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Research Article

Perception of privacy in a university building: The transparency paradox

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Abstract Informal face-to-face communication and chance encounters encourage knowledge sharing. This Post-Occupancy Evaluation (POE) examines how well a new building of a Dutch University Institute (DI) supported interaction and perceived privacy among faculty members. The study is designed as a qualitative research project with in-depth interviews among faculty members before and after relocation into the new building. The transparent and centrally organized floor plan supported face-to-face communication but generated a lack of privacy for faculty members. Not all perceived affordances of the design were planned. Lack of visual privacy and the sense of being controlled by others were related to the hierarchical position of teachers in this Higher Education Institute (HEI) between students and the dean, which caused tension and diminished their well-being.

1. Introduction

University buildings are designed to facilitate core activities, such as knowledge sharing between teachers and students and among scholars (Chapman, 2006; Temple, 2009). It concerns both formal interaction in classrooms and informal interaction through face-to-face encounters. The latter is particularly important, because knowledge sharing is achieved partly through the exchange of tacit knowledge, and therefore highly personal (intuition, ideas, values) and difficult to teach (Nonaka, 1994; Nonaka and Konno, 1998). Active engagement of teachers and students is imperative (Dhanaraj et al., 2004; Robert et al., 2009). A POE (Post-occupancy evaluation) was undertaken to investigate whether the architectural design supports interaction between students and staff as a means to support tacit knowledge sharing. A POE allows us to learn which design characteristics make informal knowledge sharing possible and to develop further insights into the affordances of architectural design (Wener et al., 2016). The concept of affordances (Gibson, 1986) refers to the

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way people link affordances, or perception and meaning, in the architectural design of the building to their perceptions of user behavior and attributed meaning.

POEs addressing the importance of informal knowledge sharing are scarce, partly because it may be difficult to obtain cases with sufficient information about whether the design brief explicitly mentions the importance of informal encounters between staff and students. Therefore, the development of a new building for an existing university department offers an important opportunity to perform such a POE. The brief for the new building emphasized informal knowledge sharing and aimed for an open and transparent building to symbolize the institute's working and learning climate, which was interpreted by the architect as calling for spatial openness and the use of glass partitions.

The design brief also included a description of workplaces for employees. Their additional needs allowed us to learn about the way the design interpretation met different and at times conflicting requirements. For employees, the abundant use of glass partitions might have been at odds with their need for architectural privacy (Kim and de Dear, 2013; Sundstrom et al., 1980). The new design offered the possibility to study whether the need for architectural privacy interfered with the need to facilitate face-to-face communication and subsequent tacit knowledge sharing. Therefore, this study aims to investigate the meaning faculty members assigned to the actual use of the building and to address whether tacit knowledge sharing is supported by informal face-to-face communication, including privacy, through the affordance of the open and transparent design of the building.

In this first section knowledge sharing and face-to-face communication are reviewed, followed by a discussion on architectural privacy and control over interactions and their implications for the designed campus environment. In the second section, the study design is explained, followed by the findings, and ending with summary and discussion.

1.1. Knowledge sharing and the role of face-to-face communication

Knowledge can be differentiated into explicit and tacit knowledge. Explicit knowledge is all knowledge that can be coded (words, numbers), whereas tacit knowledge is personal and implicit and concerns the knowledge of know-how. Both types of knowledge are intertwined (Nonaka, 1994). In the remainder of this study, explicit knowledge is ignored because it does not rely necessarily on face-to-face communication.

The transfer of tacit knowledge is best facilitated by a shared physical space and face-to-face communication because tacit knowledge requires personal interaction (Nonaka, 1994; Nonaka and Konno, 1998) and thus, depends on spatial design. Proximity and seeing each other at work will stimulate informal encounters by offering awareness of the activities of other people (Appel-Meulenbroek et al., 2017; Becker, 2007; Toker and Gray, 2008). Furthermore, chance encounters provide serendipitous possibilities for exchanging ideas, inspiration, and new relationships (Levin and Cross, 2004). Consequently, transparently designed buildings are thought to support knowledge sharing (Becker, 2007; Rashid et al., 2006).

However, transparent buildings and open spaces may limit the possibility for users to withdraw from informal social interactions (Becker, 2007; Oseland et al., 2011; Sundstrom et al., 1982a).

1.2. Architectural privacy

Privacy is generally understood as having personal control over the extent and timing of interactions, which generates a sense of autonomy, identity, and self-esteem. Too much contact may generate a sense of crowding, while too little may generate a sense of social isolation (Altman, 1977, p. 67; Margulis, 1977, 2003a, 2003b, 2011). A person's type of work influences one's sense of privacy (Hedge, 1982; Kupritz, 2000b; 2011; Sundstrom et al., 1982b; Zalesny and Farace, 1987), as does the physical environment (Altman, 1977; Newell, 1995; Pastalan, 1970; Pedersen, 1997, 1999; Westin, 1967).

Architectural privacy is shaped by the environment that regulates privacy. Sundstrom et al. (1980, p. 102) distinguished between architectural privacy and psychological privacy. Architectural privacy stems from the degree of visual and acoustic isolation provided by the physical environment, whereas psychological privacy refers to the sense of personal control over whether to engage with others. Thus, architectural privacy can support psychological privacy (Archea, 1977; Laurence et al., 2013; Newell, 1995; Sundstrom et al., 1980; Wohlers and Hertel, 2017).

The relationship between architectural privacy and satisfaction is evidenced in studies of open-plan offices using both mixed method (Kupritz, 2000a, 2011) and quantitative approaches (Kim and de Dear, 2013; Maher and von Hippel, 2005; Sundstrom et al., 1980; Sundstrom et al., 1982a; Sundstrom et al., 1982b; Veitch et al., 2007). It has long been recognized that satisfaction with communication is associated with the degree of privacy: the higher degree of privacy, the more satisfaction with communication.

Existing research addresses only the size and existence of walls and doors, the height of partitions (Sundstrom et al., 1982a), or age and job functions (Kupritz, 2003, 2011). Except for Archea in 1977 (1977; Margulis, 2003a), none of these studies addressed the meaning of the spatial implications of the architectural design of the building. The strong emphasis on a merely technological, quantitative approach points to the need for a more spatial analysis tailored to the needs of specific user groups. Emphasizing spatial experience and analysis of architectural affordances (Maier et al., 2009) will help identify how specific users link the affordances of the design to architectural and psychological privacy.

1.3. Knowledge sharing at a Higher Education Institute

The voluntary character of tacit knowledge sharing requires informal face-to-face communication, which in turn benefits from the possibility of withdrawing and obtaining architectural privacy. For this reason, HEIs (Higher Education Institute) include physical informal meeting places in their campus plans (Chapman, 2006; Temple, 2009).

One might argue that the wish to support tacit knowledge sharing by supporting informal face-to-face

communication calls for an open and transparent architectural design. However, such a spatial design might be at odds with the need for psychological and architectural privacy of other users. A lack of privacy and distraction may especially cause dissatisfaction among people with managerial tasks or with tasks requiring concentration like faculty members (Hedge, 1982). Indeed, several reports have shown that distraction and disturbance prevented faculty members from doing concentrated work in the office, causing them to work from home or elsewhere (Baldry and Barnes, 2012; Elsbach and Pratt, 2007; Kim and de Dear, 2013; Lansdale et al., 2011). Significantly, such behavior inhibits the desired face-to-face communication within the HEI.

Another disadvantage of open-plan-offices in HEI is that faculty members may demonstrate flight behavior to avoid contact with pressing students (Becker et al., 1983). This study found not only an increased absence from the office but also a reduced quality of communication between faculty and students as perceived by both parties. Teachers may also perceive "normative pressure" due to a lack of privacy, which may decrease their well-being (Evans and McCoy, 1998). Normative pressure is thought to be an effect of being seen and identified, affirming their role responsibilities, and urging them to show the kinds of behaviors that fit the social responsibilities aligned with that role (Pastalan, 1970; Rasila and Rothe, 2012). An open spatial design might thus be at odds with the need for psychological and architectural privacy of users.

Because we would like to gain a better understanding of how employees link affordances, or perception and meaning, in the design of the building to their perceptions of tacit knowledge sharing and need for privacy, we deliberately chose to use a qualitative approach rather than a quantitative approach. The objectives of the current case study are, therefore, first, to identify whether perceived architectural privacy influences informal knowledge sharing, and second, to investigate what meaning faculty members assigned to the actual use of the building. The goal is to better understand how such meaning affects their perceived architectural privacy and satisfaction with the building. The availability of the design brief for the new HEI building offers a unique opportunity to perform this POE.

2. The case Dutch University Institute DI

2.1. Background

The Institute studied is an undergraduate, English-taught three-year residential liberal arts and sciences college located in the Netherlands, with about 50% international students. Faculty members only teach and are not allowed to spend their time on research. In its first years, DI was located in a temporary building; a new building was opened in 2013 next to the existing dorms. The temporary "old" building had a typical Dutch 19th-century school typology: a long three-floor building with the main entrance and staircase in the middle and a central corridor with classrooms on both sides towards the facades. Thus, for a few months before relocation, the building was seriously overcrowded.

In summer 2013, DI moved into the new building (5823 m^2 gross, fit for 900 students) with lecture rooms, a common room, project rooms, study areas, meeting rooms, and offices. The floorplan is a quadrangle with a large central staircase extending from the common room on the ground floor to the third floor (Fig. 1). The central staircase is surrounded by open study areas and project rooms encircled by classrooms and offices, the latter behind a lockable corridor.

2.1.1. The brief

According to the mission and values of DI, the building is intended to support social interaction and academic excellence and to create an inspiring academic community by encouraging interaction for knowledge acquisition and sharing. The brief called for three layers:

> 1. An outer shell radiates openness, transparency and accessibility. 2. A middle shell, a more enclosed area where insiders meet (both formally and informally), engage in debate, interact and where education and the joint acquisition of knowledge play an important role. 3. An inner shell provides security, a place where students, teachers, and staff from different cultures find peace and space for themselves, a place for concentration and serious study. (Design Brief, 2009, p. 9 translated).

The brief further asked for a balance among costs (based on the exploitation of DI), functionality, ambitions and the wishes of faculty and students.

Fig. 1 Central staircase.

2.2. Method

The POE is designed as qualitative research with semi-structured in-depth interviews and related observations using an interpretivist approach (Bowen, 2006; Thornberg, 2012). The use of an interpretivist approach reflects the fact that different interviewees may assign different meanings and interpretations as to how the building addresses their needs for privacy and tacit knowledge sharing (Yazan, 2015). Interviews were held in three stages. First, a few months before relocation and to avoid the kind of biased memories of the old building entails, interviews addressing the old temporary building were conducted as a reference. Shortly after relocation, the new building was visited, and the first impressions of the users were collected through informal unrecorded interviews. In the third stage, nine months after relocation, in-depth interviews were held in the new building. According to place attachment theory, people become more aware of their attachment preferences shortly after relocation because of the discontinuity of identity (Milligan, 2003), and therefore data analyses relied mainly on the third stage of data collection.

In the next two subsections, we will discuss participants and data collection in more detail.

2.2.1. Participants

In the research using the institute's newsletter, employees and students were invited to participate in the study. The interviewer (SB) also approached people, partly at random, partly through snowballing. Interviews with non-scientific staff and students were conducted for triangulation. Table 1 summarizes data on the interviews. Interviewees were anonymized with fake names according to their gender. Unlike the Stage 2 interviews, Stages 1 and 3 were in-depth, semi-structured interviews. From the 46 interviews, 8 were held in English and the remainder in Dutch.

2.2.2. Data collection

The interviews were structured around themes to discover what meaning interviewees attach to the building and whether it was influenced by the relocation (See appendix 1 for the interview questions):

Table 1 Overview of conducted interviews.

Interviews	Stage March 1, 2012		Stage 2 Oct/Nov2012		Stage March 3, 2013	
Gender	Male	Female	M	F	M	F
Students	5	2	3	1	5	4
Non-academics		2	1	1	1	2
Academics	3	1+dean	5	1+dean	6	1
Total	14		13		19	

- Use of amenities and mobility in the neighborhood or city;
- Feasibility of the building in supporting (in)formal knowledge sharing, social interaction;
- Feeling at home, the meaning of the building, current and previous expectations.

The interviews were recorded with the consent of the interviewees and transcribed in part. Coding was done using ATLAS. ti version 7 using the concepts described in the literature review as sensitizing concepts to guide further data analyses. Face-to-face communication, core activity, leisure, and building characteristics were used as deductive codes, while attachment, identity, privacy, and hierarchy were added as inductive codes. Codes were subsequently combined into code families describing the following:

- Formal and informal face-to-face communication
- Attachment and identity
- Core activity
- Privacy
- Leisure
- Building characteristics, including transparency.

3. Findings

3.1. The old building: not an inviting exchange environment

The old building was explicitly meant as a temporary facility. Staff and students complained of the lack of places for confidential and small group discussions. Students Isolde and Derek commented most clearly on the building typology of DI-1: It is *"all corridors and closed doors."*

> Student Derek on feeling at home: *"Could be better. When I see the new building, it looks more open. The big room where everybody meets each other. Here it is stairs and corridors; it is a little bit closed."*

> Student Isolde: "This building is not very inspiring, it is too uniform with logos and banners everywhere, no creative space. Not a place where you walk and suddenly come up with an idea."

Privacy was hardly mentioned in the old building. However, the overall shortage of space was mentioned by multiple staff members as creating congestion in facilities intended for confidential conversations.

All seven staff members mentioned the popularity of the "staff canteen," which was a small kitchen with a table. In contrast, the canteen or "common room" was seen by teachers as a typical student's place, as Dr. Nicolas said: "The students are sitting at those tables and you are following an obstacle course through the canteen to the other side." (translated). This spatial separation between students and staff, combined with a lack of overall space, made Dr. Gabriel sigh: "There is no space for faculty to meet with students. The common room is too public. I feel uncomfortable with all these other students around." The old building was seen by faculty members as crowded, not suitable for confidential conversations, and except for the staff canteen, was not suitable for social interactions.

3.2. The new building: "open and transparent"

The new building was entirely the opposite of the old building. This difference may be partly because it was meant to accommodate 900 students in the future. The brief underscored the importance of interaction and knowledge exchange but did not mention the need for privacy of staff. The aspiration of the client and the architect was to realize an icon, open and accessible, with a core for concentration and study. Indeed, openness and transparency of the new building are a striking feature according to the respondents. They described the new building as "modern" and "open," typically referring to the central staircase (Fig. 1) connecting surrounding open study areas and the entrance to the group offices (Fig. 3). Transparency and openness support face-to-face interaction, thereby increasing the chances of knowledge sharing through serendipitous encounters (Appel-Meulenbroek et al., 2017; Becker, 2007; Rashid et al., 2006; Toker and Gray, 2008). The lively, transparent architecture was truly appreciated by Dr. Charl-Heintz who stated the following:

> "I can enjoy the space. I can (...) walk around and go to those big American-looking large student rooms (...). It's nice to see those young people there." (translated)

Dr. Charles mentioned openness as an improvement to the old building because it enhances knowledge sharing through informal encounters. He thought it was a good building to teach in.

> "I like to walk around here. (...) I have started to think more positively about it in the past six months. I think it works, in the sense that you see each other more than in the old building. In the old building (...) you could die without anyone knowing."(translated)

However, the openness and transparency had downsides, such as a lack of auditory and visual privacy. This lack of privacy distracted people and interfered with concentrated work and reflection, both of which are necessary for the process of knowledge creation. Students, for instance, complained about distraction and noise in the study area. Student Martin:

Fig. 2 Visibility of persons in tutor room and clear sight lines.

Fig. 3 Group office.

> "As I walk through the building, I see that most people are trying to study. The desire, the drive, you can see it, but as a practical matter it usually does not work optimally because of that piano and it is always noisy (...), and you run into people so it feels more like a large canteen than like real study areas." (translated)

The tutor rooms have fully glazed walls facing the public domain to prevent (suspicions of) socially undesired behavior. These glass partitions dissatisfied tutors and evoked adaptive behavior, by putting students with their back to the glass to maintain the visual privacy of their tutee (Fig. 2).

Dr Zelda: "(...) I always make sure they (students) are sitting with their back to the window so that those who walk by cannot see anything" (translated).

Dr Charles: "Because everything is very open, very glassy, (...) The tutor rooms are aquariums. That's not handy. But (...) it is not negotiable" (translated).

Masking of the glass partitions by taping over with foil or posters was not allowed anywhere in the building. Personalization of workplaces was not strictly prohibited, but the intention was to share desks so that decoration was allowed only at the group level to demarcate the offices of a specific group. At the time of the interviews, offices (Fig. 3) with about six to ten desks organized around the groups of scientific disciplines were only slightly personalized mainly in ways that enabled identification of the group.

Visibility made it easier for students to find teachers, who reported little restraint on the part of students to approach them preferably outside the group office.

> Dr Charles: "Because we are in such a glass office, which has the advantage that students just stay outside and don't come in every time. That always happened in the old building. Here they see you sitting, so they wait until you make eye contact, so that's fine." (translated).

However, the approachability was perhaps a bit too easy as students showed *"very little restraint,"* as Dr Zelda called it (translated).

Accessibility was seen as valuable in an education building, but visibility evoked mixed feelings because of the lack of visual privacy for faculty members. Not all faculty

members experienced the lack of visual privacy in the same way. For instance, the more senior Dr Edward was more relaxed and developed strategies to cope with the circumstances by taking the emergency stairwells. The different meanings Dr Zelda and Dr Edward assigned to a lack of visual privacy might have to do with a difference in age. The variance might also highlight a gender difference (Bodin Danielsson and Theorell, 2019; Kupritz, 2000a, 2003; Newell, 1994; Wohlers and Hertel, 2017).

3.3. Lack of privacy in the new building

As multiple interviewed faculty members mentioned, the lack of visual privacy in the new building contrasted with the old situation. Some referred to a lack of privacy for tutored students. Others meant a lack of intimacy and mentioned the impossibility of withdrawing. As noted above, privacy involves having personal control over the extent and timing of interactions. The non-scientific staff had almost no complaints about privacy or visibility, which may be due to the secluded location (not connected to the staircase) of their open-plan-offices, showing that a person's type of work and the physical environment (Altman, 1977; Newell, 1995; Pastalan, 1970; Pedersen, 1997, 1999; Westin, 1967) influence one's sense of privacy (Hedge, 1982; Kupritz, 2000b; 2011; Sundstrom et al., 1982b; Zalesny and Farace, 1987). However, the scientific staff mentioned a troublesome perceived lack of personal control.

3.3.1. Personal control

Scientific staff felt a lack of privacy because of a lack of personal control. The physical possibility of withdrawal and the personal control to do so are important in workplace satisfaction (Maher and von Hippel, 2005; Oldham and Fried, 1987) and concentrated work (Parkin et al., 2011). Some scientific staff members had already mentioned issues regarding personal control in the old building:

> Dr Nicolas: "I cannot relax enough, that would require more space. More space and fewer situations where space is shared very intensively. (…) If you share a space so intensely with three people, it's very hard to be relaxed. (…) More privacy, more breathing space is necessary." (translated).

In the new building faculty members signaled stress and the urge to withdraw much more clearly:

> Dr Gabriel: "(…) I just need a little bit of thought, (.) places where I can withdraw a little bit and talk with people and have some intimacy with people. I don't think the building has that kind of thing, (…)."

Teachers emphasized the importance of interaction with students but experienced stress due to a perceived lack of control over the frequency, time and duration of those interactions. Indeed, some teachers took rather drastic measures to regain personal control, like Dr Edward who regained control by using the fire escape staircase regularly and choose the central staircase only when he wanted to be seen: "Then I deliberately choose not to take the fire escape, (…) and I'll find out who I meet. You make sure you are visible on purpose at certain times." (translated).

3.3.2. External control

Teachers experienced a sense of crowding and longed for privacy away from students to work (together) undisturbed and unseen. The transparency and openness of the building forced them to keep their role and maintain authority constantly. The urge to "keep up appearances" is voiced clearly by Dr Zelda on chance meetings with her students. Although she supports the importance of contact with students, she emphasizes the different role she has as a teacher, which clearly is not always obvious to the students involved.

> "I think it's important that there's some sort of distance, anyway. So, it is clear that you are a teacher, that you are not one of them, that you also have a role other than them, (…) that it is a relationship where they cannot always demand everything from me, (…), and not always have access to me. And then you have to indicate boundaries and it helps to ensure them if boundaries are also physical." (translated)

She clearly stated that the constant urge to behave according to her role responsibilities added to her mental strain, because she had too few options to withdraw. It *"is also more difficult than if you are a man … to enforce that respect and those relations (…)"* (translated). Indeed Buck and Tiene (1989), (pp. 176—177) also found that "attractive female teachers may have more difficulty exercising their authority in the classroom". The lack of privacy exerts even stronger pressure on young or female teachers' well-being.

The mentioned lack of privacy can be interpreted as a signal that the desired state of privacy, referred to as reserve, could not be realized with these students. Reserve is a state of privacy amidst other people, made possible by the tactful consideration of the others, where one can hide personal information by actively limiting interaction (Pastalan, 1970; Pedersen, 1997, 1999). Apparently, not all students had the empathy or politeness to respect the privacy of the teachers, as Dr Zelda said:

> "for some students, it's just a little confusing that we have such close contact, that we are so committed to them. And then you soon raise expectations. … You must also not expect 18- and 19-year old to understand that subtlety. (…)" (translated)

3.3.3. Territory of peers

The need for personal privacy and reserve expressed by Dr Zelda might be related to the need for a shared territory with peers. Places where peers meet each other increase mutual trust necessary for knowledge sharing (Heerwagen et al., 2004). Such a territory affords well-being and belonging (Vischer, 2008) and thus contributes to a perception of architectural privacy. Dr Zelda's problem was increased after relocation because the new building intentionally omitted a dedicated staff canteen similar to that in the former temporary building. This decision was intended to force the staff to mingle more with students.

> Dr Tom: "The reason I do not use the canteen itself: it's a very visible place. You are seen by everyone (…). If you are having lunch, I would like to have a quieter place for lunch and not be disturbed by the people who come by. (…)" (translated).

The staff perceived their territory to have decreased with just the office wing for employees, without any other replacement in or outside the building. Thus, employees such as Dr Tom appear to have resigned themselves to the spatial affordances by withdrawing.

3.3.4. Hierarchy

The employees also experienced hierarchic supervision from their dean, which affected their need for privacy further. It has long been recognized that the possibility of being watched by a supervisor is a dissatisfier (Sundstrom et al., 1982b). Such a situation may arise as the management testified to having a strong visionary pioneering mentality at the time of the interviews. This mentality was perceived by some as a high amount of external control and top-down hierarchy as evidenced by statements of employees, such as "it is not negotiable," or expressed dismay over the decision not to include a staff canteen, or sometimes even an outspoken fear of expressing themselves in the interviews.

The layout of the building reinforced this sentiment. The office of the dean was a floor-to-ceiling glazed room next to the central staircase, originally designed as a meeting room (Fig. 4). Faculty members expressed reluctance to pass by this so-called "aquarium." Two interviewed faculty members bypassed the big staircase and took the emergency stairs to avoid control and interaction. Another teacher who was unaware of this alternative complained of the impossibility of going unnoticed either to the canteen or to another floor. The hesitation in using the central staircase might be the expression of the lack of visual privacy and the sensation of being controlled:

> Dr Tom: "when you go down you will be seen too. Visibility, very nice on the one hand, and on the other hand you think twice before moving around (...) you have to go through the entire staircase. Just like I have trouble going to the 3rd. In the old building, it was more corridor-like, much smaller, less light, you could move around unseen (...). Certain tension to be seen all the time. Feeling little privacy." (translated).

Clearly, the faculty members felt trapped between the external control of students and the hierarchic supervisor because of the particularity of the building, which may put them under strain (Evans and McCoy, 1998).

Fig. 4 Dean's office on the left.

4. Summary and discussion

This POE aims to investigate the meaning that faculty members assign to the actual use of the building and addresses whether tacit knowledge sharing is supported by informal face-to-face encounters through the affordance of an open and transparent building design. This study highlights the importance of a better balance between the need to encourage informal knowledge sharing and the need for architectural privacy among teaching staff. Up to a certain level, an open and transparently designed building may enhance social encounters and contribute to informal knowledge sharing. However, as this study reveals, too much openness and transparency may inhibit social encounters and place pressure on teachers. These findings suggest that supportive design needs to allow for architectural privacy and personal control. The current study illustrates that architects need to be aware that external, hierarchical control can inhibit tacit knowledge exchange. Faculty members may avoid interaction with students by warding them off or fleeing. Combined with the culture of the organization, the building affords the opposite of what the brief intended, that is, to foster informal interaction and tacit knowledge sharing.

The transparency of the building evoked a lack of visual privacy in faculty members. This lack of privacy appears to be the consequence of the management's desire to carry out transparency explicitly as the organizational culture. For teachers, however, visibility is stressful and undermines their ability to achieve a desired state of reserve. We consider this the transparency paradox. Though transparency can stimulate knowledge sharing through awareness, the unforeseen affordance of transparency is reduced autonomy and well-being for faculty members because of a lack of privacy. This lack of visual privacy and the feeling of being controlled is demonstrated in the reluctance of faculty members to use the central staircase. Consequently, the faculty members spent less time wandering through the building or used the emergency stairwell, which offered the possibility of escaping temporarily from external control over their interactions.

The territoriality of staff was decreased further by the elimination of the "staff canteen," which compounded their unmet need to withdraw and relax. The expressed wishes of faculty members to withdraw as a reaction to too much uncontrolled interaction with students suggest faculty flight (Becker et al., 1983). Ultimately, this reaction could lead to avoiding the building altogether.

The urge to withdraw highlights a lack of personal control over the intensity of interaction and the perceived stress over the experienced distraction and frustrated concentrated work. The intensity of the perceived lack of personal control over time, space and exercised role may be related to gender and age, and this possibility deserves further investigation.

The existence of "strategic" sight lines (Fig. 2) reinforced the sense of being under constant surveillance that arose from the transparency of the building. Visual surveillance through sight lines was applied *in extrema* in the 18th-century panopticon prison as a means of exercising power (Kornberger and Clegg, 2004). In the new building,

such a meaning may be assigned to the way the management used the glass-walled office next to the central staircase, which the architect originally intended as a meeting room. The glass-walled room is not in its own right a cause of dissatisfaction. Indeed, its meaning is derived from the perceived use of the space based on the organizational culture at the time of the study. Interestingly, even after a couple of years and a personnel change in management staffing, the office of the dean remained the same with no noticeable changes made.

The emphasis in the brief was on building a community of learners and interaction that focused more on students than on teachers. One could argue that the inner shell of the three layers, mentioned in the brief for the building (see Section 2.1.1), which should have provided security as a place for concentration and ownership, was realized insufficiently for at least some faculty members. The openness and desire for interaction hampered the needed "space for themselves." The intended creation of a home for students and teachers bore little real fruit for the latter and seemed meant primarily to serve students. The lack of territoriality for faculty members and their voiced lack of reserve might be interpreted as a lack of designated, or even secluded, areas for different role holders, here teachers and students. This absence may be misinterpreted by young students who may not be sensitive to the teachers' need for reserve. This might be particularly true because the dean had a designated space of her own, reflecting the hierarchy. One might argue that in educational buildings, designated areas should help young students acquire proper role behavior by distinguishing among the different roles. The interrelatedness between territoriality and acquiring social norms deserves further research.

While this POE is a qualitative study with a limited number of interviewees, it nevertheless lends support to the development of good practices in designing HEI. By using the available design brief coupled with in-depth interviews, this study adds valuable insights by contrasting the design brief with the different meanings that the staff assigned to the spatial design. It is not intended to be an argument for generalizing its outcomes towards the design of other types of school buildings. Instead, as highlighted here, the study stresses the importance of better identifying the needs of different groups of end-users in the design of such buildings, because the privacy issues experienced by some staff members could potentially have been recognized earlier in the design process.

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Appendix A. Supplementary data

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References

Altman, I., 1977. Privacy regulation: culturally universal or culturally specific? J. Soc. 33 (3), 66—84.
Appel-Meulenbroek, R., de Vries, B., Weggeman, M., 2017. Knowledge sharing behavior: the role of spatial design in buildings. Environ. Behav. 49 (8), 874—903.
Archea, J., 1977. The place of architectural factors in behavioral theories of privacy. J. Soc. 33 (3), 116—137.
Baldry, C., Barnes, A., 2012. The open-plan academy: space, control and the undermining of professional identity. Work. Employ. Soc. 26 (2), 228—245.
Becker, F., 2007. Organizational ecology and knowledge networks. Calif. Manag. Rev. 49 (2), 42—61.
Becker, F.D., Gield, B., Gaylin, K., Sayer, S., 1983. Office design in a community college - effect on work and communication patterns. Environ. Behav. 15 (6), 699—726.
Bodin Danielsson, C., Theorell, T., 2019. Office employees' perception of workspace contribution: a gender and office design perspective. Environ. Behav. 51 (9—10), 995—1026.
Bowen, G.A., 2006. Grounded theory and sensitizing concepts. Int. J. Qual. Methods 5 (3), 12—23.
Brief, Design, 2009. *Programme Of Requirements*. Accessible through the Authors for Reasons of Confidentality.
Buck, S., Tiene, D., 1989. The impact of physical attractiveness, gender, and teaching philosophy on teacher evaluations. J. Educ. Res. 82 (3), 172—177.
Chapman, M.P., 2006. American Places: in Search of the Twenty-First Century Campus. American Council on Education and Praeger Publishers.
Dhanaraj, C., Lyles, M.A., Steensma, H.K., Tihanyi, L., 2004. Managing tacit and explicit knowledge transfer in IJVs: the role of relational embeddedness and the impact on performance. J. Int. Bus. Stud. 35 (5), 428—442.
Elsbach, K.D., Pratt, M.G., 2007. 4 the physical environment in organizations. Acad. Manag. Ann. 1 (1), 181—224.
Evans, G.W., McCoy, J.M., 1998. When buildings don't work: the role of architecture in human health. J. Environ. Psychol. 18 (1), 85—94.
Gibson, J.J., 1986. The Ecological Approach to Visual Perception. Lawrence Erlbaum Associates, Publishers, Hillsdale, New Jersey.
Hedge, A., 1982. The Open-Plan Office. *Environment and Behavior* 14 (5), 519—542.
Heerwagen, J.H., Kampschroer, K., Powell, K.M., Loftness, V., 2004. Collaborative knowledge work environments. Build. Res. Inf. 32 (6), 510—528.
Kim, J., de Dear, R., 2013. Workspace satisfaction: the privacy-communication trade-off in open-plan-offices. J. Environ. Psychol. 36, 18—26.
Kornberger, M., Clegg, S.R., 2004. Bringing space back in: organizing the generative building. Organ. Stud. 25 (7), 1095—1114.
Kupritz, V., 2000a. The dynamics of privacy regulation: a conceptual model for HRD and organizations. J. Ind. Teach. Educ. 38 (1), 29—59.
Kupritz, V.W., 2000b. Privacy management at work: a conceptual model. J. Architect. Plann. Res. 17 (1), 47—63.
Kupritz, V., 2003. Accommodating privacy to facilitate new ways of working. J. Architect. Plann. Res. 20 (2), 122—135.
Kupritz, V.W., 2011. Individual and group privacy needs across job types: phase 1 study. J. Architect. Plann. Res. 28 (4), 292—313.
Lansdale, M., Parkin, J., Austin, S., Baguley, T., 2011. Designing for interaction in research environments: a case study. J. Environ. Psychol. 31 (4), 407—420.
Laurence, G.A., Fried, Y., Slowik, L.H., 2013. "My space": a moderated mediation model of the effect of architectural and experienced privacy and workspace personalization on

emotional exhaustion at work. J. Environ. Psychol. 36, 144—152.
Levin, D.Z., Cross, R., 2004. The strength of weak ties you can trust: the mediating role of trust in effective knowledge transfer. Manag. Sci. 50 (11), 1477—1490.
Maher, A., von Hippel, C., 2005. Individual differences in employee reactions to open-plan offices. J. Environ. Psychol. 25 (2), 219—229.
Maier, J.R.A., Fadel, G.M., Battisto, D.G., 2009. An affordance-based approach to architectural theory, design, and practice. Des. Stud. 30 (4), 393—414.
Margulis, S.T., 1977. Conceptions of privacy: current status and next steps. J. Soc. Issues 33 (3), 5—21.
Margulis, S.T., 2003a. On the status and contribution of westin's and altman's theories of privacy. J. Soc. Issues 59 (2), 411—429.
Margulis, S.T., 2003b. Privacy as a social issue and behavioral concept. J. Soc. Issues 59 (2), 243—261.
Margulis, S.T., 2011. Three theories of privacy: an Overview. In: Trepte, S., Reinecke, L. (Eds.), Privacy Online: Perspectives on Privacy and Self-Disclosure in the Social Web. Springer Berlin Heidelberg, Berlin, Heidelberg, pp. 9—17.
Milligan, M.J., 2003. Displacement and identity discontinuity: the role of nostalgia in establishing new identity categories. Symbolic Interact. 26 (3), 381—403.
Newell, P.B., 1994. A systems model of privacy. J. Environ. Psychol. 14 (1), 65—78.
Newell, P.B., 1995. Perspectives on privacy. J. Environ. Psychol. 15 (2), 87—104.
Nonaka, I., 1994. A dynamic theory of organizational knowledge creation. Organ. Sci. 5 (1), 14—37.
Nonaka, I., Konno, N., 1998. The concept of "ba": building a foundation for knowledge creation. Calif. Manag. Rev. 40 (3), 40—54.
Oldham, G.R., Fried, Y., 1987. Employee reactions to workspace characteristics. J. Appl. Psychol. 72 (1), 75—80.
Oseland, N., Marmot, A., Swaffer, F., Ceneda, S., 2011. Environments for successful interaction. Facilities 29 (1/2), 50—62.
Parkin, J.K., Austin, S.A., Pinder, J.A., Baguley, T.S., Allenby, S.N., 2011. Balancing collaboration and privacy in academic workspaces. Facilities 29 (1/2), 31—49.
Pastalan, L.A., 1970. Privacy as a behavioral concept. Soc. Sci. 45 (2), 93—97.
Pedersen, D.M., 1997. Psychological functions of privacy. J. Environ. Psychol. 17 (2), 147—156.
Pedersen, D.M., 1999. Model for types of privacy by privacy functions. J. Environ. Psychol. 19 (4), 397—405.
Rashid, M., Kampschroer, K., Wineman, J., Zimring, C., 2006. Spatial layout and face-to-face interaction in offices—a study of the mechanisms of spatial effects on face-to-face interaction. Environ. Plann. Plann. Des. 33 (6), 825—844.
Rasila, H., Rothe, P., 2012. A problem is a problem is a benefit? Generation Y perceptions of open-plan offices. Property Manag. 30 (4), 362—375.
Robert, L.P., Denis, A.R., Hung, Y.-T.C., 2009. Individual swift trust and knowledge-based trust in face-to-face and virtual team members. J. Manag. Inf. Syst. 26 (2), 241—279.
Sundstrom, E., Burt, R.E., Kamp, D., 1980. Privacy at work: architectural correlates of job satisfaction and job performance. Acad. Manag. J. 23 (1), 101—117.
Sundstrom, E., Herbert, R.K., Brown, D.W., 1982a. Privacy and communication in an open-plan office: a case study. Environ. Behav. 14 (3), 379—392.
Sundstrom, E., Town, J.P., Brown, D.W., Forman, A., Mcgee, C., 1982b. Physical enclosure, type of job, and privacy in the office. Environ. Behav. 14 (5), 543—559.
Temple, P., 2009. From space to place: university performance and its built environment. High Educ. Pol. 22 (2), 209—223.
Thornberg, R., 2012. Informed grounded theory. Scand. J. Educ. Res. 56 (3), 243—259.
Toker, U., Gray, D.O., 2008. Innovation spaces: workspace planning and innovation in U.S. university research centers. Res. Pol. 37 (2), 309—329.
Veitch, J.A., Charles, K.E., Farley, K.M.J., Newsham, G.R., 2007. A model of satisfaction with open-plan office conditions: COPE field findings. J. Environ. Psychol. 27 (3), 177—189.
Vischer, J.C., 2008. Towards an environmental psychology of workspace: how people are affected by environments for work. Architect. Sci. Rev. 51 (2), 97—108.
Wener, R.E., McCunn, L.J., Senick, J., 2016. Did that plan work? Post-occupancy evaluation. In: Gifford, R. (Ed.), Research Methods for Environmental Psychology. John Wiley & Sons, Oxford, UK, pp. 249—270.
Westin, A.F., 1967. Privacy and Freedom. Atheneum, New York.
Wohlers, C., Hertel, G., 2017. Choosing where to work at work—towards a theoretical model of benefits and risks of activity-based flexible offices. Ergonomics 60 (4), 467—486.
Yazan, B., 2015. Three approaches to case study methods in education: Yin, Merriam, and Stake. Qual. Rep. 20 (2), 134—152.
Zalesny, M.D., Farace, R.V., 1987. Traditional versus open offices: a comparison of sociotechnical, social relations, and symbolic meaning perspectives. Acad. Manag. J. 30 (2), 240—259.