these techniques are described below.

### Perceptual Market Research

Since most workers do not understand how the physical environment influences them, traditional programming techniques such as surveys and focus groups can fail to distinguish between subtle yet important design differences. Furthermore, quantitative measurement has been shown superior to qualitative measurement for predicting actual behavior, so indirect, quantitative measurement of occupants' subjective responses represents an ideal

approach. Visual Quality Programming is another technique similar to perceptual market research that captures these considerations and may be more familiar to NeoCon readers.

### **Combining Subjective with Objective Measurement**

In addition to the OPWG's own work, other evaluations have documented some of the problems with many current open-plan office installations. These problems are rarely if ever strictly product-centered, but usually involve occupants' overall experience of the space over time. Therefore, defining design problems and solutions must include both objective assessment of the psychologically meaningful dimensions of the environment (e. g., acoustics, lighting, day-lighting, thermal conditions, aesthetics, human factors & ergonomics, group identity) and subjective assessment of occupants' preferences & responses to various alternatives differing along these dimensions.

In brief, the approach features Occupant-centered Design, but in the broadest sense of that term. Behavioral criteria inform building performance criteria to benchmark and demonstrate the value of particular designs experientially both before and after installation. Success can thus be defined quantitatively both in terms of objective engineering criteria and the subjective experience of occupants. This process can thus determine the value of design investment—a persistent challenge for many other approaches that do not define success directly in terms of occupants. Defining design problems and goals in terms of occupants allows clear comparisons among alternatives to be made in both objective and subjective terms. Organizations of the future will provide proper environmental support for knowledge workers, and occupant-centered design can ensure they reach that elusive goal.