

WHO USES workplaces and WHY?	Individual goals	Organizational goals	Societal goals
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WHAT IS a workplace -- and how does it work?	Desired products and achievements	Organization	People (skill, talent, knowledge)	Resources	Environment (place, tools, equipment)
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II. WHAT IS A WORKPLACE -- AND HOW DOES IT WORK"?

"I find that the biggest difference since the move is that I don't necessarily pass by the mailboxes. In our old space, I was right next to the mailboxes, so that whenever I went out to see Jim or Beth about something, I'd automatically look into my mailbox. That way, if somebody left me a note or a memo, I'd have it within an hour or so of when they put it there, and could go after their problem right away. Then the next time I left the office, I could leave them a note with a question, or to tell them I'd resolved their problem. The way things are now, I only go to the mailboxes on purpose, which means that I do it much less often. That means that if somebody leaves me a note on Monday, I might not get it until Tuesday, and then I won't put an answer into their mailbox until later on Tuesday so that they might not get it until Wednesday. What used to take half a day now takes two days." -- an office manager, on her new \$20 million building.

Taking the word *workplace* literally, we can divide it into its two compound words: *work*, an organized, goal-oriented human activity which is rooted within a cultural context; and *place*, the location and objects with (and within) which people or groups live and act. Work and place are both of critical importance in people's self-identity. Ask people to describe themselves and the most common responses will be their names, their jobs, and where they live or where they're from. The combination of work and place often has a significance for people which includes but goes far beyond the economic.

Work is also descriptive of a larger scale of human activity, people coming together to do what would have been difficult or impossible separately. From the earliest records of human history, we see that individuals have banded together into organized groups in order to achieve common goals. This is more the case now than ever before; for almost all of us, work means working within some larger organization toward some goals which are larger than our own.

Work and place are linked to the surrounding culture, and take on much of their meaning from the social context in which they are found. Culture determines what is valuable and what is not; which practices and conditions are acceptable and which are

intolerable; which products are necessary and which are expendable. Individuals and organizations take on meanings and beliefs from the larger cultural system.

There are any number of examples throughout history of the ways in which individuals and organizations have come together within a cultural context to create ways and places of work. We include a handful for illustration.

- English crafts shops 1600 C.E.
- The early factories of Manchester and Liverpool 1750 C.E.
- New England mills 1800 C.E.
- Wright's Larkin Building 1900 C.E.
- Kahn's Ford Motors River Rouge plant 1920 C.E.
- Burolandschaft and the Open Plan 1955 C.E.
- The Open Systems Office 1980-90 C.E.
- The Virtual Workplace: Car, Home, and Airport
- The Social Workplace: Coves and Caves, Private/Communal Systems
- The Fluid Workplace: Hotelling, "Hot Desks," and Temps

This list is obviously far from complete; many millions of Americans work in industrial or crafts or retail workplaces which more closely resemble our examples from earlier centuries than the information workplace we think of as the American office. Even in those environments, though, just as in our modern examples, we can see that workplaces are a tool which assists peoples' activities in pursuit of their own goals and those of the operating organization. The creative act of the workplace is the transformation of resources into these desired products or achievements, whether through creative thought, physical labor, or technology. It is a central place in which all of the necessary resources are brought together, procedures and tasks are set for all of the participants, and resources are placed in proper relationship to one another for the transformations to occur smoothly and efficiently.

What are the components of this workplace system? Certainly the workplace has a **physical environment**, and at the Johnson Controls Institute, we are most specifically interested in working with this physical setting. But there is of course more than that.

Any workplace is based upon a **set of expected products and achievements**, and these will differ greatly depending upon the type of workplace we're talking about and the culture within which it is situated. The factory is based around the production of objects, while the school may be based around the production of knowledge and the achievement of its students.

There are a certain **set of resources** that any particular workplace will require in order to meet these products and achievements. These can range from energy to tools to office supplies to money, and again the resources required will be specific to that type of workplace.

There are a **group of people** that will be necessary in a given workplace, again varying depending on the type of workplace. One workplace may require creative people, while another may not; one workplace may require people who are physically strong, while others will not. And finally, there is an **organizational structure** specific to the type of workplace we're examining, ranging from tight to loose, hierarchical to flat, collaborative to individualistic.

Any workplace type can be defined by its unique pattern of these components that make it up. But what we find is that a building is a difficult scale to do this kind of analysis, that there are nested within any workplace a number of much more specific places, each of which can be described by a particular pattern of these five elements.

As different as companies are from one another, and as different as workplaces can be from one another, when we examine the workplace system -- the people, organization, resources, products and achievements, and the environment -- we find that, even though there are an almost infinite number of possible configurations, the system all comes together in a fairly few common patterns in late 20th century architecture.

A list of those patterns for an information-based workspace might include:

- the front office
- the "war room"
- the mailroom
- the hallway
- the coffee machine - water cooler
- the hotel
- the virtual office
- the rabbit warren
- the production space
- the back office
- the bullpen
- the office pool
- the studio
- the factory
- the cove
- the skunkworks
- the den
- the conference space

Each of these differ in their organization and personnel, in the resources they demand, in the products and achievements they can deliver, and in the environment they demand for successful operation. Each of these can be enormously productive environments *in its*

own way, but our expectations for a productive office pool are quite different than for a virtual office. Let's look at a couple of places in a typical office and see how this plays out.

Example 1: *The Bullpen*

The bullpen consists organizationally of a group of people who work cooperatively and collaboratively on group-based problem solving activities, such as developing new advertising strategies or product line development. This type of work activity requires close proximity and an environment that fosters social camaraderie, and the participants will be expected to be creative, open, and critical. The setting might take the form of small office workstations focused on a central meeting area in which the team spends a good deal of time tossing ideas back and forth. The products of this place are solutions to particular problems. The resources used in this process, both material and informational, are shared among the members of the workgroup.

Example 2: *The Water Cooler*

The water cooler and its associated workplace patterns such as hallways are often thought of as simple support spaces, but in fact are productive elements of many work systems. Typically, they support face-to-face meetings between people who might not have sought one another out but who are somewhat familiar with one another's work. Meetings in such places are typically very brief, lasting a few seconds to a few minutes, and are characterized by an exchange of information about current projects. These meetings can be directly productive through a fortunate mesh of knowledge need and information at hand; they can be indirectly productive through the promotion of social cohesion and group formation that allows for better teamwork; and they can be completely unproductive.

This workplace pattern, when successful, has some specific environmental features. It will be located in or near common travel areas which are large enough to support both brief conversations and passers-by; they have some non-meeting function that draws people to them, such as coffee and vending machines, bathrooms, or drinking fountains; and they have an informal and unprogrammed nature, so that people feel as though they are "off-duty" momentarily and that normal organizational boundaries and hierarchies are relaxed.

The nature of environmental quality will be different for both of these examples, and for all of the other places we've identified. Each one of them has a different set of operational strategies to satisfy, and will require a different collection of people, organization, resources, physical environment, and achievements to get there. The

question of environmental quality then becomes, "How well does this place, this small specific component of the work system, do what it's supposed to do?" And by "what it's supposed to do", we mean those social, organizational and individual strategies that we discussed earlier.

The critical focus of this paper is the environment within which all of these diverse resources are brought together, organized, and converted into desired goals; the medium through which work is done and resources used for the creation of wages, products, profit and knowledge. Even in the electronic age, when many of the traditional forms of gathering, organizing, transforming and exchanging are being replaced by digital communication, the physical necessities of the workplace cannot be ignored or minimized. The building and its equipment still plays a strong role in the day-to-day operation of any business. Because resources of all sorts are finite, it is critical that as many resources as possible be converted to desired goals rather than wasted within a inefficient conversion system.

Our understanding of the workplace as a system is still limited by thinking of the nature of work as being individual (and usually fixed and repetitive) tasks. Sundstrom's (1987) review of research on work environments showed that human factors psychology and ergonomics were the largest contributing fields to our understanding of workplaces, and were mostly focused upon individual performance.

Table 2. Empirical Studies Concerning the Physical Environment in Offices and Factories *

Level of Analysis & Topic of Study	No. of Studies Cited				Totals
	Lab Exper.	Field Exper.	Surveys	Field Studies	
Individual Worker					
Lighting	13	1	—	5	19
Windows	—	—	3	1	4
Temperature	27	2	2	8	39
Air Quality	4	—	2	1	7
Noise	72	1	1	1	75
Music	9	9	1	—	19
Color	25	—	1	—	26
Work-stations	2	—	5	1	8
Interpersonal Relations					
Status	—	—	1	1	2
Personalization and participation	—	1	1	3	5
Ambient conditions and interaction	8	—	—	—	8
Proximity of workspaces & interaction of groups	—	—	—	9	9
Room layout and interaction	11	—	1	9	21
Privacy and enclosure	—	—	4	8	12
Seating arrangement and group discussions	12	—	—	—	12
Organization					
Organization, structural and physical layout	—	—	—	1	1
Comprehensive studies and post-occupancy evaluations					
	—	2	15	6	23
Totals	183	16	37	54	290

* Source: Sundstrom, E. (1986). *Workplaces*. New York: Cambridge University Press.

While certainly beneficial, this attention on individual performance and satisfaction has been of limited use in helping us to understand the nature of the work environment in supporting interpersonal relationships. This is unfortunate, because the modern knowledge-based workplace is centered around communication, collaboration, and the development of effective groups (Boyett & Conn, 1991). The era of the isolated worker doing repetitive tasks is in decline; the real potential for productivity improvements in the white-collar workplace is to be found in the improved creativity, effectiveness, leadership and timeliness of the managers and professionals who set the agenda for the organization rather than in incremental increases in clerical speed (Lehrer, 1983; Weiss, 1984).

There are a great number of goals that various participants may have for any particular workplace, from comfort to self-expression, from productivity to job satisfaction, from

income to group membership. The workplace system can only be evaluated on the basis of how well it meets those goals. A workplace environment can hinder achievement of goals in two ways. First, it can be set up such that some available resources are not used at all. Examples would include resources not getting to the site because of distance or inaccessibility; workers' skills and knowledge not being required or fully utilized; and trained and qualified people not being brought in because of failure to meet their accessibility needs.

Second and far more common, workplaces can be set up such that available effort and resources are wasted or absorbed by the workplace rather than converted to desired goals. Inefficient office layouts that require too much travel; energy wasted through inefficient equipment and building components; slowdowns or even lost work days due to glare or repetitive stress injuries at computer-intensive jobs: these are only a few examples of the many ways in which workplace environments waste resources through some combination of failures large and small.

Because the workplace is an intertwined system, a change in any of the resources, especially the environment, will have effects -- often unforeseen -- in achieving its goals. Because the workplace is part of a larger, dynamic social and economic system, both resources and goals are always changing to a greater or lesser extent. Thus the workplace is never completely constant but rather always adjusting to new circumstances and constraints.

This general definition of the workplace -- a system of resources, including people and their environment, intended to create socially valued products and achievements -- leads us to our next question: How can we evaluate such a complex system? What are the criteria for environmental quality in the workplace?