Photocopiers and Water-coolers

The Affordances of Informal Interaction

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Abstract

There has been increasing recognition of the importance of informal interactions in organizations, but practical attempts to control the level of informal interaction by design have been marked by unintended consequences, and research examining the effects of the physical environment on informal interaction has produced contradictory results. Drawing upon a qualitative study of informal interactions observed in photocopier rooms in three organizations, this paper builds on the work of ecological psychologist James Gibson to develop a theory of the *affordances* of informal interaction. The affordances of an environment are the possibilities for action called forth by it to a perceiving subject. Research on affordances has typically focused on the physical affordances of individual behavior. We introduce the notion of social affordances and identify the social and physical characteristics that produce the *propinquity, privacy,* and *social designation* necessary for an environment to afford informal interactions. The theory of affordances provides a lens through which to reinterpret the conflicting results of previous studies and to reexamine the seemingly simple water-cooler around which the organization gathers.

Keywords: affordances, informal interaction, space, culture

Since Dalton (1959) first wrote about the importance of the "informal organization," there has been an increasing appreciation of the link between informal interactions and organizational outcomes. Once viewed by managers and researchers alike primarily as a source of inefficiency and a noisy distraction from real work (Roethlisberger and Dickson 1939), informal interactions have been shown to be a key part of management work (Kotter 1972; Mintzberg 1973), to influence the rate of innovation in organizations (Allen 1977), and to increase cooperation within teams (Pinto et al. 1993). The relative paucity of informal interaction in virtual teams, for example, has been found to have a negative effect on the effectiveness of those teams (Kraut et al. 2002). The growing body of literature documenting the impact of social networks on individual and organizational outcomes provides further evidence of the importance of the informal interactions that sustain these networks (Raider and Krackhardt 2001; Brass et al. 2004). This information has not been lost on practitioners. Organizations such as Scandinavian Air Systems (SAS), Corning and Xerox have redesigned their offices to maximize the opportunity for informal interaction explicitly in the belief that this will improve performance.

Yet, practical attempts to control the level of informal interaction by design are marked by unintended consequences (Leibson 1981; Grajewski 1993; Horgen et al. 1999; Markus and Cameron 2002), and research examining the effects of the physical environment on informal interaction has produced contradictory results (Allen and Gerstberger 1973; Oldham and Brass 1979; Sundstrom et al. 1980; Szilagyi and Holland 1980; Hatch 1987). It is evident that settings vary in the extent to which they afford informal interaction: Some settings make informal interaction impossible or unlikely while others foster informal interaction and even obligate it. We do not have a good understanding, however, of exactly *how* setting influences informal interaction. It is clear that the social construction of the environment is as influential as its physical construction on the pattern of interaction that

occurs there (Zalesny and Farace 1987; Hatch 1991; Kornberger and Clegg 2004). There is, however, no integrated framework that explains how the physical and social characteristics of a setting combine to foster or inhibit informal interaction. The simple water-cooler around which the organization gathers turns out to be a complicated construct and, as organizations become more global, teams more virtual, and beverage choice more diverse, it remains primarily as a memory and metaphor. Where are the "water-coolers" of the new organization? To answer this question we need a theory of the underlying physical and social characteristics of settings that afford informal interaction. Our goal in this paper is to develop such a theory drawing on Gibson's (1986) theory of affordances and a qualitative study of informal interactions in the photocopier rooms of three organizations. To do this, we review the two competing strands of existing theory and argue that a theory of affordances, adapted to social settings, offers a way to reconcile them. We present the results of the field study to specify the social and physical characteristics of environments that afford informal interaction. Finally, we discuss the implications of the work for organizational studies and practice.

Theories of Privacy and Propinquity

Perhaps the most famous studies of the effects of the physical environment on informal interaction are the Hawthorne Experiments (Roethlisberger and Dickson 1939). At Hawthorne, it was shown that elements of the physical environment of a workplace may have a significant impact on the behavior observed within it but seldom in the way predicted (Gillespie 1991). The experimenters did not find the effects on efficiency they had expected from the elements, such as lighting levels, they intentionally manipulated. What they did find, however, was that moving the workers from the normal environment into small test rooms, where it was impossible for the foreman to maintain constant supervision, had the effect of increasing the amount of informal interaction among them enough that two women

were removed from the Relay Assembly test after ignoring warnings from the experimenters to stop talking so much (Homans 1950; Steele 1973; Hatch 1997). At Hawthorne, then, a move from an open-plan work setting to a smaller, more private, setting was associated with increased informal interaction. Studies examining the generalizability of this finding have been prompted by the widespread adoption of open-plan office layouts and curiosity about their behavior impact. The results have been mixed, giving support to contradictory theories: theories of privacy and theories of propinquity. Theories of privacy hypothesize that enclosed spaces foster informal interactions because people feel more comfortable to talk when they can control the boundaries of their conversation. Thus, walls, partitions, and other forms of inaccessibility and privacy are predicted to correspond with increased levels of informal interaction. In addition to the Hawthorne Studies this theory has been supported by findings by Oldham and Brass (1979), Oldham and Rotchford (1983), and Hatch (1987).

Theories of propinquity, in contrast, hypothesize that open spaces foster information interaction because they bring people closer to each other. There is evidence that the physical distance separating people at work is likely to decrease exponentially the amount of spontaneous, informal contact among them (Homans 1954; Allen 1977; Keller and Holland 1983; Davis 1984). The research of Festinger, Schachter and Back (1950) and Estabrook and Sommer (1972) shows that the more difficult it is to encounter others—having to go out of one's way, around a corner, or up stairs—the less likely a person is to interact with them. Pfeffer (1992) gives anecdotal evidence that occupying an office located across from the restrooms enhances opportunities for informal interactions. Sommer (1969) finds that even the facing of chairs shapes how much interaction there is among people in close proximity—even if people merely have to turn their heads to talk to one another informally, they are less likely to do so. Open-plan offices, by removing the walls and partitions that separate people and make it more inconvenient for them to encounter each other, then, should correspond

with increased levels of informal interaction. Studies by Allen and Gerstberger (Allen and Gerstberger 1973), Ives and Ferdinands (1974), and Szilagyi and Holland (1980) provide evidence supporting this prediction.

The first step toward reconciling these findings, as Zalesny and Farace (1987) and Hatch (1991) have indicated, is to acknowledge that the social construction of a setting is as important as its physical construction when considering how it shapes behavior. Both privacy and propinquity have social as well as physical entailments. Privacy, defined as "selective control of access to the self or one's group" (Altman 1975), is partly a function of the visual and acoustic isolation of a space. It is, however, also partly a function of the social definition of the place (Buttimer and Seamon 1980; Gieryn 2000). The same room, five meters square, fully enclosed, without windows, and with closed doors may afford considerable privacy if it is broom cupboard and considerably less if it is a public waiting room. The designation of a setting as a place where certain sorts of behaviors are expected—e.g., is the place public or private, is it a common area or reserved for special use—and where certain norms of disattention and interruption apply—e.g., do people eavesdrop, do they knock before entering—will affect how private is a space. Propinquity, defined as two people being in the same location where there is both opportunity and social obligation for face-to-face communication (Monge et al. 1985), is likewise partly a function of physical proximity and partly a function of social norms. Theories of propinquity have tended to make the implicit assumption that a decrease in distance between two people is associated with an increase in their obligation to communicate with each other (Sykes et al. 1976; Schutte and Light 1978). For example, if a person is standing at the photocopier making copies and a colleague approaches with some documents to copy and stands waiting nearby, the two people might feel an obligation to acknowledge each other's presence with words of greeting or even feel obliged to exchange small talk or engage in conversation. Interaction

obligation, however, has social, not physical origins, and its contours are socially defined. Further, as Hall (1966) shows, there are national, regional, and ethnic cultural differences in the relationship between physical distance and interaction obligation.

The second step towards a reconciliation of the conflicting findings in the literature is to remove the presumption of physical or social determinism and bring the individual back in. Where interaction obligation socially exists, it may be resisted by individuals. The result will be an awkward social situation: uncomfortable, probably, but not uncommon. Individuals may always decide to violate social norms about the sort of interaction behavior appropriate in a given situation—they may be rude, in other words—and they may decide to go ahead and speak even when their conversation can be overheard. This agency is not an error term, it should be explicitly taken into account by our theorizing.

Theory of Affordances

What is needed is a theory that can explain the relationship between the physical and socially constructed environment and the behavior of actors within it that leads to informal interactions. This theory would be *ecological* in the sense of analyzing the relationship between individuals and their environment. The work of ecological psychologist James Gibson, especially his research on *affordances* (Gibson 1986), offers a useful starting point for such a theory. The affordances of an object or environment are the possibilities for action called forth by it to a perceiving subject. Thus, to humans, handles afford grasping; paths afford locomotion; slippery slopes afford falling. Gibson's claim is that what we perceive when we look at an object or environment are its affordances, not its qualities. We can discriminate abstract qualities such as substance and surface, color and form if we are prompted to do so, but what we normally pay attention to—and what studies by Gibson and his colleagues show that infants pay attention to—is what the object or environment affords us. With conscious effort, we may perceive a scene photographically but, Gibson argues,

most of the time, as we are moving about and acting in the environment, our visual system does not operate like a motion picture camera projecting a movie on the back of the retina observed by some little homunculus in our brain. Perception, having evolved to help the organism survive and thrive in its environment, is economical. Perception readies us for action. There is experimental evidence that the perception of object affordances—the handle of a cup, for example—automatically triggers the action in our mind (Tucker and Ellis 1998; Grezes and Decety 2002; Tucker and Ellis 2004).

The radical implication of this ecological approach to visual perception is that the world around us is always already imbued with meaning for the observer. We may be wrong about what an environment affords us, as when we misperceive a closed glass door as affording passage and attempt to walk through it, but our perceptions are always laden with meaning. Further, this meaning, the affordance of the environment, is relative. A small hole that affords concealment to a mouse does not afford the same thing, and will not be perceived in exactly the same way, to a human adult. Gibson (1986: 41) explicitly rejects the absolute duality of subjective and objective and argues that considering affordances—which are real and external to the perceiver yet relative to the perceiver—allows us to escape this philosophical duality and provides a powerful way to conceptualize the relationship between actor and environment.

Gibson's ecological approach to visual perception and theory of affordances have been influential in psychology and cognitive science. Elements of the theory remain controversial in those fields (Gardner 1987). Specifically, some researchers argue against the strong form of Gibson's claim that affordances are perceived *directly*: i.e., without the need to invoke beliefs, attitudes, or mental processes (Ullman 1980). Gibson, these critics claim, neglects the information-processing problem of how, exactly, affordances are recognized as such. Others have, in turn, defended direct perception on conceptual and empirical grounds

(Turvey et al. 1981). From the perspective of the sociology of organizations, the amount of mental processing involved in the perception of affordances is not the issue. The issue is the individualism of the theory of affordances as it is usually formulated. Where ecological psychology considers social interaction at all, it tends to be in terms of the affordances of other people perceived by an agent. As with other elements of our environment, our perceptions of other people arrive immediately with information about the opportunities they afford for acting, interacting, and being acted upon—physical threat, sexual availability, cooperation, communication, etc. (Zebrowitz and Collins 1997). Gibson (1986: 128) argues that, "what other persons afford, comprises the whole realm of social significance for human beings. We pay the closest attention to the optical and acoustic information that specifies what the other person is, invites, threatens, and does." There have been studies of the affordances of social interaction examining the relationship between the elements of physical environment and social behavior—how the use of paper versus email changes the way people communicate because of the different affordances of the two media (Gaver 1996), for example. What has been missing is attention to social affordances: how the social construction of a physical environment impacts the affordances of that environment.

Drawing upon a qualitative study of informal interactions observed in photocopier rooms in three organizations, this paper builds on Gibson's work to develop a theory of the affordances, social and physical, of informal interaction. An exploratory, qualitative field study is appropriate for two reasons: (1) to go beyond the commonsense ideas about the characteristics of settings that foster informal interactions—the ideas, for example, that led to the unintended consequences experienced by organizations that have tried to design such settings—and to go beyond the conflicting findings of previous studies, an exploratory study conducted in natural, organizational settings is warranted; and (2) to understand the joint effects of the physical and socially constructed environment calls for a holistic approach

more easily achieved in qualitative work. The field study helps us build theory by allowing us to unpack the categories of privacy and propinquity drawn from the literature in order to examine the actual physical and social characteristics that constitute them.

Based on our data, we have added a third category of characteristics affording informal interaction having to do with the roles and activities that are socially designated for a particular space. This draws upon the symbolic interactionist perspective (Goffman 1966; Blumer 1969; Goffman 1971) as a way to introduce the social into Gibson's theory of affordances as it pertains to the ecology of informal interactions. The resulting theory has two parts:

1. Informal interactions are afforded by environments where people are brought into contact with one another and feel socially obliged to converse (propinquity), they are able to control the boundaries of their conversation (privacy), and they feel it is socially acceptable to converse (social designation).

2. The key environmental factors that create, or fail to create, the requisite propinquity among people, privacy, and social designation to afford informal interaction are: the location and layout of the place and the technical and social function of the resources it contains.

An important corollary of the theory is that environments *afford* informal interactions to a greater or lesser degree, they do not *determine* them.

Setting and Method

In exploratory studies, perhaps especially qualitative exploratory studies, though it is straightforward to describe the methods of data collection, describing the methods of data analysis and theory building is much less straightforward. Many theoretical papers are silent on the question of methods. Yet, our ability to understand and evaluate a theory, particularly a theory grounded in systematic observation, is improved by knowledge of the process of its creation. In the present case, the original field study was not designed specifically with the objective of examining informal interactions. The data collection began at the first site, a

department within the research center (RC) of a publicly-owned utility in France, with a general focus on the impact of technology on office work and organizational behavior. The research was inductive and initial observations centered around the use of the various technologies present in the photocopier room at the site—photocopier, fax, and printer—because of its ease of access. The photocopier room was a public space where an observer was not intrusive, as she was, for example, when she observed people working in their offices. Having been granted general access to the department, observation of the photocopier room did not require additional permission or coordination of informants. The room, however, was also an enclosed space where an observer was not obtrusive, as she was, for example, when she walked the corridors observing people. Moreover, the machines themselves offered a form of legitimacy for the research, "a cover story" (Van Maanen 1991: 35). Studying photocopying was seen as strange by many subjects but not as disruptive or suspicious. This was important because the goal of the research was to observe, and videotape, behavior that was, as much as possible, natural. A final observational advantage was that the technologies in the photocopier room were used in this organization by people at all levels of the organization (though some people spent much more time in the room than others) and at all times of the work day. Thus, the photocopier room offered an advantageous vantage point for observing the behavior of a wide range of people as they interacted with technology.

What emerged unexpectedly in the observations, and what led to a change in the focus of the study, was the degree to which people interacted with other people in the photocopier room. Had the photocopier machine been intentionally designed to afford social interaction rather than document duplication, it could hardly have succeeded better. Photocopying itself, far from being a solitary or individualistic task, is often collaborative. Photocopiers, like videocassette recorders, are everyday technologies ostensibly made for use by non-specialists

but often designed in a way that baffles casual users with complicated features and cryptic interfaces. Photocopiers also require periodic maintenance and resupply of paper and toner, tasks requiring knowledge (e.g., where the paper and spare toner cartridges are kept) and skills (e.g., how the paper is loaded into the machine to prevent jams or how the toner cartridge is installed) that tend to be unevenly distributed among users of the machine. Thus, people were observed turning to each other for help in operating the photocopier, watching each other to learn more about how to operate the machine, and commenting on its operation. Photocopying is also a relatively mindless task that allows conversation during its operation. People would talk with whoever was using the photocopier as they entered the room to negotiate access to the machine or to use the fax machine or pick up office supplies from the cupboard there. People passing by the room would sometimes look in as they passed and strike up a conversation with the person using the machine if they recognized him or her.

Intrigued by the evidently social nature of photocopying, the first author conducted studies of photocopier rooms in two additional organizations—departments with a commercial publishing house (PH) and a business school (BS), both in France—to gather comparative observations. Similar to the first site, in the second and third sites the photocopier room was a special-purpose room containing the photocopier, fax and printer. In none of the three cases was the photocopier room designated as an area where informal meetings should occur, nor had it been designed to foster informal interactions. In each of the settings, the photocopier was *casually operated*, i.e., operating the copier was not the main role or job of the individuals who used it, and the entire department, both professional and administrative staff, had access to the machine. Observations were conducted by the first author over an 18-month period in the Research Center and the Business School and over a 3-month period at the Publishing House. The researcher spent one or two days a week in the copier room, observing and taking detailed notes. Thirty-eight hours of videotape were also

taken and were used as a backup to the written notes. In-situ interviews with informants were conducted whenever it was possible and deemed necessary to clarify events and interpretations. After we had begun to analyze the data and had tentatively identified the core categories of our theory, we re-contacted three informants who had been helpful during the field study to check our understanding and ask them more specific questions about the social and organizational context.

We analyzed the data in three phases. Having shifted the fieldwork from a focus on person-to-machine interactions to person-to-person interactions, we were nevertheless still concentrating during the first phase of analysis on the effects of the machines and other elements of the physical environment on interaction behavior. We constructed narratives of episodes observed in the three sites and detailed descriptions of each site. It became clear that physical characteristics alone were not sufficient to explain what we were finding. Specifically, we observed strikingly different patterns of informal interaction at BS compared to RC and PH that we could not account for physically. Consistent with the advice of Strauss (1987) and Becker (1998), we turned to the literature and existing theory to help us focus our coding and analysis in the second phase of analysis. Recognizing the theoretical importance of privacy and propinquity for informal interaction, we coded the data for these two categories. This meant listing the elements of the sites that had a positive or negative effect on privacy and propinquity. Specifically, these were: layout elements such as windows, doors, and partitions; location elements having to do with where the photocopier room was situated in the geography of the department; and functional elements concerning the objects in the rooms—photocopier, fax, printer, but also in some cases bulletin boards, supply cabinets, and mailboxes—and their technical and social function. This list was generated based on having coded the episodes for moments where privacy seemed to be an issue—for example, people suspending a conversation when a third party entered the room or

when the room quieted—and the same for propinquity—for example, people encountering each other and either interacting or not and people nearly encountering each other but failing to do so.

From this second phase of analysis we concluded that the categories of privacy and propinquity explained much about why environments characterized by certain combinations of location, layout, and function fostered informal interactions, but not everything. Something was missing. Drawn to think of the ways in which the people we were studying might find their photocopier room to be a natural place for informal interaction for similar reasons that we, as researchers, found photocopier rooms to be natural places for observation, we began to consider the ways a physical environment, as Hillier (1996: 190) puts it, "creates a pattern of normal expectation about people. These expectations guide our behavior. Where they are violated, we are uncomfortable and behave accordingly." The location, layout and function of a place not only bring people together and provide the opportunity and obligation to converse as well as the necessary control over the boundaries of the conversation for people to feel comfortable interacting, they also index certain cultural norms designating what is appropriate and expected behavior in a place like this.

The final phase of our analysis was to go back through all of the episodes of interactions and near-misses to test whether our categories saturated the data: that is, whether every episode could be explained in terms of the privacy, propinquity, and social designation of the photocopier room by virtue of its location, layout, and function. For episodes that were complicated or equivocal, we contacted informants at the three sites to help us with interpretation. We found that the theory adequately explained the influence of the environment, the photocopier room, on the interactions and non-interactions but though the environment had a direct influence on *where* interaction occurred, it had an indirect influence on *whether* an interaction occurred and *what kind* and *when*—outcomes directly influenced

by such factors as the personalities of the individuals involved, their current state of mind, and their prior relationship. Gibson's (1986) theory of affordances seemed to explain this well. The photocopier rooms at RC and PH *afforded* certain kinds of informal interaction, but didn't determine them, and the photocopier room at BS afforded far fewer, though didn't prohibit them. The qualitative data allow us a thickly detailed understanding of what this means.

Propinquity in Photocopier Rooms

Informal interactions can occur only in places where people encounter each other. All else equal, the more traffic that flows through and past a place, the greater the chance of encountering others there, and places that are central and that have a layout that makes them easy to enter and exit will have more traffic. Centrality has two dimensions: physical centrality, a simple matter of location, and functional centrality. Functional centrality has to do with the functions of the place itself—the reasons that people have to visit the place—and the location of the place in relation to other functionally important locations in the office—for example, the entrance, lavatories, stairwell, or other places regularly visited by people throughout the day.

At RC, the photocopier did not have a physically central location, but its location was functionally central (see Figure 1). Its door opened onto a hall leading to the main stairway entrance of the department. This hall also contained the elevator to the other floors of the department. Any person entering or leaving the department (only possible via the stairs or elevator) passed by the photocopier room. Thus, everyone walked past it at least twice a day and, in practice, people passed it several times a day. The same hall also contained the departmental mailboxes. Along the hall, near the photocopier room was the meeting room where people took coffee in the morning and after lunch. The photocopier room was located at the intersection of this hall and the corridor to all of the offices. Coming in an out of the

photocopier room, a person was likely to encounter another member of the department and, standing in the photocopier room, it was likely that many people would pass by.

Figure 1 about here.

The location of the photocopier room at the second site, PH was physically central as well as functionally central (see Figure 2). There was a main entrance hall leading to two corridors that wrapped around opposite sides of a central core and ended at an open-plan office. The photocopier was in the central core with a single door opening onto one of these corridors. The department's few traditional offices-with-doors also were accessed via this corridor. Also in the central core was a meeting room whose door opened onto the other corridor. This second corridor contained the kitchen, separated by no walls or doors where people could make coffee. People usually did not stay there to drink their coffee. Most of the traffic flowed through the corridor where the photocopier room was located.

Figure 2 about here.

At BS, the third site, the location of the photocopier room was not central (see Figure 3). It was at the end of a corridor, beyond the secretaries' office, next to a staircase that served primarily only as a fire exit and was seldom used. Aside from people specifically arriving to use the photocopier and the occupants of the three offices facing the door to the photocopier room, there was little traffic.

Figure 3 about here.

The social and technical functions of the resources present in the photocopier rooms of the three sites contributed in varying degrees to the rooms being functionally central in their

own right. All three rooms contained a photocopier, fax, and printer, but they varied in who tended to use these machines and how often, and in what other resources were present.

At RC, aside from the single machine that functioned as photocopier, fax, and printer, the room also contained a shared color printer, which was for special jobs only and seldom used, and a supply cabinet. On the wall were two bulletin boards where company information, such as details of the summer camp for the children of the company, and personal information, such as announcement of births, were posted. In RC, everyone did their own copying. This had not always been the case, but recently management had decided to flatten the organization by downsizing secretarial and administrative support such that only the top management had secretarial support. The two secretaries in the department, therefore, were no longer supposed to provide any secretarial support to the 20 researchers. The researchers copied documents in order to support the administrative activity of their bureaucratic public organization, to share drafts of documents that several people were working on, to keep records of information that someone else had given them, or to keep personal records. They did quite a lot of copying, often going back and forth throughout the day to the photocopier room to do small jobs. In general, the resources and functions of the place meant that there were many reasons for all staff to enter the photocopier room on a regular basis.

At PH, the photocopier room contained the department's mailboxes which generated a lot of traffic. Between 9:00 and 9:30 in the morning, the room was extremely lively as people came to pick up their mail and stayed to chat. They tended to visit the room several times during the day for their mail as internal and external mail were delivered separately in the morning and internal mail was delivered again in the afternoon. On the wall was a bulletin board with some information posted such as doctors' contact numbers, the schedule of mail pickup and delivery, and advertisements posted by the "comité d'entreprise" for theatre tickets, summer camps for the children, and so on. This department of the Publishing House

had always been small with a rather informal structure. There were no administrators to do secretarial work for the professionals, except for the head of the group who had an assistant. At PH, copying was considered part of the job of the professionals: they made copies for the print shop; they made copies of the different states of the mock-ups of the books; they kept records of all the articles in the newspapers concerning the books that they or their competition had published.

At BS, the photocopier room contained a supplies cabinet but not mailboxes or a bulletin board. At BS, faculty, though they had cards that gave them access to the photocopier, usually did not do their own photocopying—they typically had their secretaries make photocopies for them. Thus, in practice, the main users of the photocopier were the three secretaries who shared the office next door. Further, all large copying jobs were done by the school's dedicated print shop. To avoid having to stand waiting, the secretaries carefully coordinated their copying so that there was only one of them in the photocopier room at a time. They also carefully coordinated who was in charge of maintaining the photocopier: refilling paper and toner, and repairing the machine. Very few people used the fax machine—secretaries sent and received faxes from their computer, and this fax machine was outgoing only—and many professors had printers in their offices and so they seldom used the shared printer either. The overall result was that people in BS did not tend to encounter others in the photocopier room .

The layout of a space—how accessible it is, how enclosed, how large—influences both the opportunity for interaction and the social obligation for interaction within it. Accessibility, the number of doors or open entrances, shapes whether people are likely to enter the space. All else equal, people are more likely to enter a space when it is easier to do so, and to pass through a space when it is easier to enter and leave. Enclosure, the ratio of walls to windows or doors or low-partitions, shapes whether, as people pass by a space, they

can easily see inside who is there to join them, and, reciprocally, whether those inside can see who is passing by to call to them. Size influences whether people are able to be in the room together without acknowledging the fact, i.e., without interacting with them. All three of the photocopier rooms were large enough to admit several people comfortably but small enough to obligate people to interact, at least given the French white-collar office-culture in which all three were set.

At RC, the photocopier room was completely enclosed along three walls and partially enclosed along the fourth wall containing its large doorway. The photocopier room had a window, which looked out of the building, making the room seem spacious. However, the layout of the hallway and door of the room was such that it was difficult to see who was in the room while walking down the hall, and it was noticeable that people had to purposefully peer in to see. Similarly, while making copies it was difficult to know that someone was passing by. In some cases, people relied on auditory cues. It was possible to hear footsteps or voices as people walked down the hall and if people in the photocopier room were talking this was audible from the hall, often prompting a passer-by to have a look in. From the photocopier, it was possible to hear people talking in the hall in front of the elevator and sometimes people making copies would hear a colleague and go to talk with them. Thus, encounters could be quite spontaneous, but the voice cues reduced the randomness of the mix of people encountering one another as there was conscious selection based on familiar voices.

The layout of the photocopier room at PH was minimally enclosed thanks to its open door and large interior window. People passing by along the corridor could see in to find out who was there making copies or getting their mail. The high visibility was reciprocal: those in the photocopier room could see out to identify people walking by in the corridor.

At BS, the degree of enclosure of photocopier room was between that of RC and PH. Like RC, it had one door that was always open onto the corridor. Compared to RC, though,

anyone passing by could fairly easily see inside. The photocopier was positioned near the door and so someone operating it could see out and identify anyone passing. The room was interior and had no window. It was dark, making it feel small and cramped.

Privacy in Photocopier Rooms

Privacy, the ability to control the boundaries of interaction, has two dimensions. First, and perhaps most obviously, there is a spatial dimension. People must have confidence that they are heard by only those they want to hear them and that they are not overheard. The sensitive nature of many informal interactions—whether task-related or friendship-related—and the possibility that any discussion may eventually lead into sensitive areas makes this essential. Informal interaction in the absence of such privacy—talking in a corridor, for example—risks being silenced or broken up by the appearance of others with concerns raised about what the person might have heard. Second, there is a temporal dimension. Privacy implies control over access to oneself: when we choose to interact with others and when we choose to cease those interactions. To the extent that being in a place obligates us to interact with those we would prefer to avoid or prevents us from exiting an interaction when we desire, it is not a private place.

With regard to the location and the function of a place, the characteristics that make for propinquity mitigate against privacy. The centrality of the photocopier rooms at RC and PH meant that people were entering and leaving the room regularly and others were passing by and could overhear voices that were not kept quiet. This reduced their privacy compared to BS where the photocopier was somewhat remote and isolated.

It is in their layout that places may balance the propinquity and privacy within them. In the photocopier rooms, two aspects of layout, enclosure and visibility, influenced privacy. In terms of enclosure, all three rooms were what the architectural theorist Alexander (1977) calls “half-private” which means that, similar to an alcove, they were partly enclosed and

partly open. In our observations, the doors of all three photocopier rooms were kept open all the time. Alexander argues that such a semi-enclosed layout is ideal for informal interactions because it is private enough for casual conversation but open enough for a high chance of encountering others.

In terms of visibility, there were differences among the three sites. At RC, the corner layout of the photocopier room masked visibility: people walking down the corridor could not see inside the room without special effort and, likewise, people inside the copier room could not see whether someone was approaching and about to enter the room or come within earshot. They had to go to the door and look out to ensure the corridor was empty before gossiping about sensitive topics and check again periodically during their discussion. Otherwise, they risked being startled and having to cut off their speaking in a way that would reveal to the entrant that they had been speaking of something he or she was not supposed to hear. Visibility, then, cuts both ways. Low visibility affords privacy from prying eyes. However, in an office environment, especially in public spaces as we are studying, it may seldom be practical for informal interactants to avoid being overseen. High visibility, on the other hand, may afford a form of privacy by giving people information about the movements of newcomers that enables them smoothly to adjust their interaction to control what these others see and hear.

At PH the photocopier room was a space with good visibility, and actors could see in advance when they were about to have their privacy interrupted and would stop talking in time to avoid compromising the privacy of their conversation. In short, the presence of windows onto the corridor and open doors has an important, but subtle, influence on the perceived privacy of organizational spaces in situations where actors want the content of their informal conversations to remain private but they don't mind the simple fact of the interaction being publicly known.

At BS, the visibility afforded by the layout of the photocopier room was similar to that at RC. However, we observed no interactions that were disturbed by a lack of privacy at that site. If a place affords too little propinquity to others then no matter how private it may be, it will not afford informal interaction. Privacy is important for encounters to become interactions, but this is not possible without encounters already existing.

Affordances are the possibilities of an environment perceivable by actors. Perception is essential. The quantity and quality of informal interactions afforded by a place will depend, in part, on how private it is perceived to be. An *a posteriori* indication of how private the three photocopier rooms were perceived to be by members of the respective organizations can be had from an analysis of the content of the conversations there. Interactions varied among several different types of content ranging from casual topics requiring no privacy to more serious and revealing subjects where privacy was an issue.

There were superficial greetings and jokes, discussions about vacations, anecdotes about the family, comments on the appearance of people, and questions about how they were doing. This would sometimes develop into more lengthy conversations about personal topics such as children sick and waking up during the night, likes and dislikes and expertise concerning movies and sports, views on current events heard on the radio on the way to work, and so on.

There were interactions that concerned the photocopier itself. These included help and collaboration. People would talk about the machine to solve a problem they were having with it. An episode from RC provides an example:

> Mary, the head of a group, was in the copier room trying to make double-sided copies, but she kept getting an error message. She was staring at the copier, muttering and pushing buttons in all directions when John, the head of the department, came in to pick up a fax. On his way out, he paused at the door and asked her what was wrong. She explained and he stayed to help her. They checked the manual and worked together for five minutes—taking turns pushing different buttons—and finally succeeded to make double-sided copies.

People also talked about new copier functionality. They learned from each other how better to use the more esoteric feature of the machine, such as its ability to automatically staple documents. Finally, they negotiated access to the machine. At both RC and PH it was often the case that there was more than one person wanting to use the machine at a time and so people were forced either to queue or to decide to come back later or to negotiate terms under which they might overtake another in line because they had a very quick job to do, or were in a big hurry, or had job of higher status.

There were interactions about work. Sometimes these discussions followed on from discussions about the machine or about the documents being copied. Take this example from PH:

> Eva was making a copy of a newspaper review of a book recently published by the company and Margot entered the photocopier room to pick up her mail. Margot, flipping through her mail said, "Hello," and, in friendly tone, asked Eva what she was doing. Eva explained and showed Margot the article, and they began a discussion about the book. Soon they were talking about other books published by PH, comparing their successes and failures.

At RC, it happened on several occasions that researchers, upon observing what a colleague was photocopying, asked for copies for themselves. This led to a discussion of research ideas, currents interests, and what people were working on. One such interaction even led to a new research collaboration. Sometimes merely the chance encounter of a particular person in the photocopier room led to a work-related discussion, as in this episode in RC:

> Gerry was making copies when a colleague, Ann, entered the photocopier room to get a notebook and pens from the supply cabinet. While looking in the cupboard, Ann asks Gerry if she has called their client concerning a joint project: "Oh, I wanted to send you an email: Have you heard from Mr. Thomson?" Gerry says no, but assures Ann that she will call the client by the end of the day if he has not gotten back to her by then.

There were many interactions exchanging organizational gossip. People gossiped about the internal politics of the company. For example, in RC: "I heard that they want to transform our department into a profit center and get us out of research and doing more

consulting work." In PH: "Agnes told me that we might be downsized and incorporated in the Literature Department and relocated to the Headquarters building." They also gossiped about colleagues, revealing who they liked and who they didn't like, who should be trusted and who cannot and why, as in this example from RC:

> Rachel was making copies one morning when Sophie came in to make a copy. Rachel told her that she wouldn't be long and so Sophie decided to wait. While waiting, she stood looking at the items posted on the bulletin board. She noticed a newspaper article mentioning one of their colleagues who has just published a novel. She was surprised to learn this, and asked Rachel if she knew. Rachel did know and told her a bit more about the book and also the previous novel that this colleague had written. Gradually, the conversation shifted to Rachel asking Sophie if she had fewer arguments with her boss these days. Sophie told her about a recent crisis. Rachel empathized and told her other stories she had heard about Sophie's boss.

Episodes of gossip like these were interrupted when someone else approached or entered the space, evidence of the privacy they require to be afforded.

These data can only be suggestive—the presence of the researcher, especially those days when she was using the video camera, made the room much less private. What they suggest is that the moderate level of privacy in RC and PH, a balance between a location, layout, and function that generates propinquity and one that generates privacy, is sufficient for a wide range of informal interactions.

Social Designation of Photocopier Rooms

The location, layout, and function of the photocopier rooms do something more to afford informal interactions than merely provide the necessary balance of privacy and propinquity. They contribute to making the photocopier rooms at RC and PH feel like natural, comfortable places for informal interaction. As an informant at PH explained, even though people would go into the kitchen first thing in the morning to get their coffee, they wouldn't stop there to talk. Instead, they would come into the photocopier room. "The kitchen is just a corridor; it's not a comfortable place to stay. Moreover, in the copier room, there is the mail and if you make copies, you have to wait and you can chat with the others." Like the photocopier

room at PH, the kitchen was centrally located and contained shared resources—the coffee and water dispensers—that made it a candidate to be a designated meeting point. However, its corridor layout afforded informal interaction less well than the semi-enclosed, alcove layout of the photocopier.

The comfort that this informant speaks of is partly physical but also partly a social construct. It is about a place that is comfortable to *be* with others: sufficiently large to accommodate people without crowding, sufficiently enclosed to mark a distinction between an outside and an inside and protect against constant interruption, e.g. It is also, however, about a place that is comfortable to *be found* in. In the organizations we studied, informal interaction was entirely considered to be real work. Certainly some conversations had work-related content, but few were entirely work-related and some had no work-related content at all. This meant that the legitimacy of informal interactions was in play. In RC and PH, where everyone made their own copies, the photocopier machine offered a high degree of legitimacy, not only for being in the photocopier room, but for remaining there, even when one was not copying, and for talking to others. This is for two reasons. First, not only is making copies a legitimate activity but so is *waiting* to make copies. Thus the photocopier room affords legitimacy to be present not only for the person operating the machine, but also for others standing next to the machine. They may be waiting their turn. Second, operating the machine requires constant physical presence but little mental energy. People using the machine seem "free" and available for "recruitment in interaction" (Backhouse and Drew 1992). Conversation, under those circumstances, between someone operating the photocopier and someone waiting to use it is natural, even obligatory.

In contrast, at BS, where the secretaries did most all of the copying, it was unusual enough for anyone else to be in the photocopier room that it was a source of surprise and comment by the secretaries if others—even the professors, who had the ostensible right to use

the copier and who had each been issued a copy card—were discovered there. The professors had a clear legitimate right to use the photocopier machine as well as the fax machine and printer. Role definitions, however, made *informal interaction* there seem strange and out of place. Because the secretaries shared an office nearby and coordinated their work so as not to use the machine at the same time and have to wait, even informal interaction among them there was remarkable and out of place. It is possible for it to feel comfortable to be in a place and be found there but still not feel comfortable to interact there. Similarly, a place comfortable for a short chat may not feel appropriate for a long discussion. It was common for a discussion initiated in the photocopier room to be continued in a private office.

In the case of these photocopier rooms, the social designation of activities appropriate to them was not explicit and it was not absolute. It was, rather, a set of imperfectly shared expectations and understandings about what was appropriate and normal there. One consequence of the resulting ambiguity was the usefulness of having multiple resources in the room, multiple reasons to be there and to stay there. At RC, people reading items posted on the bulletin board spoke to people photocopying. At PH, people checking their mail spoke to those using the photocopier. People using the photocopier and speaking to someone waiting would then stay in the room, checking their mail even if they had already checked it or looking absently at the bulletin board, while continuing to talk to the next person using the photocopier. Here is an example from PH, typical of mornings in the photocopier room there:

> At 9:15 one morning, a staff member, Anne, was in the photocopier room alone making copies. A colleague, Beatrice, came in to check her mail. Beatrice stood there going through her mail and making off-hand comments to Anne, and Anne replying. At one point, Beatrice moved over to show Anne one of the documents she had received in the mail and to ask for her opinion. Anne gave it and returned to her copying with Beatrice still standing and reading. A third person, Celine, entered the room to pick up her mail and stood there reviewing it. As Beatrice had done, she commented aloud in

> general terms about what she has received in the post. Two conversations developed, with Celine moving between the two conversations: Beatrice and Celine spoke about their mail; Anne and Celine spoke about what they did the evening before. A fourth person, Denise, entered the room bearing a box of chocolates she received as a professional Christmas gift from a bookseller. She offered the chocolates around and stayed for about three minutes chatting with her colleagues, all now as one conversation. They then all left the room at the same time to go their separate ways.

The multiple functions of the photocopier room at PH afforded informal interactions not only by giving more people a reason to be in the room but by giving people more reasons for being there and lingering there. Denise had no reason to go to the photocopier room at all with her chocolates except in the expectation that this morning, like every morning, she would be likely to find a social gathering there.

Discussion

This paper argues that informal interactions are afforded by the social designation of an environment and the propinquity and privacy within it. Observations of photocopier rooms in three organizations reveal a set of physical and social characteristics that can create such an environment. These include: functional centrality, semi-enclosure allowing visibility and easy access across well-defined boundaries, and multiple shared resources whose use requires presence but not concentration. No claim is made that this combination of characteristics is the only one possible to produce the requisite propinquity, privacy, and social designation to afford informal interaction. Further research is necessary to test the generalizability of the claims made here. There is no reason to expect, however, that these characteristics are not transposable beyond the specific context of photocopier rooms and beyond even the traditional office settings of the organizations we studied. It would be interesting to understand, for example, their applicability to distributed organizations and the affordance of informal interaction in virtual space where the concepts of functional centrality, semi-enclosure, and shared resource still have a clear meaning, but would operationalize in very different ways.

The theory of affordances helps us interpret the conflicting results of previous studies of the effects of open-plan offices on informal interaction. There is a tension between the qualities of an environment that favor propinquity—high-traffic and open layout—and the qualities that favor privacy—isolation and enclosure—yet both propinquity and privacy are required to afford informal interaction. A balance between them is necessary, then, but balance may difficult to achieve. Where this balance is tenuous, the social designation may be especially important. Propinquity, privacy, and social designation must all be present for the affordance of informal interactions: conceptually, their effects are multiplicative, not additive. An excess of one may be able to compensate for the paucity of another, but not its absence.

Take the example of SAS. In 1987, the airline redesigned it headquarters to center around a "street" that linked shopping, eating, medical and sports facilities and "multirooms" that contained comfortable furniture for meetings, coffee machines, fax and photocopying machines, and shared office supplies. These spaces were explicitly designed to create informal interactions, but they turned out to have little effect on the pattern of interactions, the majority of which continued to occur in private offices (Grajewski 1993; Markus and Cameron 2002). Lacking privacy, these spaces failed to afford informal interaction despite their favorable social designation and propinquity benefits.

Or consider the LX Common at Xerox's Wilson Center for Research and Technology, a space designed to support informal interaction among groups who normally worked independently. The space was semi-enclosed, located at the center of the lab and traversed as people walked from the entrance to their labs, from one lab to another, and from the labs to the conference room. It contained the kitchen, the photocopier machine and printers, and important reference materials. The different groups started to use the LX Common to hold meetings, and it was found that others who did not wish to join or disrupt one of these

meetings, but who needed to pass through the space to reach their labs, were found to be detouring several hundred feet to enter the labs through a rear door. The space only began to afford the intended informal interactions after the lab manager, who recognized the problem, declared three rules: "(1) Traffic through the common was acceptable at any time. (2) Anyone was free to join any meeting in the Common. (3) Anyone was free to leave any meeting in the Common at any time" (Horgen et al. 1999: 214). In this case, the room had a reasonable balance of propinquity and privacy within it, but an intervention to change and make explicit the social designation of the activities and behaviors acceptable in the room was required for people to feel comfortable interacting informally there.

So far, we have been discussing informal interactions as if they were homogeneous. There are different types of informal interaction, however, and further work needs to be done to understand how their affordance varies. A starting point would be to look at how different mixes of propinquity-favoring characteristics and privacy-favoring characteristics afford different types of interaction. For example, among the three photocopier rooms, chance encounters where two people were talking and a third-party joined them were markedly more common in PH. This may have been because, compared to RC, the photocopier room in PH had high visibility—people could see others passing by and pull them into conversation or see in and join. If this causal link holds generally, it would suggest that organizations that wish to foster informal interactions in order to increase collaboration or deepen the sense of community by increasing the closure of the social network may wish to explore such designs. There is evidence that open layouts are associated with less confidential interactions (Sundstrom et al. 1982), and it is plausible that more enclosed spaces—and those with places to sit and facilities such as whiteboards—afford longer, more meaning discussions in interaction. If so, and if such spaces can be designed without compromising propinquity, then organizations that wish to foster informal interactions for their potential innovation and

problem-solving benefits may wish to create these kind of environments. Social network theorists mark important distinctions, such as those between friendship networks and advice networks and between the size of networks and the strength of ties, that are associated with different types of informal interaction. Investigation of the environmental characteristics that afford these various interactions would have theoretical and practical benefits.

The theory is that certain changes to the social and physical environment will alter the affordances people perceive in it, and that this will shift their patterns of behavior. This is not deterministic: the argument is not that every individual, having perceived the affordances of the environment, will necessarily engage in all or any of the afforded behaviors. In this, it is similar to the theory of Broken Windows (Wilson and Kelling 1982; Kelling and Coles 1996)—made famous by the success of David Gunn, William Bratton, and Rudolph Giuliani in reducing crime on the subways and streets of New York City (Gladwell 2000)—which postulates that environments with characteristics, such as windows that are left broken or boarded up, graffiti, and vagrancy, that signal a resigned acceptance of unlawful disorder are perceived as affording crime. This affordance may embolden criminals and frighten the law-abiding. The claim is not, however, that broken windows determine crime any more than a slippery floor determines falling. The claim is that broken windows have a symbolic meaning associated with the affordance of crime. Agency determines what happens next.

Gibson's (1986) theory of affordances has not received the attention it deserves in organization studies and sociology largely because of its individualism. While there has been work examining the physical affordances of social behavior (Gaver 1996), the theory has not taken seriously the importance of social affordances. This paper takes a first step in this direction. With its ecological focus and deep commitment to an understanding of the environment in terms of the meaning that actors perceive in it, we believe the theory of affordances provides a strong basis upon which to meet the call many have made (Hatch

1997; Kornberger and Clegg 2004) for a theory that brings together the physical and social aspects of space and organization.

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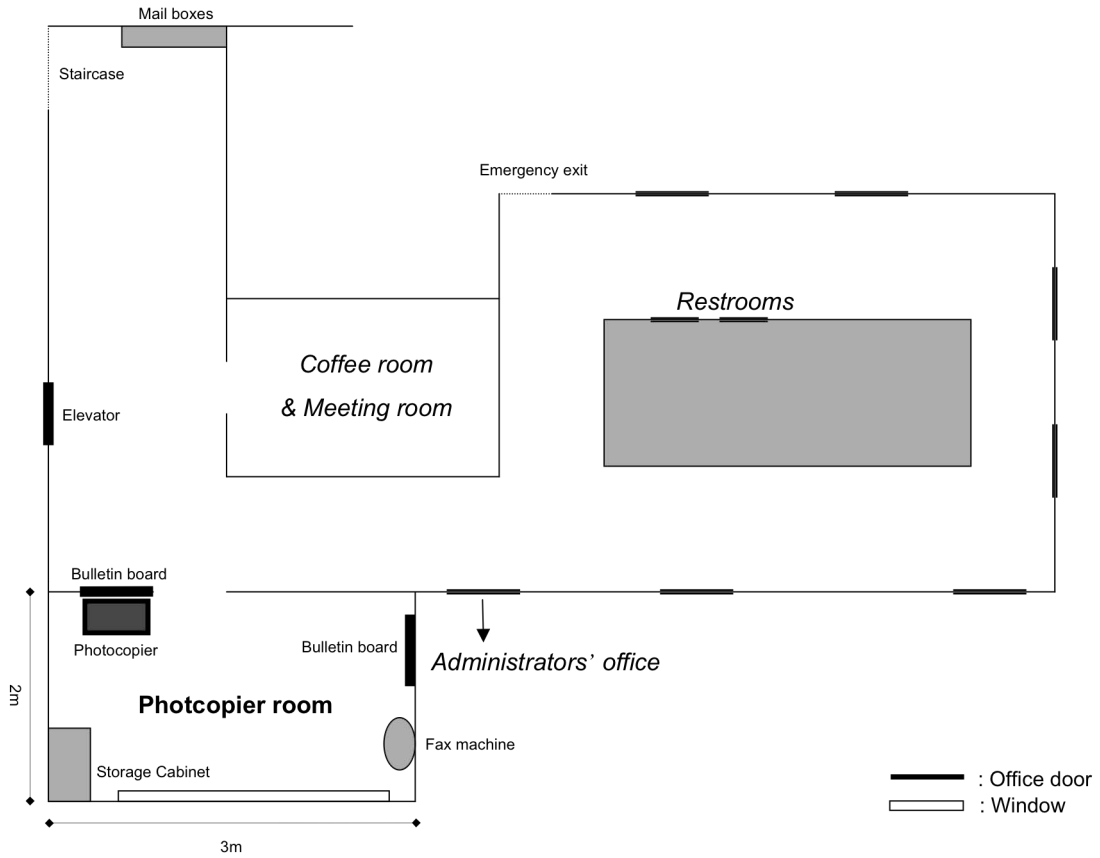
Figure 1: Research Center Overview

Floor Plan:

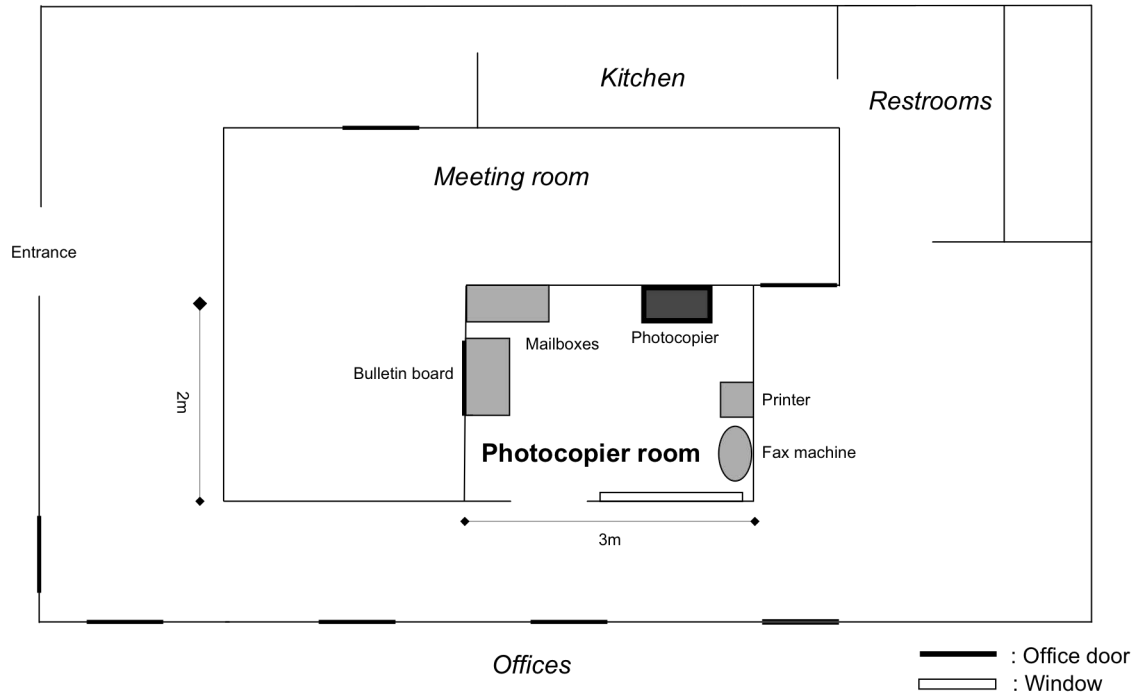


Technical Summary:

Space of department office:	Distributed on two floors
Location of the photocopier room:	Central
Pedestrian traffic past copier room:	Heavy
Windows:	On outside
Size of the department:	20 people
Number of users:	20: 12 frequent users; 8 less frequent users
Average number of people in the copier room when it is not empty:	Between 2 and 3
Percentage of time when it is empty:	30
Who makes the copies:	Everybody
Is there someone in charge of the copier:	Yes
Resources in the room:	Fax machine, photocopier (also functions as printer), office supply cabinet, 2 bulletin boards

Figure 2: Publishing House Overview

Floor Plan:

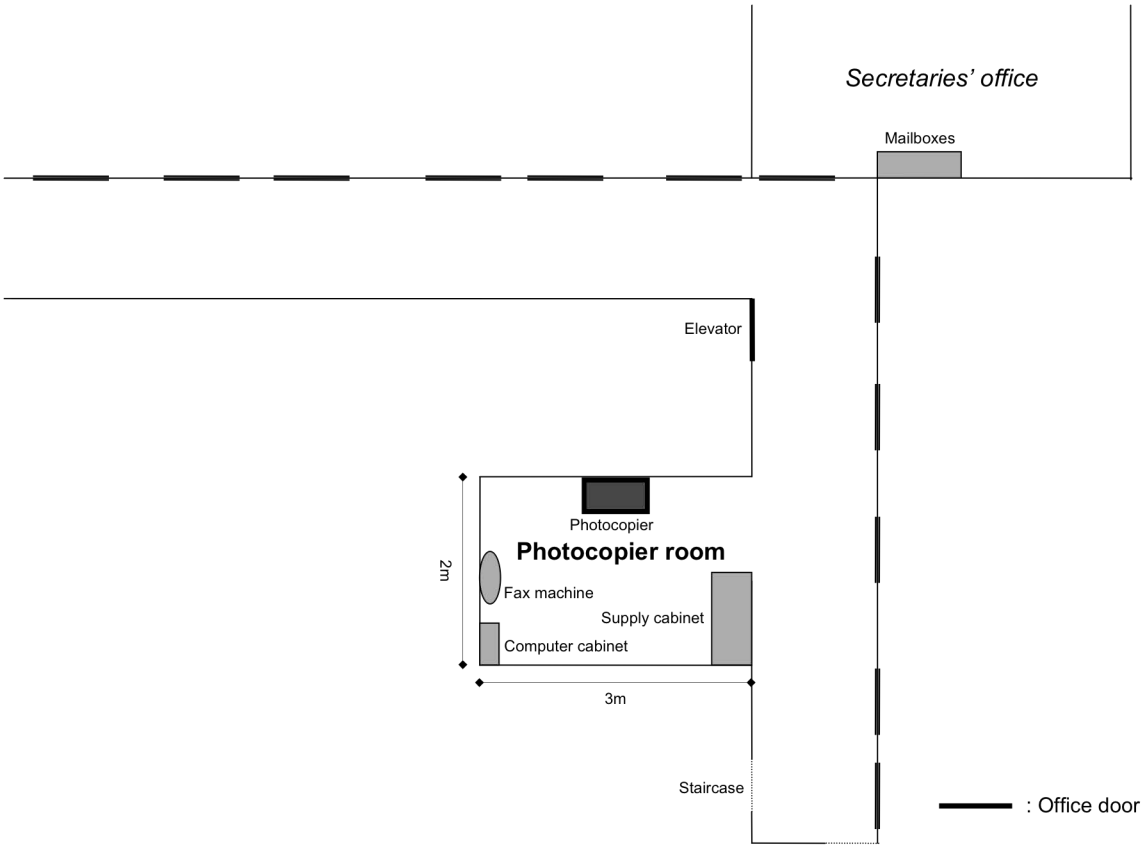


Technical Summary:

Space of department office:	One floor
Location of the photocopier room:	Central
Pedestrian traffic past copier room:	Heavy
Windows:	On the corridor
Size of the department:	8 people
Number of users:	8
Average number of people in the copier room when it is not empty:	Between 3 and 4
Percentage of time when it is empty:	30
Who makes the copies:	Everybody
Is there someone in charge of the copier:	No
Resources in the room:	Fax machine, shared printer, mailboxes, bulletin board, photocopier

Figure 3: Business School Overview

Floor Plan:



Technical Summary:

Space of department office:	Distributed on two floors
Location of the photocopier room:	Isolated
Pedestrian traffic past copier room:	Light
Windows:	None
Size of the department:	20 people
Number of users:	3 frequent users (the secretaries)
Average number of people in the copier room when it is not empty:	1
Percentage of time when it is empty:	80
Who makes the copies:	Mostly the secretaries
Is there someone in charge of the copier:	Yes
Resources in the room:	Fax machine, shared printer, office supply cabinet, photocopier