



Blueprints for Designing Effective Collaborative Workspace

Nahum Gershon, The MITRE Corporation

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We shape our buildings, and afterwards our buildings shape us.ⁱ

–Winston Churchill

Introduction

Critical thinking and effective planning rarely emanate from cramped and dysfunctional workspace. A well-designed office environment, however, can significantly increase the potential for effective collaborative practices. The optimal design provides a balance between distraction-free workspace and a place where colleagues can meet and interact informally. Past experience and field research have determined that the design of effective collaborative workspace should satisfy the following criteria:

- Public spaces should be located close to the private spaces, including:
 - Conference and team rooms as well as communal work spaces with technology that allows videoconferencing and teleconferencing.
 - Places where professionals can gather spontaneously (a library) or eat lunch together with wall space to hang and store charts, maps, etc.
 - A “Main Street” that enables individuals to meet each other spontaneously.
 - Public areas to meet with visitors.¹
- When most professional work is focused on independent projects, the workspace should provide²:
 - Enclosed private work spaces large enough to accommodate an extra chair.
 - Work areas that accommodate at least two people sitting in front of the computer screen.
- When most professional work involves group activity, provide space for both small and medium-sized group activity.³

One of the consequences of a rapidly expanding workforce has been the tendency to squeeze more people into available space. It is hard to collaborate if there is no room in your cubicle for a visitor’s chair. Research shows that compressed workspace almost inevitably leads to a reduction in productivity, product quality, and collaboration. Most managers accept this as a hidden cost of doing work. This paper argues that any change to the physical work environment should involve a conscious weighing of the pros and cons and their impact on collaboration.

Moreover, senior managers should make a concerted effort to think strategically about how their physical workspace is designed, especially prior to fitting out new buildings or newly-leased space. One of the more viable approaches is to provide enclosed work spaces that encircle more public common areas; this increases the potential for random encounters and interactions both within and across teams.

Building Effective Collaboration Space

Human beings are herd creatures and they like to stick together. This is true for life as it is for office environments. When spending time together, people not only satisfy their need for closeness, but also share information, interests, and the like. In office environments, much of the learning takes place when people meet informally.

A good office design that supports a more collaborative work environment can have a major impact on worker productivity, creativity, and the quality of the final product. If workspace design makes collaboration among people physically difficult, people will not collaborate much. Even worse, their innate tendency to socialize and collaborate might be significantly diminished.

In the last 30 years or so, the tendency of office space planning has been to “open” office environments and have people work either in half-open cubicles or in open space. A typical cubicle environment is depicted in the following New Yorker cartoonⁱⁱ:



As in the cartoon, many existing office cubicle arrays possess the following characteristics:

- **Rigidity.** The cubicle arrangement is rigid; there is only one way to arrange the furniture in the cubicle. There is only one option for access and egress.
- **Clutter.** There is not enough space in the cubicle to house all of the materials a person needs to do his or her work. The clutter can become unbearable and unsafe.
- **Lack of Social Space.** There is no place for socializing or meeting visitors.

The quality of the work environment is also affected by such factors as lighting, acoustics, ventilation, and temperature control. A series of studies over the years show that office design improvements that address these issues frequently generate a 15 to 20 percent increase in worker productivity.ⁱⁱⁱ

- Seventy percent of employees believe their productivity would increase with the implementation of appropriate noise reduction strategies.
- A 1995 Harvard-sponsored study of 40 buildings and 3,000 employees showed that increased ventilation reduced sick days by an average of 1.5 days per employee.
- The same study determined that employee-controlled lighting improves workers' perception of their environment by nearly 20 percent and decreases costs by 16 percent.

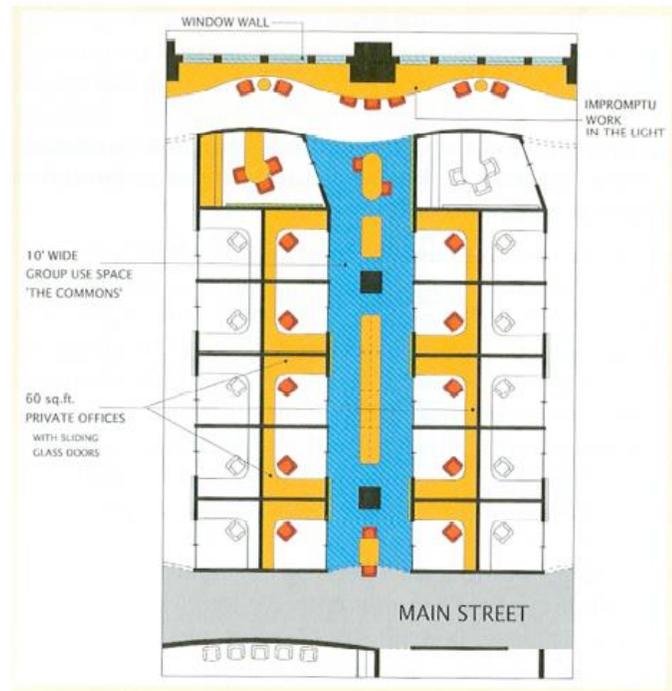
Significant improvements in the quality of work product, creativity, and productivity could be achieved with better designed workspace. Unfortunately, the recent trend has been in the opposite direction in recent years; with the major influx of new workers, agencies have been forced to house more people in less space. The costs of compressing workspace in this way should not be underestimated.

Examples of how to design better workspace better abound in the outside world, where the quality of the workspace is seen as having a major impact both in improving quality and defining the mission and culture of the organization. Given the high value placed on establishing a culture of collaboration, there is a parallel requirement to build workspace wherein collaboration can best take place. The following discussion provides some layouts illustrating how better work space design can enhance interaction and communications.

Most Professionals Work by Themselves

Most professionals are required to spend a considerable time engaged in careful thinking. This includes both individual and team/group work. In *Disproving Widespread Myths About Workplace Design*,^{iv} Brill et al. report their findings based on interviewing and surveying the work conditions of many thousands of office workers. They found out that “both quiet work and verbal interactions happen largely in individuals’ workspaces.” At the same time, impromptu meetings in public spaces are important to stimulate the exchange of ideas and for creativity. The key is to strike a balance between the need for a distraction-free workplace and the value of meeting and interacting informally with people in unplanned ways. The solution they propose is to design enclosed workspaces (enclosed offices or enclosed groups of a small number of small open workspaces), each in close proximity to public spaces that “increase the frequency of random encounters and interactions for individuals, within and across teams.”

Workspace Array with Public Space. One design that fosters collaboration is an array of enclosed workspaces surrounding a public space that allows people to meet and interact. A schematic design of such a space is given in the figure below.



A design of a cluster of individual workspaces with public space GSA Public Building, San Francisco, CA^v

To reach an individual workspace, one must walk through the public space, which provides ample opportunities for people to interact without much planning. These public areas could include drinks and some food (a social magnet). It is important that the enclosed workspaces have doors that can be closed at will in order to preserve privacy when needed. The professionals should also be allowed to plan the furniture arrangement in their space (to promote diversity including diversity in thinking).

From their research and surveys, Brill et al. concluded that areas of enclosed workspaces (e.g., enclosed cubicles) support informal interactions and impromptu meetings more effectively than open space offices. This conclusion seems counterintuitive: open space offices do not foster more open communication. Open communication is better achieved by removing unnecessary and restrictive hierarchical boundaries and “other barriers that limit the flow of ideas and collaboration,” and by using “ways to increase the frequency and utility of work-useful informal interactions and group work.”

Cross-Group Public Spaces. In addition to the public spaces within a group of enclosed small workspaces, consideration should be given to creating cross-team and cross-functional work space such as:

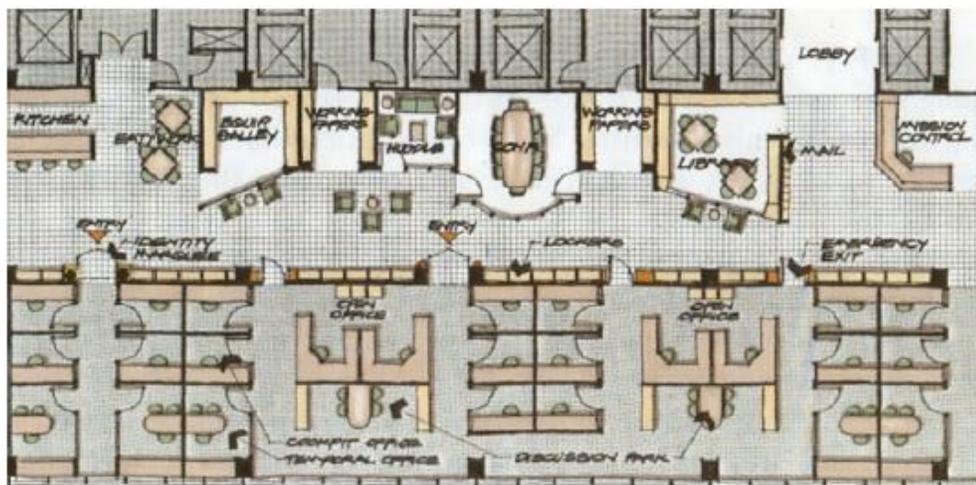
- “Main Street.” A hallway with services, support spaces, and meeting places.
- An enclosed workspace between Main Street and the personal office spaces that prevents noise from reaching the individual work spaces.
- Public spaces interlaced with arrays of personal workspaces, or workspaces interlaced by public spaces.



A Main Street, Perspective⁶

One of the necessary steps in providing workspace for IC professionals that will enhance their work rather than impede it, is to consider:

- How close group interaction space should be to individual workspace.
- Whether interaction spaces should be dedicated to a group or be available to everyone.

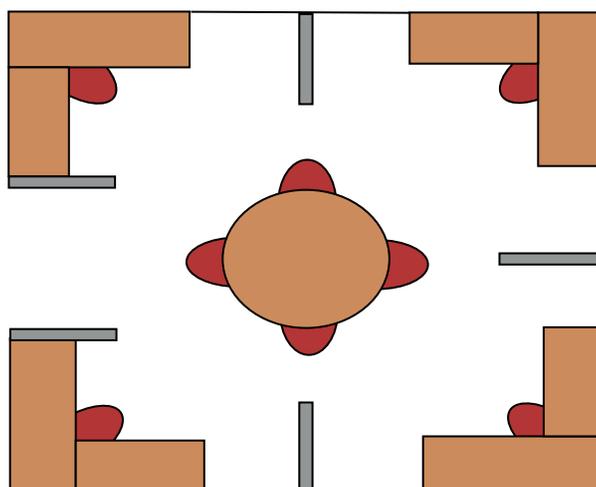


A Main Street Plan, including a full-height wall between Main Street & individual workspaces

Most Professionals Focus on Work in Groups

In some offices, people work together in groups most of the time. We describe here two possibilities (among many) for increasing efficiency and work quality by creating an open array.

Small Group Open Array Workspace. One possibility is to place a small number of professionals in a room divided into individual work areas and a public space in the middle. The following figure illustrates a configuration for a group of four professionals that provides both privacy and the ability to interact. Short partitions divide the space into individual workspaces that keep colleagues outside one's normal field of vision when working at the computer or at one's desk. However, by slightly moving his or her chair back from the desk, the employee can easily engage others in the workspace visually. This is suitable for people working on related issues.



A Four-Desk Array with Center Public Table

A more radical approach has been developed by the architectural firm Meridian Design that divides the work space into open group areas with no cubicles.^{vi} First, the floor is divided into a number of team areas. The work area is then arranged not with the familiar 90-degree cubicles, but rather with a number of encompassing open workspaces where the prevalent angle is 120 degrees. Each workspace is designed for a few people. The encompassing nature of this design helps to define the boundary of the individual workspace and focuses attention toward a central communal horizontal surface (large and usually non-rectangular table) used for both work and other group activities such as eating, discussing, or floating ideas and sharing insights (some of these activities are also done from the desk surface in a good team flow). The space underneath the communal horizontal surface could be used for extra storage.



The flowing workspace uses 120-degree corners. Note the communal table in the center of the workspace (on the left).

As seen in the photo, each computer is placed in a corner of a table with a 120-degree angle. This allows more than one person to work in front of the computer (see picture below), which is much better than placing a computer in the 90-degree enclosure so common in small cubicles.



Two persons sharing a screen in a 120-degree corner

The open arrangement using 120-degree angles has proven more efficient for Meridian Design than the typical cubicle array they used to have. An individual sitting in front of his or her computer screen, placed in a 120-degree corner, is visually isolated from people who sit in other 120-degree corners. To open a space for passage or activities in a traditional 90-degree cubicle structure, one needs to eliminate cubicles.

Using Wall Space to Share and Collaborate. Areas facing a wall could post drawings, charts, and other materials on the upper half of the wall (see photo). The lower half is used for storing accumulated large pieces of paper or charts not essential for the work done at a particular time. This communal display also accommodates the collaborative work of two or more people.



The wall is used for collaborative work and storage.

Sound Proofing. Based on their study interviewing thousands of office workers, BOSTI Associates³ notes that “noise is both necessary for business (because it is integral to verbal transactions, informal learning, and collaboration) and also distracting to neighbors trying to concentrate.” They found out that “both quiet work and verbal interactions happen largely in individuals’ workspaces.”

In open environments, such as cubicle or non-cubicle arrays, noise is most often a disturbing factor. The technology to isolate sound to the immediate surroundings of the analyst exists today and could be implemented. Use of such white noise systems has been actively embraced in the commercial world, which has calculated that the price of this feature is easily compensated by the increase in productivity.

Acknowledgements:

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ⁱ Winston Churchill, 28 October 1943, to the House of Commons (meeting in the House of Lords).

ⁱⁱ Captionless (Man looking over cubicle wall at mannequin standing in for co-worker). Published in *The New Yorker* May 10, 2004. Printed by permission. Copyright restrictions prohibit copying and distributing this figure.

ⁱⁱⁱ Kristan J. Wheaton, “Office Upgrades Likely to Increase Productivity,” Intelligence Report, Institute for Intelligence Studies, Mercyhurst College.

^{iv} M. Brill, S. Weidemann, and the BOSTI Associates, *Disproving Widespread Myths About Workplace Design*, published and distributed by Kimball International. See <http://www.bosti.com/public.htm>

A more in-depth publication is BOSTI’s 1985 two-volume work *Using Office Design to Increase Productivity*, based on rigorous, client-based research with 10,000 workers in 100 organizations. It showed that workplace design affects productivity and job satisfaction.

^v From M. Brill, S. Weidemann, and the BOSTI Associates, *Disproving Widespread Myths About Workplace Design*, published and distributed by Kimball International. Permission granted.

^{vi} Meridian Design, New York City, NY. The photos were taken at their offices.