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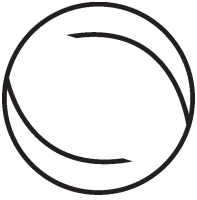
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Photocopiers and Water-coolers: The Affordances of Informal Interaction

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Abstract

There has been increasing recognition of the importance of informal interactions in organizations, but research examining the effects of the physical environment on informal interaction has produced contradictory results and practical attempts to control the level of informal interaction by design have been marked by unintended consequences. Drawing on 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 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 social 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 has been found to have a negative effect on the performance of those teams (Kraut et al. 2002). The growing body of literature documenting the impact of social networks on individual and organizational outcomes has provided further evidence of the importance of the informal interactions that sustain these networks (Raider and Krackhardt 2001; Brass et al. 2004).

With recognition of the benefits of informal interactions has come interest, among both researchers and practitioners, in understanding how to foster them. By definition, informal interactions cannot be planned or regulated by fiat, but the likelihood of their occurrence can be influenced through indirect means. Academic and practical attention has focused primarily on the effects of physical architecture (e.g. the enclosure or openness of a space) and geography

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(e.g. the centrality of a space). Research examining these effects, though, has produced contradictory results (Allen and Gerstberger 1973; Oldham and Brass 1979; Sundstrom et al. 1980; Szilagy and Holland 1980; Hatch 1987), and practical attempts by organizations such as Scandinavian Air Systems (SAS), Corning, and Xerox to design spaces that increase informal interaction have been marked by unintended consequences (Leibson 1981; Grajewski 1993; Horgen et al. 1999; Markus and Cameron 2002). The evidence is 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 lack, however, a good theoretical understanding of exactly *how* setting influences informal interaction.

The simple water-cooler around which the organization gathers turns out to be a complicated construct. Analytically, the difficulty arises from the fact that both the physical construction of a space and its social construction influence the pattern of informal interactions that occurs there. It is well-understood that neither simplistic extreme — neither a social determinism that would deny the role of architecture, geography, and material artifacts, such as water-coolers themselves, in shaping informal interactions, nor a physical determinism that would deny the importance of the meaning that people assign to the elements of their physical environment, and the power of social norms and formal authority to designate the activities that are legitimate in a particular space — is sufficient to explain how setting influences informal interaction (Zalesny and Farace 1987; Hatch 1991; Kornberger and Clegg 2004). There exists no integrated framework, however, to explain how the physical and social characteristics of a setting combine to foster or inhibit informal interaction, and so, without a clear alternative, these oversimplifications have persisted.

We believe that Gibson's (1986) theory of affordances — developed originally to explain how individuals perceive the behavioral possibilities of a setting or object and influential within the study of human-machine interaction (Norman 1988, 1993) — offers a useful starting point for the development of such an integrated framework. The theory of affordances provides a vocabulary for articulating how an individual's behavior in a setting is shaped, but never fully determined, by the physical and social characteristics of that setting. As authors such as Gaver (1996) and Hutchby (2001) have noted, it is a natural extension to apply affordance theory not only to individual behaviors but also to social behaviors, such as informal interactions. A well-developed theory of social affordances holds the promise of being a generally useful ecological approach — in the sense of analyzing the relationship between individuals and their environment — to organizational behavior. This paper takes the first step in this direction, building a theory of the social affordances of informal interaction. To do this, we review the conflicting strands of existing theory of informal interaction and show that a theory of social affordances offers the possibility of reconciliation. We then draw on the results of a qualitative study of informal interaction in a particular setting — the photocopier room — of three organizations to illustrate the approach and specify the social and physical characteristics of organizational environments that we hypothesize afford informal interaction.

Theories of Privacy and Propinquity

Existing theories of the relationship between informal interaction and setting can be divided into two strands: theories of privacy and theories of propinquity. Theories of privacy posit that people feel most comfortable to interact informally when they can control the boundaries of their conversation. Theories of propinquity, in contrast, posit that informal interactions occur in spaces that bring people physically closer to each other. These theories lead to testable hypotheses that should allow us to choose between them. Theories of privacy, for example, hypothesize that enclosed spaces foster informal interactions. Thus, walls, partitions, and other forms of inaccessibility and privacy are predicted to correspond with increased levels of informal interaction. Theories of propinquity, on the other hand, hypothesize that centrally located, open spaces foster informal interactions. Thus, the absence of walls and partitions that separate people and make it more inconvenient for them to encounter each other are predicted to correspond with increased levels of informal interaction.

The empirical evidence is contradictory, however, and lends support to both of these incomplete theories. 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 their manipulation of elements such as lighting levels. 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, for example, 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 supporting theories of privacy. Studies of the behavioral impact of open-plan office layouts by Oldham and Brass (1979), Oldham and Rotchford (1983), and Hatch (1987) have supported this, finding lower levels of informal interaction among people working in open-plan offices.

In favor of theories of propinquity, 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 et al. (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. In contrast to the work cited above, studies of the behavioral impact of open-plan office layouts by Allen and Gerstberger (1973), Ives and Ferdinands (1974), and Szilagyi and Holland (1980) provide evidence that open-plan office architecture is associated with more, not less, informal interaction among workers.

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 a broom cupboard and considerably less if it is a public waiting room. The social meaning of the space (e.g. is it defined as public or private, is it a common area or reserved for special use?) and whether certain norms of disattention and interruption apply (e.g. do people eavesdrop, do they knock before entering?) will affect the privacy of 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 similarly 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 use of purely physical proxies for the socio-physical constructs of privacy and propinquity in studies of their effects on informal interactions helps begin to explain the confusing results of these studies. The problem goes beyond adequate operationalization of variables, however, to the model of causality implicit in existing theories. It is not enough merely to replace physical determinism with socio-physical determinism. Logically, it is not possible for both privacy and propinquity to determine informal interactions — the social and physical elements of a setting that tend to increase privacy tend to decrease propinquity and vice versa. Yet, a degree of both privacy and propinquity are necessary for informal interaction. This is not a matter simply of a need for balance between privacy and propinquity or of a U-shaped relationship between them and informal interaction. What is required is a reconceptualization of the relationship in organizations between environment and behavior away from causality and toward affordance. This means bringing agency back

into our theorizing while still recognizing that the physical and social characteristics of an environment pattern the behavior within it. Proximity and privacy do not cause informal interaction, but they do more than enable it: they encourage it, they may even obligate it. Where interaction obligation exists, however, people may successfully resist it. The result will be rudeness and an awkward social situation: uncomfortable, probably, but not uncommon. People may always decide to resist physical pressure to interact and to violate social norms about the sort of interaction behavior appropriate in a given situation. This agency is not an error term; it should be explicitly taken into account by our theorizing. The theory of affordances does this, and it has an additional analytical advantage. Recasting privacy and proximity as complementing affordances of informal interaction, rather than as competing causes of it, changes the terms of debate from whether it is privacy or proximity that is the more important cause to what else, beyond privacy and proximity, may be necessary to afford informal interaction.

Theory of Affordances

The theory of affordances comes from the work of ecological psychologist James Gibson (1986). Gibson studied visual perception. 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, 2004; Grezes and Decety 2002).

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 his 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). This is an important issue for cognitive science, but from the perspective of the sociology of organizations, the amount of mental processing involved in the perception of affordances is not an issue.

Studies of the affordances of technology and everyday objects by Norman (1988, 1993) and others have demonstrated the utility of the theory for understanding how the design of an object impacts how people use it. This work in the area of human-machine interaction (HMI) has led to findings in three areas that suggest the applicability of affordance theory to the present question of the relationship between organizational settings and social interaction. First, these studies have shown that we perceive the function of an object — from a door handle to the control panel of a nuclear power station — from visual cues in its design. Objects tend to be used as their designers expect when they are designed in a way that exposes their functionality. Norman's work documents myriad examples where the opposite obtains: from door handles that give no indication by their shape whether they should be pushed or pulled, to esthetically impressive control panels of identical knobs and dials, symmetrically arrayed, that give no distinguishing visual indication of what they do. In such cases, conscious thought, and even training, on the part of the user is required or else the unrecognized, or unremembered, functions go unused.

Second, HMI studies have shown that the affordances of objects and workspaces perceived by the people actually using them may be subtle and unrecognized by designers or managers until change occurs. Hutchins (1995), for example, studied the effects in airplane cockpits of the replacement of the interconnected mechanical control wheels used by pilot and co-pilot with more modern individual joysticks. The joysticks were designed to have all of the functionality of the old control wheels and more. It was discovered, however, that pilots had come to rely upon an affordance of the old system that had not been recognized by designers: when the pilot turned the control wheel, the co-pilot's wheel turned as well. This was an accident of design, not an intended functionality, but it had the effect of signaling the pilot's moves to the co-pilot without the need for explicit conversation or instrumentation. Similarly, Mackay et al. (1998) found that attempts to modernize the IT systems used by air traffic controllers failed in part because the new system replaced the paper flight strips that controllers used to represent individual aircraft with onscreen representations. Though the electronic versions contained the same information, they lacked other affordances of the paper strips that supported the personal memory, peripheral awareness, and collaboration of the controllers.

Unintended consequences can result from designs, or redesigns, that do not reflect a full understanding of the affordances involved.

Third, there is evidence from HMI studies that the perceptual cues of affordances can be learned as social convention. While Gibson's (1986) original experiments focused on the perception of affordances via cues that he believed were innate to the species — terrain features that afford locomotion, for example, or physical properties of objects that afford grasping — research has shown that affordances, especially of man-made objects, are linked to a complex web of cultural knowledge and conventional rules regarding use (Hutchby 2001). Furthermore, once we learn associations between perceptual signals and specific affordances, we transfer that knowledge from one domain to another. Having learned the complicated set of associations between window, icon, mouse, and pointer in one computer program, for instance, users apply it to new programs they encounter and are frustrated by inconsistencies (Dix et al. 1998).

These three insights provide a starting point for extending the theory to the affordance of social behaviors, such as informal interactions, within organizational settings.

1. When actors enter a setting they perceive cues about what behaviors it affords and these perceptions shape behavior.
2. Some of these affordances may be subtle and actors may be unconscious of them until the setting is relocated or redesigned in a way that certain behaviors are no longer afforded.
3. The affordances of an environment arise from its social meaning, and conventional rules regarding use, in addition to its physical properties.

An explanation of the affordance of a particular social behavior by a given setting would answer two questions. The first question is: what are the environmental requirements of the behavior? In the case of informal interaction, prior theory has identified two environmental requirements. People must come into unplanned contact with others (propinquity), and people must be able to control the boundaries of their conversation (privacy). The theory of affordances helped us identify in our data, as described below, a third environmental requirement: people must feel that it is socially acceptable to stop and talk to each other in this setting (social designation). Thus, settings must have the correct propinquity, privacy, and social designation to afford informal interaction. The second question is: what are the physical and social characteristics of the setting that may fill those environmental requirements and signal the affordance to perceiving actors? This is an empirical question and to answer it in the following sections we draw on previous studies as well as our own qualitative study of informal interactions. We find that the key characteristics fall into three dimensions: architecture, geography, and function.

Setting and Method

A qualitative field study is the appropriate way to investigate the affordances of informal interactions for two reasons. First, affordances may be subtle, and

often are not recognized consciously by actors themselves, and there is a need to go beyond the commonsense ideas that have led to the unintended consequences experienced by organizations when trying to design settings to increase informal interaction. The direct observation of informal interactions in three comparable organizational sites is the correct vantage point for this. Second, to understand the effects of the jointly physically and socially constructed environment, and to move beyond simple models of causality to a model of affordance, a holistic and interpretive approach is called for that is more easily achieved in qualitative work. Furthermore, the field study helped us build theory by allowing us to unpack the categories of privacy, propinquity, and social designation — which were deduced from the literature and identified in the data — in order to uncover the actual physical and social characteristics that constitute them.

In exploratory studies, perhaps especially qualitative exploratory studies, while 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 on 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 whomever 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. The first author conducted observations 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. A total of 38 hours of videotape were also taken and were used as a backup to the written notes. In-situ interviews were conducted with 16 subjects. The protocol was to ask the subject about their most recent social interaction in the photocopier room and then ask them to reflect on their more general views about why the photocopier room either was or was not a place where informal interactions regularly occurred. The interviews were short, five to ten minutes, and conversational. Commonly, subjects spoke about previous informal interactions in the photocopier room and drew comparisons to interactions patterns of other sites. 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 (the architecture and geography of the photocopier rooms, the technical characteristics of the machines present) 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, and that they certainly did not exert a deterministic influence on social interaction. 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. Recognizing the theoretical importance of privacy and propinquity for informal interaction, we coded the data for these two categories (see Appendix for the full coding tree we generated during our analysis). This meant listing the elements of the sites that had a positive or negative effect on privacy and propinquity. Specifically, these were: *architectural elements* such as windows, doors, and partitions; *geographical elements* having to do with where the photocopier room was located and how it was situated; 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. Then we divided the data into discrete moments of interaction, or potential interaction (which we labeled as near-misses), to understand the role of our listed elements of the environment in each. We focused especially on moments where privacy seemed to be an issue (e.g. people suspending a conversation when a third party entered the room or when the room quieted) and the same for propinquity (e.g. 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 geography, architecture, 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.' We found a parallel to the attention paid in studies of the affordances of technologies to conventions of use. The geography, architecture, 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. This led us to add a third dimension to our interpretation: social designation.

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 geography, architecture, 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, though there were some interactions that it could not explain. Our interviews revealed instances, for example, where people were in a hurry but said they otherwise might have stopped to chat, or where people confided that they did not like the person they had encountered and that is why they did not interact with him or her, or where they might not have stopped to interact but they were feeling a little bored or lonely. The photocopier rooms at RC and PH afforded certain kinds of informal interaction, but did not determine them, and the photocopier room at BS afforded far fewer, though did not prohibit them. The qualitative data allow us a thickly detailed understanding of what this means.

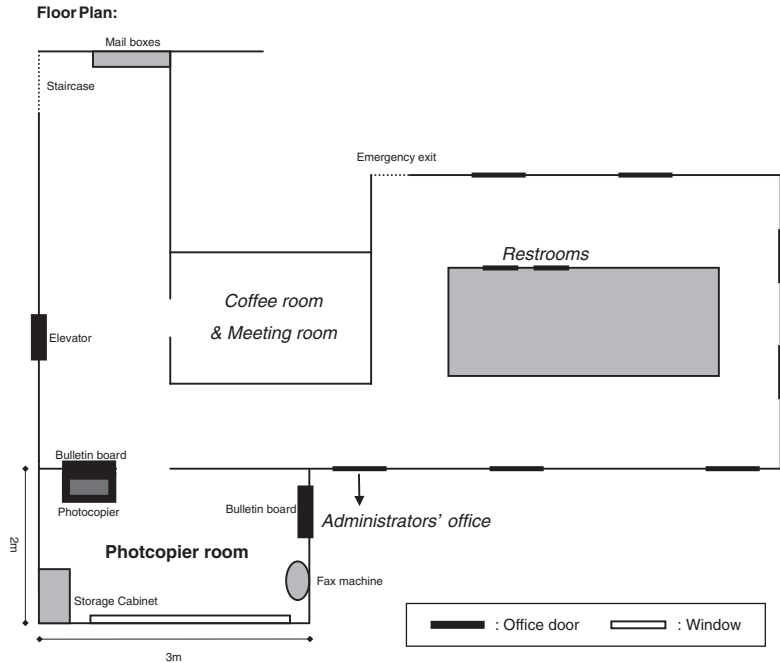
Propinquity in Photocopier Rooms

Informal interactions can occur only in places where people encounter each other. All else being 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 geography, and functional centrality. Functional centrality has to do with the functions of the setting itself (the reasons that people have to visit the space) and the location of the space in relation to other functionally important locations in the office (e.g. 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 and 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.

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

Figure 1.
Research Center
Overview



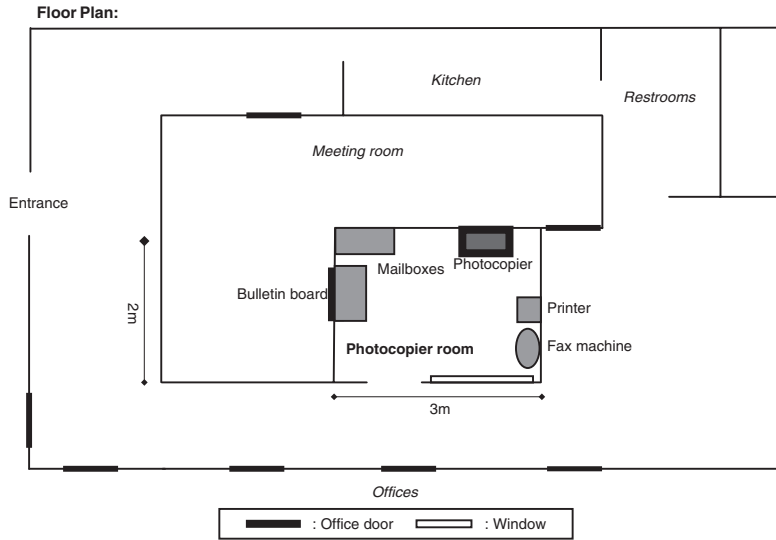
Technical Summary

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

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.

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 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 2.
Publishing House
Overview



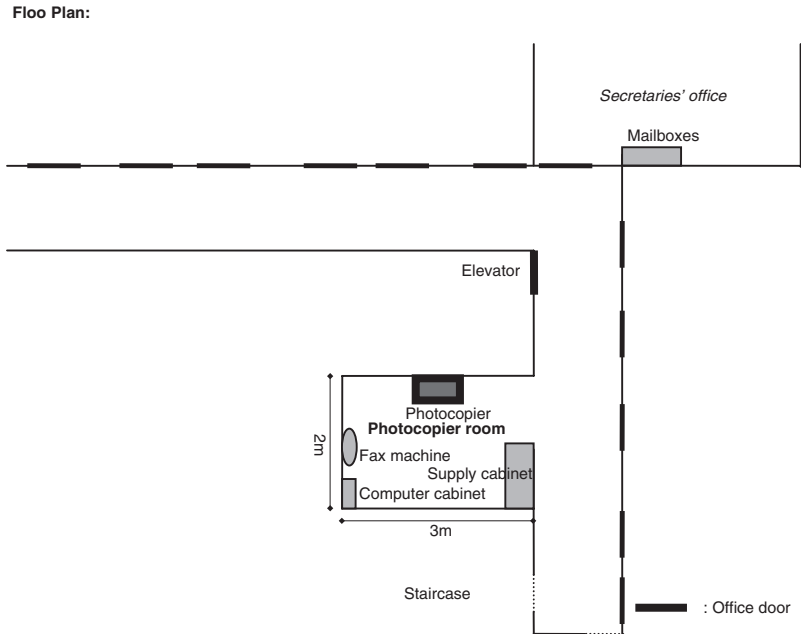
Technical Summary

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

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, was 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 managers had secretaries. The two secretaries in the department, therefore, were no longer supposed to provide any support to the 20 researchers. The

Figure 3.
Business School
Overview



Technical Summary

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

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 mockups 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; 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 architecture 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 being 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, doors and 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 passerby 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 architecture 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 the 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 internal 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 can be heard by those to whom they are talking and that they are not overheard by others. 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 geography 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 architecture that settings may balance the propinquity and privacy within them. In the photocopier rooms, two aspects of architecture influenced privacy: enclosure and visibility. 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 surprised 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, it may seldom be practical for informal interactants to avoid being over-seen. 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 do not mind the simple fact of the interaction being publicly known.

At BS, the visibility afforded by the architecture 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 seemingly at random, 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 in making double-sided copies.

People also talked about new copier functionality. They learned from each other how better to use the more esoteric features 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 a 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, on observing what a colleague was photocopying, asked for copies for themselves. This led to a discussion of research ideas, current 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 asked Gerry if she had called their client concerning a joint project: 'Oh, I wanted to send you an email: Have you heard from Mr. Thomson?' Gerry said no, but assured Ann that she would call the client by the end of the day if he had 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 did not 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 had just published a novel. She was surprised to learn this, and asked Rachel if she knew. Rachel had known 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. Quantitative follow-up work would be required to draw firm conclusions about the relative frequencies of the different types of talk we identified and the likelihood that one type leads to another — that talk about how to operate the photocopier, for example, leads to collaborative talk about work, or relationship-strengthening talk about family and leisure interests. What our data indicate, however, 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 to afford a wide range of informal interactions.

Social Designation of Photocopier Rooms

The geography, architecture, 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 would not 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. It is also, however, about a place that is comfortable to *be found* in. In the organizations we studied, informal interaction was not entirely considered to be real work. Certainly some conversations had work-related content, but few were entirely work-related and some were not about work 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 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, 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 had 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

There are few human activities more mundane than informal interaction and few settings in which to study them more commonplace than office photocopier rooms. As a site for fieldwork, photocopier rooms lack the ability of the exotic to shock us: we all, most of us, have personal experience of them and may think we know them already. Furthermore, our study does not aim at *exposé*. There is no hidden life of photocopier rooms to be revealed. The three sites we observed were ordinary and what happened there was ordinary too and not surprising. What is surprising, though, is how poorly existing theory explains such ordinary behavior and how poorly served practitioners are by the received wisdom about it. Our theory is that settings such as photocopier rooms afford informal interaction to the extent that they bring people into contact with each other (propinquity), allow people to control the boundaries of their conversation (privacy), and provide legitimate rationalizations for people to stay and talk to each other (social designation). This turns out to be a departure from existing theory in two ways, each of which has implications for research and practice.

Our first contribution is to highlight the social component of privacy and propinquity and the importance of the social designation of a setting in its affordance of informal interaction. Ignoring social designation and using purely physical proxies for privacy and propinquity simplifies analysis considerably: that is why previous studies have done so. The risk, however, is oversimplification. Empirically, as previous studies have shown, these physical characteristics alone (geographical elements such as centrality and architectural elements such as enclosure) have no unambiguous relationship with informal interaction. That is not to say that physical characteristics are not important. It is to say that only when we include social characteristics — routines concerning who uses what resource when that shape traffic patterns in the office, for example, norms about social distance and interruption that govern polite behavior, and shared understandings about the behaviors designated as appropriate in the setting — can we understand fully what behaviors are afforded. As we found when trying to understand the very different pattern of informal interaction we observed in BS from PH and RC, the physical differences among the settings, especially the non-central geography of the photocopier room at BS, was significant but not decisive. Equally important were norms at BS about who used the photocopier, printer, and fax and how turn-taking with those resources was handled.

Clearly, this is not merely a theoretical issue. It has implications for design. Consider the example of 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 setting had an ideal physical design, but it was not until the social norms were designed to allow people to control access to themselves that actors felt comfortable interacting informally there.

It is a more common mistake, though, to overestimate than to underestimate the influence of social norms and the power of organizational elites such as managers to designate certain settings as those where informal interaction should occur. Generally, organization theory more often falls into the trap of social determinism — usually simply by ignoring the influence of the physical environment and failing to study it — than that of physical determinism, though both are equally errors of oversimplification. Even in practical design, the power of social elements and authority are sometimes exaggerated at the expense of physical considerations. Take the example of SAS. In 1987, the airline redesigned its 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, and SAS management communicated clearly to employees their belief that 'good ideas spring from impromptu meetings' and that, because 'ideas are rarely created when you're sitting at your desk alone and tense, but [are generated] during creative encounters with other human beings,' the purpose of the street and multirooms was to foster informal interactions. The new facilities, however, 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). Open and highly trafficked, they lacked the physical elements of privacy, and so these spaces failed to afford informal interaction despite their propinquity benefits and despite their explicit and official designation.

Our second contribution is to suggest that the relationship between the social and physical environment and behavior in organizations may be more usefully explained as one of affordance than one of causality. This move, from causality to affordance, offers a non-deterministic way to theorize the influence of the social and physical environment. One reason for the relative paucity of studies

of space in organizations, and for the necessity of calls like the one by Kornberger and Clegg (2004) to bring space back into organization theory, has been the absence of integrative theoretical approaches such as affordance provides. It does this by forcing us to consider spaces as places where, because of their architectural and geographic qualities and also because of their social construction, certain things are expected to happen (Buttimer 1980; Gieryn 2000).

Our field studies illustrate how the concept of affordance can provide a lens to help us understand the relationship between a specific type of environment and the behavior of actors within it and to analyze the physical and social elements of the environment that are relevant to the behavior. More generally, the theory of affordances can help us explain how physical and social elements of the environment interact to shape behavior. This is true even of domains, such as the symbolic meaning of space, that have hitherto been regarded as purely arbitrary social conventions. Brown and Duguid (1994), for example, point out that the physical attribute of elevation has different meanings for different businesses: a penthouse office is the pinnacle of success, pun intended, for a law office but terrible business for a book store, and conversely the ground floor shop is prime retail space for a bookstore, but a humiliating bringing back to earth for a law office. These symbolic meanings may be arbitrary, but Gaver (1996) uses affordances to explain them differently. Increasing height implies decreasing accessibility. The accessibility of a ground-floor location is beneficial to a bookstore that may rely on walk-in traffic afforded by it, whereas inaccessibility, and the privacy and lack of disruption it brings, affords quiet working and confidential conversation that benefits a law firm.

Affordance breaks with causality in acknowledging the agency of actors. The theory is that certain characteristics in the social and physical environment are perceived by actors as indicating the behaviors afforded by the environment and that this has an effect on their subsequent behavior. Affording a behavior is more than merely allowing it or making it possible, but it is less than determining it. This aspect of the affordance concept is exemplified in 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.

Limitations and Future Directions

This points to an important aspect of affordances: their relational character. Affordance always presupposes a perceiving agent, and different types of agent may be afforded different behaviors by the same environment. Gibson (1986), in

his original work, focused on species as the highest-level category of agent. A mouse is afforded shelter by a hole in the wall that may afford nothing to larger species. With social affordances, we must consider cultural differences as well. Members of different cultures may perceive the affordances of an environment differently. Broken windows and graffiti, for example, may not be perceived in many European countries as the strong signals of disorder affording criminality as they typically are in the US. A limitation of our field study is that, because all three organizations were in the same country, we have no opportunity to investigate possible national cultural difference in the affordance of informal interaction. Further, we lack the broad ethnographic data about the cultures of the three organizations that would enable us to go further in interpreting the effects of organizational culture on affordance. What's more, while there is no reason to expect that the effects of privacy, propinquity, and social designation are not transposable beyond the context of photocopier rooms, our data permit us to make no claims about this. Future work is needed to substantiate the generalizability of the conclusions we draw here or, alternatively, to delineate the contextual and cultural patterns that specify them. A potentially interesting direction for future study would be to understand the applicability of our findings to distributed organizations and the affordance of informal interaction in virtual space, where the concepts such as functional centrality, semi-enclosure, and shared resource still have a clear meaning but would operationalize in very different ways.

An additional area for further work is suggested by the different types of informal interaction that we observed: copier-related interactions, work-related interactions, and non-work-related interactions. It would be interesting to understand better than our data allow 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 and how social designation mediates the relationship. 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 relationship 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 fewer 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 meaningful 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 this kind of environment. 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 of affordances offers organizational scholars a framework for studying the influence of environment on behavior in a non-deterministic way that takes into account the importance of both its physical and social construction. This paper takes the first step in developing such an ecological theory and illustrates how it might be applied to particular types of setting and particular social behaviors of interest. The power of the physical environment and the power of the social environment are each so interesting that they have long been studied independently. We argue that bringing space back into organization theory requires a conception of space as jointly physical and social in its influence. This adds complexity, subtlety, and even ambiguity, to our theorizing, but the cost of oversimplification is confusion and contradictory findings. The theory of affordances does not reduce the complexity or eliminate the ambiguity in the relationship between space and organizational behavior. What it does promise, however, for scholars and designers alike, is a more productive way of talking about this rich and important subject.

Notes

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Both authors contributed equally to this paper.

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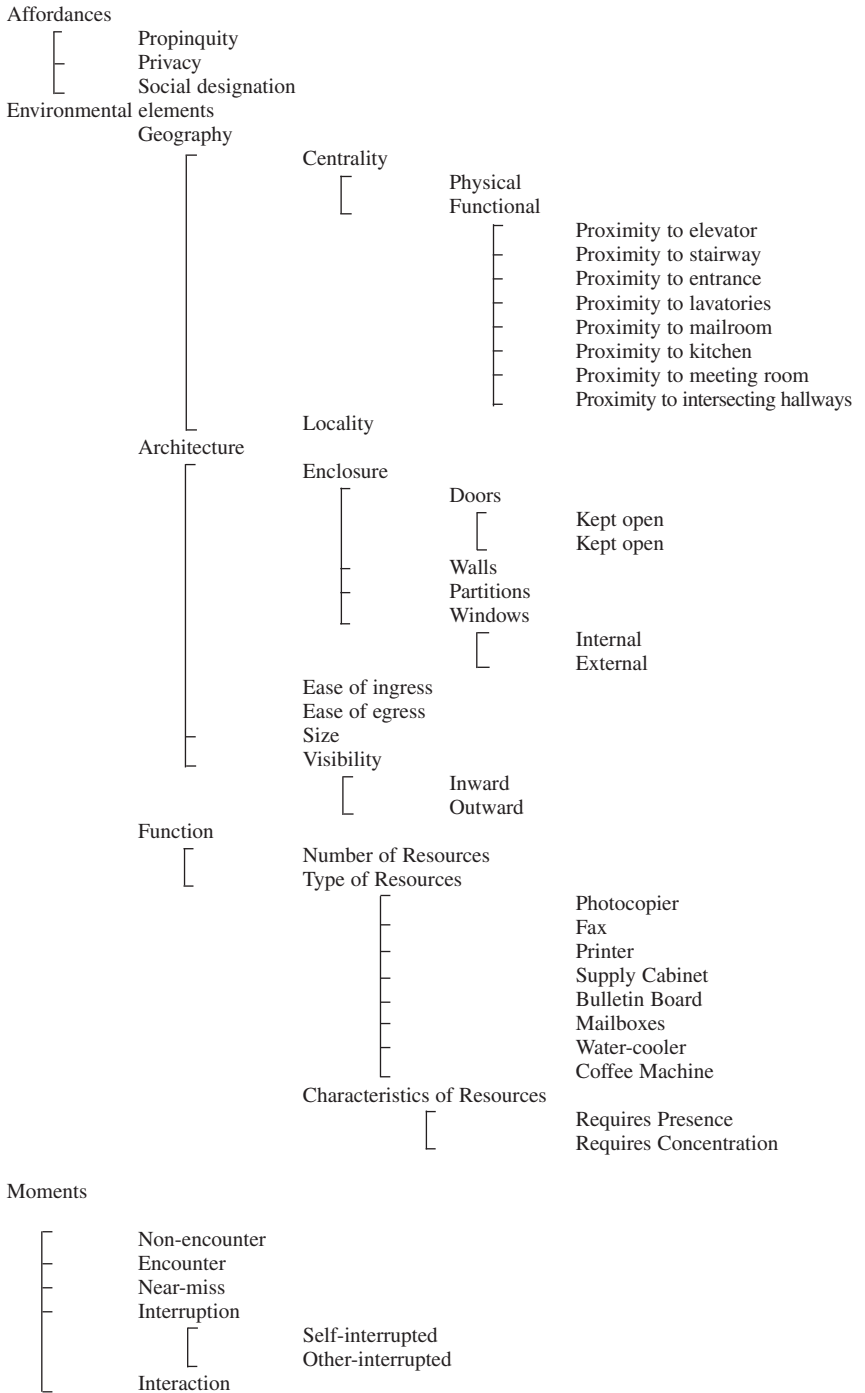
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Appendix (coding tree)



Interaction Types

