Who Moved My Cube?

Creating workspaces that actually foster collaboration by Anne-Laure Fayard and John Weeks
Spotlight

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MANAGERS ONCE DISCOURAGED, even forbade, casual interactions among employees. To many bosses, chitchat at the watercooler was just a noisy distraction from work. Today we know that chance encounters and conversations on the job promote cooperation and innovation, and companies craft their floor plans and cultures with this in mind. The results have been surprising—and often disappointing.

Consider the experience of Scandinavian Airlines (SAS). In 1987 the company redesigned its headquarters around a central “street” that linked a café, shopping, and medical, sports, and other facilities, including several “multirooms” containing comfortable furniture, coffeemakers, fax and photocopying machines, and office supplies. The new design was explicitly intended to promote informal interactions, and management broadcast the message that employees should find opportunities in the new space for “impromptu meetings” and “creative encounters.”

What happened as a result? Very little. A study of employee interactions revealed that just 9% were occurring in the street and the café, and just 27% in all the other public spaces combined. In spite of the thoughtfulness and good intentions informing the new design, two-thirds of interactions were still confined to private offices. What went wrong?

Common sense, it turns out, is a poor guide when it comes to designing for interaction. Take the growing
enthusiasm for replacing private offices with open floor plans in order to encourage community and collaboration. More than a dozen studies have examined the behavioral effects of such redesigns. There's some evidence that removing physical barriers and bringing people closer to one another does promote casual interactions. But there's a roughly equal amount of evidence that, because open spaces reduce privacy, they don't foster informal exchanges and may actually inhibit them. Some studies show that employees in open-plan spaces, knowing that they may be overheard or interrupted, have shorter and more-superficial discussions than they otherwise would.

Both sets of findings are correct. Open floor plans, or indeed any type of design, can either encourage or discourage informal interactions, depending on a complex interplay of physical and social cues. Over the past 12 years we have conducted nine studies of the effects of design on interaction, looking at organizations in the United States, Europe, and Asia. We surveyed the extensive literature on the subject and interviewed dozens of managers about their

The Properties of Proximity
People often assume that proximity is purely a function of physical factors: how far employees are from one another or how close they are to a break room. And distance is important. The MIT organizational psychology professor Thomas Allen famously discovered that the frequency of workers' interactions in an R&D complex he studied declined exponentially with the distance between their offices—an effect popularly known as the Allen curve. Even when they were in the same building, researchers on different floors almost never interacted informally, he found.

But it's not just the physical attributes of a space that influence informal interactions; "proximity," as we use the term, depends on traffic patterns that are shaped just as much by social and psychological aspects. In fact, physical centrality is often less important than "functional centrality"—proximity to such things as entrances, restrooms, stairwells, elevators, photocopiers, coffee machines, and, of course, the watercooler. Allen argued that to improve the dissemination and sharing of ideas, lab directors should create spaces containing several shared resources. The social geography of a space is a crucial component of its physical layout.

The Importance of Privacy
One of our studies involved a media agency whose central shared space, which held coffee and vending machines, a printer, and a copier, sat between the company's entrance and private offices. Everyone had to pass through it—but nobody lingered there. The reason, many employees confided, was that there was so much traffic that private conversations were impossible. In particular, the agency's director came in frequently for coffee, and people didn't want her to overhear them.

Be aware that seemingly small changes to a space can have an outsize effect and that unintended consequences are common.

office redesigns. The sum of our research reveals that a space may or may not encourage interaction depending on how it balances three dimensions, or "affordances," that have both physical and social aspects: proximity, privacy, and permission. (For more on affordances, see the sidebar “The Signals Design Can Send.”)

The most effective spaces bring people together and remove barriers while also providing sufficient privacy that people don't fear being overheard or interrupted. In addition, they reinforce permission to convene and speak freely. These requirements, we've found, apply just as readily to virtual spaces as to physical ones, although their virtual manifestations may be quite different. In either setting, getting the balance wrong can turn a well-meant effort to foster creative collaboration into a frustrating lesson in unintended consequences. Although no formal studies of the reasons for the design failure at SAS were done, it has all the earmarks of such an imbalance—and should serve as a cautionary tale for any company contemplating a redesign.
Idea in Brief

Casual interactions among employees promote trust, cooperation, and innovation, and companies have devised open floor plans and common areas to encourage them. But such efforts can easily backfire. Spaces, whether physical or virtual, invite interaction only if they properly balance three factors, or “affordances.”

**PROXIMITY** Designs must drive traffic to shared spaces and give people reasons to remain. Centrally-located areas containing shared resources such as photocopiers and coffee machines do this well. For virtual workers, continuously open video links and instant messaging provide a sense of proximity.

**PRIVACY** People must feel confident that they can converse without being interrupted or overheard. They must also be able to avoid interacting when they want to. Alcoves lend privacy to public spaces. Clear policies about who has access to which communications help protect privacy online.

**PERMISSION** Company leadership and culture, as well as the space itself, must convey that casual conversation is encouraged. Comfortable furniture and obviously work-related machines such as photocopiers help send that signal. In addition, leaders should model desired behaviors in both physical and virtual spaces.

The physical requirements of privacy are the most obvious ones. At a minimum, people need to be confident that they can converse without being overhead. To ensure such confidence, spaces must be designed with visibility and acoustics in mind; privacy is enhanced when others can’t see whom you are talking to and when you can see others approaching or within earshot. There’s a subtle implication here: True privacy allows you to control others’ access to you so that you can choose whether or not to interact. Though it may seem counterintuitive, research shows that informal interactions won’t flourish if people can’t avoid interacting when they wish to.

The architect Christopher Alexander, who has written extensively about patterns of use in buildings and cities, describes the alcove as the ideal space for informal interactions: It’s sufficiently public for casual encounters but provides enough privacy for confidential conversations. Alcoves also make it easy for people to move a conversation that began in the open (for instance, in the hallway) to a more private space without having to seek out a room with a door—a disruption that can end the conversation.

Let’s look at how a lack of privacy undermined interactions at Xerox’s Wilson Center for Research and Technology. Managers created the “LX Common” to encourage informal encounters among employees in separate groups. The Common afforded great proximity: It was centrally located and was traversed by people walking from the main entrance to their labs, from one lab to another, and to the conference room. It contained the kitchen, the photocopier and printers, and key reference materials, and this functional centrality also drove traffic. But as teams started having conversations and meetings there, people began taking long detours around it. The problem? The Common created so much proximity and so little privacy that engineers couldn’t pass through without risking being sucked into a meeting, informal or otherwise. So they avoided the space altogether.

The lab manager found a solution by setting three rules that gave employees control over when and with whom they would interact in the new space: Traffic through the Common was acceptable at any time; anyone was free to join any conversation there; and anyone was free to leave any conversation at any time. Once the rules were in place, informal interactions flourished.

The Power of Permission

The social dimension of permission is more obvious than the physical one, but both are critical. Culture and convention shape our view of what constitutes appropriate behavior in a particular environment. In an office, people generally deem a space to be a comfortable, natural place to interact only if company culture, reinforced by management, designates it as such. This was evident in a consulting firm we studied, where “real work” was done only at one’s desk or in meeting rooms. The luxurious coffee lounge was usually empty: Employees would come in, grab a cup of coffee, and leave. Company culture did not give them permission to stay and talk. In contrast, at a creative collaborative we observed, where designers, advertising people, and architects shared an office space, sitting on sofas and chatting in the centrally located café was seen as part and parcel of the creative process.

Sometimes the artifacts in a space powerfully affect its social designation. In a study of interactions in photocopier rooms at three French companies, we found that the mindless, stationary task of making copies, combined with the need for others to stand around while waiting their turn, created permission for informal interactions. The sense of permission was strengthened by the fact that copying is perceived as work. Management might frown on
employees’ “gossiping” over coffee but have no problem with the same sorts of conversations around the photocopier.

Permission, then, reflects the interplay of physical space, artifacts, and company culture. We saw some best practices for combining these elements at IDEO and Zappos. In IDEO’s open-plan office, portable furniture lets employees move around to work near whomever they’re collaborating with. At Zappos, managers are encouraged to spend as much as 20% of their time socializing and team building. The CEO, Tony Hsieh, has a small cubicle in the middle of the company’s Las Vegas cube farm, signaling his availability and broadcasting permission to interact.

**Putting Principles into Practice**

Understanding the three P’s required for informal interaction is just the beginning. How do you actually design for them? Start by being attuned to the balance between them; having only one or two usually isn’t enough, and over- or under-emphasizing any of the three can backfire. Build flexibility into your design so that you can test permutations, and measure the design’s effects. In our experience, companies rarely do either. Be aware that seemingly small changes can have an outsized effect and that unintended consequences are common.

Along with Bojan Angelov, a research fellow at New York University’s Polytechnic Institute, we provided consulting services to a company that sells coffee equipment and supplies to offices. During our work there, we found that coffee rooms were more often conversation-triggering spaces than true interaction spaces. Proximity wasn’t the issue; the rooms we observed were well located. They weren’t set up to afford privacy, though, nor did people feel they had permission to linger. Employees would often start conversations in coffee rooms but then move to a more private space to continue talking. However, many conversations were interrupted, and ended, before they got to this next stage. The moment of transition—the perceived need to find a more private place—made the interactions fragile.

Another of our studies highlighted the unpredictable impact of design changes and the importance of monitoring their effects. Researchers in a university psychology lab had a communal coffeepot and took turns making coffee each afternoon. As the person so tasked passed by colleagues’ offices on the way to the kitchen, he or she would tell the others that the coffee would be ready soon. Everyone would convene in the kitchen 10 minutes later and discuss both personal events and research projects while they sipped their coffee.

The head of the lab realized how important these coffee breaks were to collaboration. He wanted to encourage and reward them, so he replaced the old coffeepot with a new single-serve machine that made a variety of high-quality hot drinks. This would give people all the more reason to visit the kitchen, he thought. But because coffee was now freely available and was dispensed by the cup, people came by for it at different times and left once it was ready. The informal afternoon meetings disappeared. The lab director had provided plenty of permission and privacy (employees could retreat to an office if they chose), and he was correct in assuming that increasing proximity would stimulate communication. Un-

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**The Signals Design Can Send**

The concept of “affordances,” developed by the psychologist James Gibson, explains how an object or an environment communicates its purpose and offers possibilities for action. Handles afford grasping; doors afford entry and exit; paths afford locomotion. Gibson argues that when we look at an object or an environment, we perceive its affordances for action even before we notice qualities such as shape and color—although we might ignore or misinterpret the affordances or, when they are especially subtle, fail to see them at all until a change to the environment alters or eliminates them. In the context of our research, workspaces afford—or don’t afford—proximity, privacy, and permission.

Affordance theory helps us understand how the design of an object might affect the ways people use it. An object generally gets its intended use only when the design exposes its purpose. There are myriad examples of bad designs that obscure affordances, from door handles whose shape gives no indication whether they should be pushed or pulled to aesthetically impressive control panels consisting of identical knobs symmetrically arrayed, without any visual clues as to what the various knobs do. In such cases conscious thought, and sometimes even training, is needed before people can understand and make use of an object’s functions.

Studies show that the affordances of objects and workspaces, as perceived by the people actually using them, may at first go unrecognized by designers or managers. The cognitive scientists Ed Hutchins and Don Norman, for example, examined the effects of replacing the interconnected control wheels used by aircraft pilots and copilots with individual joysticks. The joysticks were designed to have all the functionality of the old control wheels and then some. Hutchins and Norman discovered, however, that the designers had failed to recognize an important affordance of the old system: When the pilot turned the control wheel, the copilot’s wheel turned as well. This was not an intended functionality, but it signaled the pilot’s moves to the copilot without the need for conversation or extra instrumentation, and the pilots had come to rely on it. Unintended consequences can result from designs or redesigns that fail to account for significant affordances—whether in aircraft, workspaces, or elsewhere.
Some studies show that employees in open-plan spaces, aware that they may be overheard, have more-superficial discussions than they otherwise would.

Fortunately, he inadvertently decreased proximity, throwing the three P’s out of balance and causing casual interactions to plummet.

Although few managers would want their employees to loiter all afternoon in the coffee room, neither should they want them to cut casual conversations short. People need time to engage if a light conversation is to evolve into something more substantial. We often observed that conversations started next to the coffee machine continued in front of a cubicle or in an office doorway—"accidental alcoves" of the modern workplace. Too often proximity is the only design consideration for coffee rooms and other informal spaces. If you don’t also build in privacy (for example, by creating real alcoves) and convey adequate permission, you will probably end up with a space that triggers ephemeral interactions bearing little fruit.

Finally, it’s important to remember that permission can take many forms. Managers’ reactions to employee behavior, along with their own role modeling, can have a bigger impact than mere expressions of permission. We’ve found that many managers say they value informal interactions but in fact crush them by making negative comments when they witness them—in some cases conveying powerful disapproval through body language alone. To encourage the encounters that fuel collaboration, align what you say and do. (For guidance on how to balance the three P’s, see the sidebar “Designs That Inspire Interaction.”)

Promoting Virtual Proximity
In virtual environments, nonwork activities such as walking to the restroom or getting coffee separate people rather than bring them together. How can we replicate online the random encounters that are so vital to communication in the physical world? Our research suggests that two and sometimes three conditions are needed: high awareness of others in the virtual space; compelling reasons to voluntarily engage; and, on occasion, rules for participation.

In physical workspaces that stimulate interaction, employees have a peripheral awareness of one another, a sense that colleagues are present and available. Virtual spaces need to convey a similar sense. Applications such as instant messaging, Skype, and Twitter can do this, but only if they’re always open, whether on desktops or on smartphones and other

Casual Encounters in Virtual Spaces
Promoting informal interactions in the physical world is challenging enough; nurturing them in virtual settings is harder still. We have decades of research on physical workspaces to draw on, but we’re just starting to understand the nature of informal interactions in virtual workspaces and how to design for them. Our research suggests that the three affor-
Designs That Inspire Interaction

By providing proximity, privacy, and permission, both physical and virtual public spaces can invite chance encounters that may evolve into more-substantive connections.

### Physical Space

**Proximity**
- Position common areas in central locations or near restrooms, stairwells, or elevators to tap existing office traffic; avoid putting them in locations that would require a special trip.
- Include shared resources such as coffeemakers, vending machines, and mailboxes.
- In particular, include resources, such as printers and copiers, that sometimes require collaborative problem solving.

**Privacy**
- Experiment with the number and type of resources in the space to moderate traffic; avoid overcrowding.
- Create alcoves or other peripheral areas that facilitate private conversations in public spaces.
- Help people control with whom they interact. For example, make sure they can see who’s coming, and let them opt out of meetings in the space.

**Permission**
- Communicate the purpose of the space and the reasons you encourage informal interaction.
- Don’t create too many rules about the use of the space; informal interaction can’t be legislated.
- Make sure that the culture expected in the space mirrors the overall organizational culture. If senior managers and rank-and-file employees don’t mix much normally, they probably won’t do so here either.

### Virtual Space

**Proximity**
- Create a core group of active participants and provide engaging content and resources.
- Require participation at the outset if needed.
- Convey a sense of continuous presence (for example, by asking employees to set their IM status to indicate availability) and make shared spaces easily accessible (no more than one click away).

**Privacy**
- Create ways for people to move easily from group interactions to one-on-one conversations.
- Set transparent policies governing the privacy of online exchanges.
- Allow people to control access to themselves by choosing when they are visible online.

**Permission**
- The recommendations for permission in physical spaces apply here as well. In addition:
  - Model desired behaviors.
  - Leave shared virtual workspaces and video links open before and after scheduled activities to signal that casual use is sanctioned.
mobile devices. Frictionless accessibility is key. Our studies show that if connecting with a team member online requires more than one click, informal encounters won’t happen. It’s not unlike how people behave in the real world: You’re not going to casually drop in on a colleague who’s on another floor. Some team leaders ask their members to customize their IM status or Skype mood message to invite or discourage informal interactions at any given time. It’s the virtual approximation of pausing at the coffee station or closing your office door.

Anyone who has tried to promote a knowledge management system knows that traffic trails off unless the system contains useful information and is frequented by interesting, helpful people. The same holds true for virtual team environments and discussion forums. In our studies of public online forums, we’ve found that successful communities have a core group of active participants who provide resources and reasons for others to join in. You don’t need a core group of copy makers to fuel informal interactions in the physical world, but you do need their equivalents—facilitators, champions, and other lively regular visitors—to keep interactions going in virtual environments.

This creates a chicken-and-egg problem: It’s hard to promote an engaging online social environment without a core group, but a core group is unlikely to form without an engaging environment. It may be necessary to mandate participation until routines and a critical mass of activity develop. During our teaching about distributed work, we created a course blog and invited students to discuss the class on a voluntary basis. The blog languished. We then required participation, making sure that our own posts modeled the behaviors and communication styles we wanted to see. At first students engaged at the minimal level and stayed strictly on topic. Soon, however, they began to participate more spontaneously, responding to one another’s posts and venturing into more-casual terrain—suggesting a movie related to the course work, for instance, or asking about a bag left behind in class.

Creating a sense of proximity is especially challenging when virtual-team members are widely dispersed. We taught a course at Insead in which two classrooms a world apart—one in Fontainebleau, the other in Singapore—shared a media space. Video links, interactive whiteboards, and other technologies let students on the two campuses see, hear, and write to one another in real time. We found that it takes a lot of planning and experimentation to foster an informal virtual work environment. One key, we discovered, was to open the video connection before class and leave it on during breaks and afterward. Inspired by the sense of proximity this created, students soon began to engage in casual interactions during nonclass time, even inviting others to stop by and say hi to friends on the other campus.

Protecting Virtual Privacy

When employees know that the company may be monitoring their electronic exchanges and that their conversations might never be deleted, they are reluctant to use virtual channels casually. Managers and IT directors need to balance their desire to screen communications with the need for the privacy essential to trust building and collaboration. Organizations can’t promise complete privacy. But clearly communicated policies governing who has access to electronic communications and under what circumstances can convey important reassurance.

Xerox creatively tackled the challenge of providing both proximity and privacy in a virtual work environment. It installed a number of video links connecting EuroPARC (its R&D center in Cambridge, England) with the original Palo Alto Research Center. At first the links were always on, but the system’s designers quickly realized that if they wanted the scientists to use the technology, they would have to provide virtual doors that people could close at will. They ultimately afforded three levels of privacy: A video link could be on, off, or set at an intermediate status—like a half-open door that allows people in an office to glance out and those outside to look in for permission to visit. The links gave close collaborators a peripheral awareness of one another and increased the opportunities for chance conversations. For example, each day at about 4:00, employees in the UK office would use the links to see who was in the café having tea so that they could decide whether to join the group there.

Providing Virtual Permission

When you run into someone at the coffee machine, it’s natural to comment on the weather. This strengthens social bonds by affirming shared suffering or good fortune and often leads to a more substantial conversation. But in a virtual work environment it would be odd to contact someone out of the blue just to talk about the weather. Opportunities for random encounters are few. How, then, can
How Photocopi ers Promote Interaction

Although photocopi ers are ostensibly made for easy use by anyone, their complicated features and interfaces can make them frustrating and baffling. They need periodic maintenance—tasks that require specialized knowledge (such as how to install a toner cartridge or extract jammed paper) that tends to be unequally distributed among users. These characteristics are wonderful stimuli for informal interactions, because they give people natural reasons to launch into conversation. We’ve observed employees turning to one another for help, watching one another to learn more about the machine, and commenting (usually disparagingly) on its operation. These casual conversations can naturally lead to other subjects, some of them work related. And what is being copied can be as important as that it is being copied.

One company we studied did this by capitalizing on a mistake. A London-based manager used the wrong e-mail distribution list to invite people to her farewell party at a nearby pub. She had meant to ask her local colleagues but instead invited everyone in more than 25 offices all over the world. This led to rounds of humorous e-mails from far-flung colleagues about flying to London for the event. The next day the firm’s leaders published some of the e-mail exchange in the company newsletter, praising it as an example of the informal, connected culture they desired. Their note signaled that such online exchanges weren’t just permitted—they were encouraged.

When virtual-team members come to know one another beyond the confines of their job, the team is strengthened. Understanding this, Nokia—an effective company in terms of virtual teaming—provided social networking tools and other online resources specifically to encourage employees to share photos and personal information, and created virtual “offices” that were open 24/7. Keeping such offices open around the clock conveys permission to use them for nonwork exchanges. Turning a video feed on well before a virtual meeting and leaving it on during breaks and afterward can send a similar message, as we saw in our linked Fontainebleau and Singapore classrooms. Open connections help foster the sense that geographically disparate groups share an informal space and that the casual interactions that might occur in a real-world common space are sanctioned there.

We’ve seen virtual-team members get so involved with their smartphones and planted in front of computers for much of the day, knowledge workers increasingly straddle physical and virtual space. At first blush, you’d think this hyperconnectivity could only enhance the informal interactions that fuel creative collaboration. Our research shows, however, that what matters isn’t how much proximity, privacy, and permission real or virtual spaces afford, but how the affordances are balanced. A lopsided distribution is more likely to inhibit than promote beneficial interactions. Technology can help employees feel closer to colleagues around the world, but relentless connection can erode their privacy and overwhelm. Networking applications such as LinkedIn, Lotus Notes, IdeaJam, and Twitter can tear down walls, but they can also create them: People gathered around might discover, in the documents coming off the machine, the write-up of a colleague’s project that’s relevant to their own work, or a new company policy that might affect them. Rich discussions often ensue. Indeed, had the photocopi er been designed specifically to inspire social interaction, it could hardly have succeeded better.

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