

## #179

### THE BALANCE BETWEEN PHYSICAL CLOSURE AND OPENNESS IN OFFICE WORKSPACE AND THE RELATION OF THE INTERACTION BETWEEN WORKERS AND THEIR NEED FOR PRIVACY

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#### ABSTRACT

The scope of this research project is to develop a model indicating a balance between physical openness and closure in office working environments and the relation between physical attributes and their influence on possible interactions between office workers and their need of privacy. Interaction among employees takes place in cases of extensive visibility and accessibility. On the other hand, privacy is possible, most times, in enclosed spaces with defined physical boundaries. Literature confirms that both interaction and privacy are significant for the workers' satisfaction and, at the same time, serve the management's interests. The main research question posed is: What are the physical and geometrical/morphological components that enable the delicate balance between physical closure and openness in office workspace? The research objective is to uncover the characteristics of these issues.

In this paper we present the research in progress combining quantitative and qualitative methods and a comparative evaluation between both. The research method is a comparative study of variant case studies. In this paper we present two case studies: the traditional office, restricted office with closed rooms connected by corridors and an open space office. In both case-studies global integration was examined using axial lines map while at the same time behavioural analysis was conducted based on observations and employee interviews, culminating with a comparison of the results of the analysis. Partial results of this study indicate that combining the axial lines maps with additional analysis of behaviour maps may result in more comprehensive information. Preliminary outcomes of the study indicate reciprocal relations between size of corridors and interaction between office workers together with their feelings of privacy in space; also the location and accessibility of common functions in the public spaces and their usability. Strong relations were found between topological analyses and interview analysis regarding openness to external view in addition to location and orientation of seating regarding privacy and interaction. The research results and conclusions may serve as a basis for future studies in this area and a basis for practical directing guidelines for future office space design as well as office workers community and managements.

## KEYWORDS

Physical closure and openness; interaction between workers and privacy; office-space morphological characteristics; office-space design; Space syntax.

## 1. INTRODUCTION

The scope of this research is to develop a model dealing with the balance between physical openness and closure in office working environments and the relation between physical attributes and their influence on possible interactions between office workers and their need of privacy. Interaction takes place in cases of extensive visibility and accessibility. On the other hand, privacy is possible, most times, in enclosed spaces with defined physical boundaries. Literature confirms that both interaction and privacy are significant for the workers' feelings of satisfaction which coincides with serving the management's interests.

This study focuses on issues of privacy and interactions in office environments of various types: The traditional office with closed rooms connected by corridors, where employees are sited individually or in pairs, and the open-spaced office, where each employee is sited individually in a cubicle, of various types: completely open with no partitions or open with different height partitions that do not reach the ceiling as in closed rooms. All case-studies have similar tasks and functionality.

In the last decade, studies on the topic revealed that employees have been complaining of lack of privacy such as acoustic privacy, visual privacy and a sense of personal loss (Vischer, 2002, 2005, 2006, 2007b). With that being said, different studies affirm that open-space areas contribute to collaboration and interactions among employees (Rashid and Zimiring, 2003, Rashid et al, 2005, Rashid et al 2006, Rashid et al 2007, Rashid et al 2009, Steen & Markhede, 2010, Suckeley & Dobson, 2014). It appears that the employees' content, regarding privacy, in complete open-spaced offices resembled the content of employees, regarding privacy, in completely closed offices, in contrast to employees working in open-spaced offices with partial partitions.

The research objective is to uncover the geometrical/morphological characteristics in office workspaces that enable the delicate balance between both: to encourage interaction and cooperation between workers, while supporting their privacy needs.

## 2. DATASETS AND METHODS

This article presents a research in progress combining quantitative and qualitative methods and a comparative evaluation between both. The quantitative methods are based on powerful space syntax (Hillier, 1996, Hillier and Hanson, 1984) axial maps analyses and geometric metrics analysing accessibility, visibility, connectivity, interaction and intelligibility of variant office working environments. The qualitative methods are based on conducting deep interviews among dozens of office workers and observations on the variant public spaces of this workspace. The research method is a comparative study of variant office spaces with similar tasks.

The article presents a traditional office with closed rooms connected by corridors, comparing two corridors, one 1.5m' wide and the second 2.5 m' wide, in the same office building. The study also compared the global integration using axial maps analysis with interviews in another office building designed as an open space. This office building combines closed rooms with open spaces containing partitions of various heights including extremely low partitions in the height of computer screens. Results and conclusions are presented from the comparison between workstations in different open space offices (Totally open with no partitions and totally open with different height partitions).

### 3. RESULTS

The results of a comparison between two corridors in a traditional office building are as following: figure 1 an axial line map examining global integration is presented. The analysis is relating to the rooms and the corridor with the focus on the contrast between the two. It seems that in both corridors, the wider and the narrower, the potential for integration exists in a similar way. (In both corridors, red axial lines were found in comparison to blue axial lines located in the rooms). This indicates a forecast of interactive activities that can occur in these corridors.

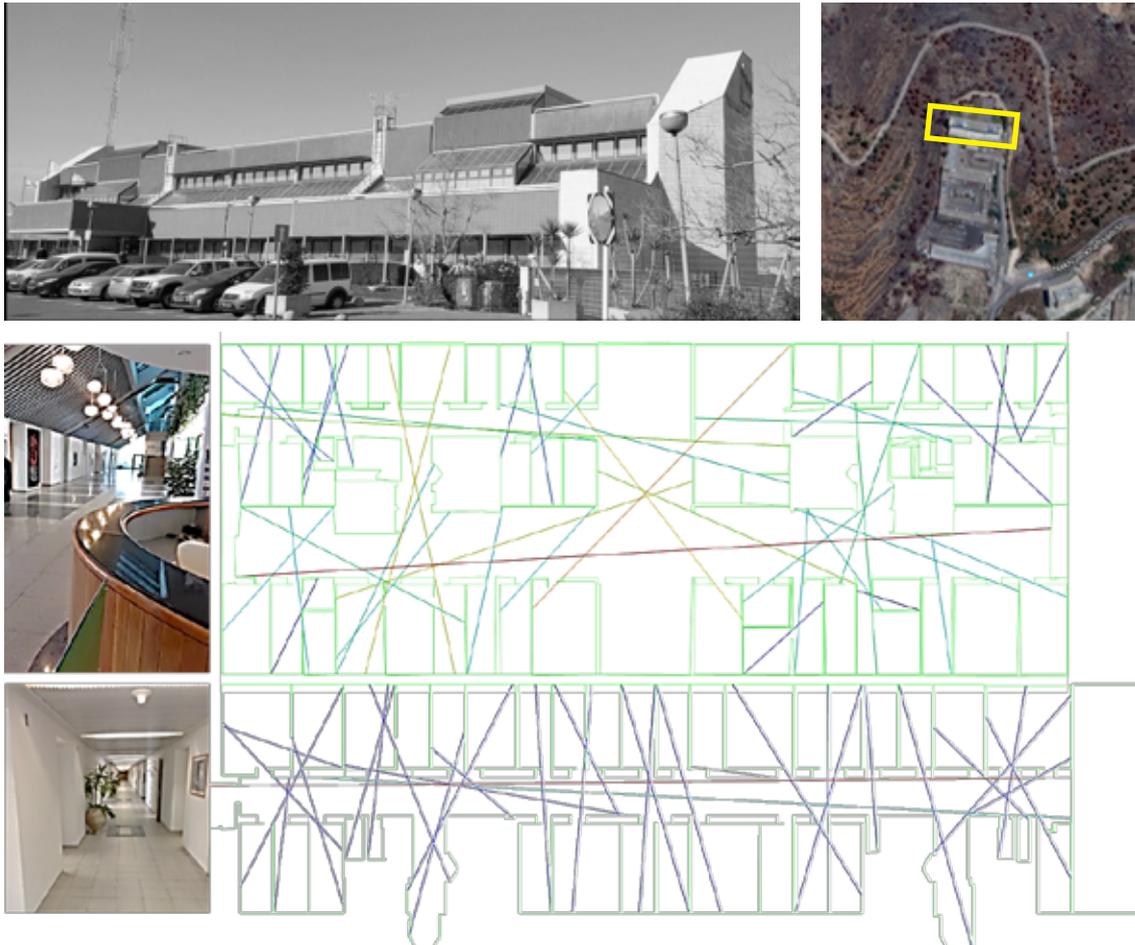
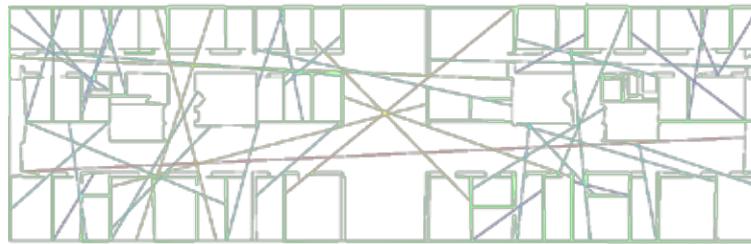


Figure 1 - Top - site view and photo of the traditional office space building. Down - Axial line map – global integration in a wide corridor (2.5 meter-top) and in a narrow corridor (1.5 meter-below)

Behavioural maps were charted indicating various activities in different locations in the corridors. These maps are based on observations and describe employee behaviour in these particular areas. Figure 2 shows a comparison between Axial lines and a behavioural map in the wider corridor on the entrance floor. The cluster of red dots seen on the behavioural map indicate that the main activity, is that of private individuals talking on their cell phones.



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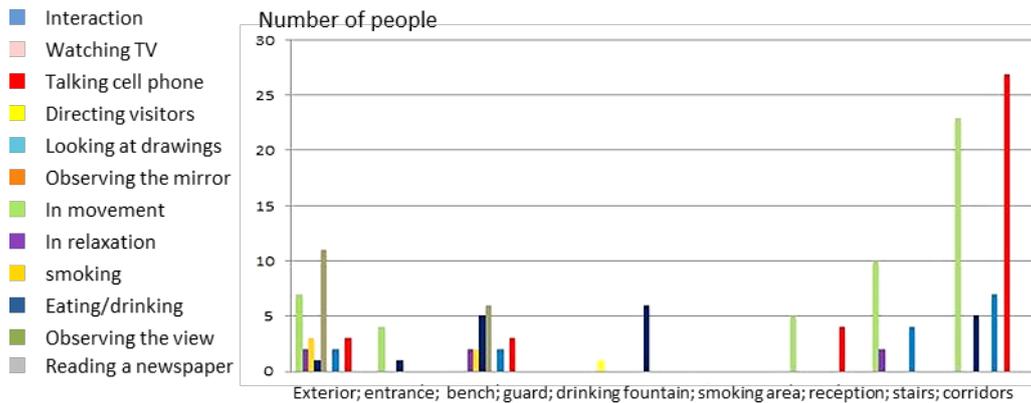
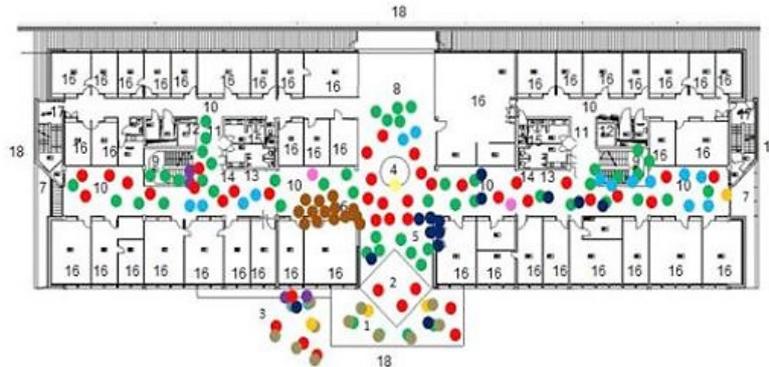


Figure 2 - Axial line map – global integration in a wide corridor (2.5 m) and a Behavioural map indicating interactive activity of talking in the corridor (see the red dots/column).

Figure 3 shows a comparison between Axial lines and a behavioural map. The behavioural map displays multiple grey dots indicating interactive activity taking place in the corridor of both work and social related conversations. From employee interviews, it is apparent, that there is less integration in the corridor on the entrance level than in the corridor on the upper floor. As an example, one of the employees working in an office along the wider corridor, on the entrance level affirms: Occasionally there are noises that bother me.... Sometimes I go out of the room into the corridor to make a private call. According to interviews, it is clear that the conversations among the employees are conducted in the rooms or in intimate recesses, but not in the corridor. However, an employee in the upper floor, facing the narrow corridor said: In the corridor, one bumps into colleagues that haven't been seen in a long time, we greet each other and catch up on the latest. Another employee states that, in the corridors, the kitchenette, the copy-machine room, the coffee stands, even in the lavatories, there are rendezvous. The same employee states that when she needs privacy she doesn't go out to the corridor.

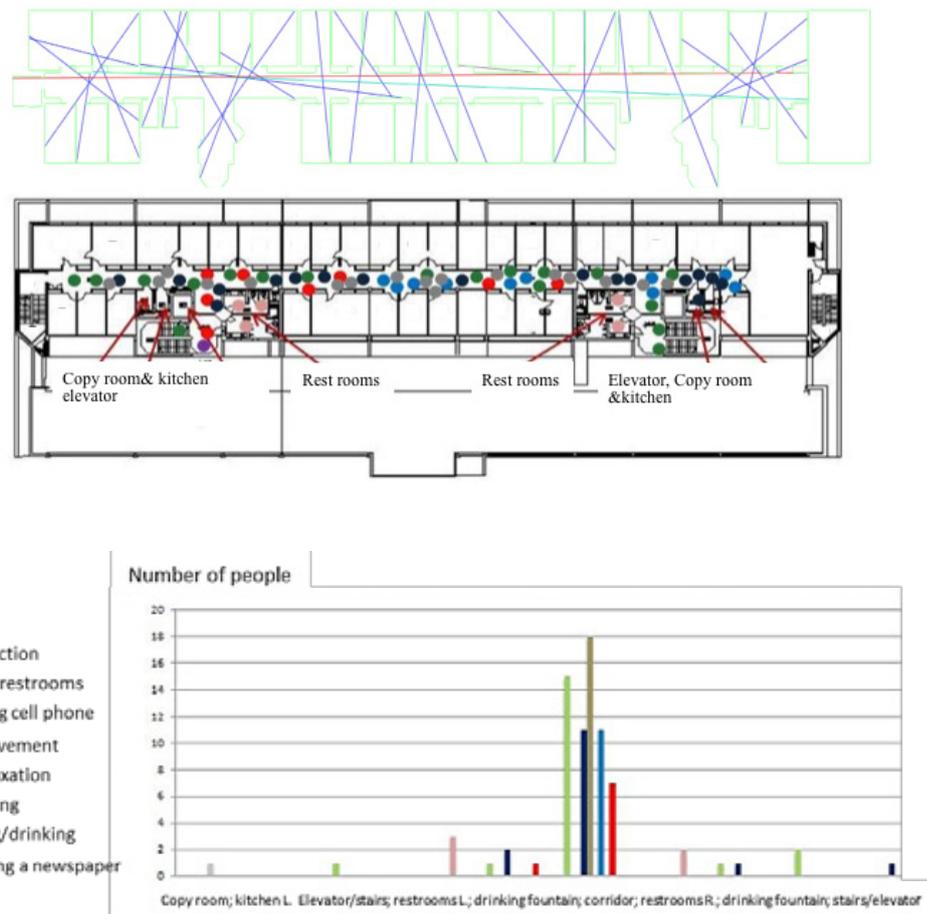


Figure 3 - Axial line map – global integration in a narrow corridor (1.5 m') and Behavioural map indicating working related activity in the corridor (see the grey dots/column).

In an observation conducted on the two corridors it is apparent that in the upper level, where the corridor is narrower, work related interactions and cooperation among employees exist. However, in the corridor on the entrance level, where the corridor is almost twice as wide, the main activity viewed was talking on the cell phone, which is a private activity. The employees were satisfied in both corridors: the wider corridor provides anonymity enabling a kind of privacy and the narrow corridor provides intimacy and enables interaction, while privacy is realized in the closed office rooms.

The result of a comparison conducted in an open space office with various height partitions are as follows: Strong relations and similarities between the results of the axial maps analysis and observations and interviews were found. The interactive axes which appeared on the axial maps were found to be interactive in the observations which portrayed movement of employees through passageways, between stations, and employee cooperation which takes place in these areas. Observation revealed that in the passages and between the work stations employees ask and advise one another in work related issues along with social activity.

In the cubicles where the partitions reach 1.6-1.8 meters there is more interaction and cooperation among employees in the passages because they seem higher. An employee operating in a cubicle, states that, *everybody hears everybody else... There is no quiet, not even for a minute, when I want to sit quietly, I put on headphones*. In contrast, an employee who sits in a complete open space with very low partitions explains, *yes, we see. The truth is that it hardly bothers, maybe just a little bit - the lack of privacy, but I am pleased with the fact that I can see*

others. Another employee in an open space station affirms, *On the whole, I consider everyone my friends, those sitting in the adjoining stations a bit closer, in the department, on the floor. I don't feel crowded at all. I don't feel that I hear the noise. I don't feel exposed despite the open space.* Another employee expresses that *it is easier to cooperate.* It appears that in open space offices the highest satisfaction is where no partitions or very low partitions that enable maximum visibility and interaction. It appears that visibility influences a silent behavior due to awareness to the neighboring employees.

#### 4. CONCLUSIONS

Preliminary outcomes of the study indicate reciprocal relations between size (width and length) of corridors and interaction between office workers and their feeling of privacy in the traditional office space; also the location and accessibility of common functions in the public spaces and their usability.

The Behavioural Map shows that in spite of similarities in the topological maps in both corridors, the activity observed was different: In the narrower corridor, there was interaction activity and cooperation between employees. Whereas in the wider corridor there were private activities of talking on the cell phone. The combination of axial lines and behavioural maps have stronger relations to the employee's response according to interviews.

In an open office space, there is general satisfaction concerning the issues of privacy in various aspects, when partitions do not exist at all, or when the partitions are very low. Similar results were found during observations. These findings strengthen the conclusions of recent work taking place in the last decade which discuss the satisfaction of privacy.

These research outcomes and conclusions may serve as a basis for future research in this area. The suggested model may become a basis for practical directing guidelines for future office space design as well as for the office workers community and managements.

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