Organizational creativity through space design.

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Abstract

The design of the space has much influence on our creativity level and thinking mode. Both exterior and interior design use shape, texture and material to reflect our interpretation of the purpose of the space. Taking into account the different activities that occur in the work space environment, flexibility in design offers a sense of balance between dense areas that enhance interactions, and closed areas that boost individuals' concentration and development of ideas. By representing the values and purposes of the organization as a whole, design features can alter our perceptions in the space, bringing out feelings of freedom or confinement, and conveying sensations that ultimately enhance or impair the creativity potential of the place.

In the beginning, buildings were designed to fit a purpose, later that evolved into designing beautiful spaces that tell stories (Pérez-Gómez, 2007). Homes, schools, and businesses are becoming more integrated in this information age to tell those stories, where individuals come together as teams and share knowledge, skills, goals and values at work and in their social lives (McCoy, 2005). In a way, this team will become a small community by itself that "motivates its members to exceptional performance" (Bickford & Wright 2006, p.4.2). Additionally, some researchers have observed that the physical work environment reflects and contributes to the social conditions within organizations, which foster problem solving (McCoy & Evans, 2002). Finding the desirable place will help develop or hinder the team's cohesiveness, creativity, productivity, and eventually inspire the development of products or ideas.

In exploring these concepts, I focused on the physical aspect of the environment at work, and what it takes to make a space stimulate our creativity. To understand better the physical side, I attended the 'Reconciling Poetics and Ethics in Architecture' Conference that took place at the McGill School of Architecture in Montreal from September 13 to 15, 2007 and examined several theoretical and practical books of structural architecture and interior design. I would like to look at these spaces from the lens of creative press (environment) in different cultures and times.

Who Is Involved In The Space?

Both individuals and teams inhabit the space, and their views need to be examined in terms of how a place affects the perception of a creative environment. An individual's use of space can be spent in browsing and analysing activities (Haner, 2005). Organizations aim at bringing up and maintaining those creative talents who actively seek new

knowledge, are motivated by curiosity and want to achieve something (Kristensen, 2004). On the other hand, group activities include brainstorming, collaborating, decision making and evaluating projects (Haner, 2005). Their needs, motives, and styles provide the basic drive and source of energy for the organization (Isaksen, Lauer, Ekvall, & Britz, 2001). Thus the creative milieu of the establishment may offer offices, meeting places, and facilitate communication and interaction (Törnqvist, 2004; Haner, 2005), and the more creative the environment is perceived, the more creative individuals are drawn to such an atmosphere. What makes this phenomenon important is how those creative people will place specific demands on the space that may lead to establish the preconditions for yet another creative environment. In doing so, they continue the cycle of developing a creative atmosphere, that attracts more creative individuals (Törnqvist, 2004). Understanding the individual and team's characteristics helps us unfold the capacity and potential to use the physical environment to its fullest advantage.

The Work Space.

The International Workplace Studies Program has conducted extensive case studies of numerous successful and creative organizations to understand how the physical work environment supports workplace initiatives that encourage the high performance of teams and cross-functional collaboration. Their conclusions reflected some of the results explained in this paper, such as the features of the environment that facilitate communication, task accomplishment and are adaptable to changes in the team and the organization (McCoy, 2005). For example, at Vitra, the office furniture manufacturer in Germany, employees are "encouraged to move freely throughout the rooms of the

workspace to fulfill their needs" (Zelensky, 2002, p.18). Whether they need to move near or far also affects the frequency and quality of their interactions (McCoy (2005).

Spaces in this sense enable access to relevant data, information and process-specific content (Moultrie, et al., 2007), all the while inspiring workers to see things from different angles other than plain white walls, big steady desks and back-damaging chairs. More and more companies are realizing having a joyfully designed and fun workspace helps awaken their employees' light-hearted nature, and aim at removing barriers to creativity. Google Campus and Redbull headquarters in London are examples of such playful areas (see figure 1) (http://positivesharing.com/2006/10/10-seeeeeriously-cool-workplaces).

Figure 1. At Googleplex, employees are encouraged to take time off to develop ideas.

Design issues

Since a long time ago, cities have built themselves into creative hubs in one or more aspects. What exactly do these cities have, or do, that makes them such a talent magnet? As a starting point, Abbaszadegan (2000) explains the positive correlation between a high value of integration a space has, and the high density level of activity. Meaning, the busier a place the more activities it experiences, therefore the more creative and valuable it becomes. Hence, "all creative milieux, – whether geographic, institutional or networks – hold advantages and hindrances to creativity." (Törnqvist, 2004, p. 231)

Adapting this concept on a smaller scale, bigger cities tend to produce more of their work in a concentrated area (for example, downtown). These areas are filled with shops, cafés, libraries, schools and business offices, in addition to some residential sections. The more people come to this area, the more resources are provided, more contacts and more jobs are created. Density plays a huge role in this sense as one can find almost everything they need to produce a creative outcome. Zooming in again on our example, the high density found in one office environment results in more intense interaction, which leads to more innovation (Haner, 2005; Kristensen, 2004). This can be achieved through "an increase of the head count density in work environments" and will require "either physical or temporal alterations". (Haner, 2005, p.111). Physical alteration means reducing the floor space per workstation, which ultimately allows for more spaces for informal communication to foster innovation. Temporal alteration is in fact using those additional spaces that have become *non-territorial* to utilize different processes more frequently. An important factor that must remain is the availability of a closed space for those processes

that require concentration or alone-time. These can be used when the workstations become crowded, or when there is a need for privacy (Haner, 2005; Kristensen, 2004).

In effect, flexibility is a key role in designing a space that is creativity-driven. Both settings (availability of public and private spaces) need to be distinguished not only by the walls and seating arrangements, but also by their "technological equipment" (Haner, 2005, p.293). Examples of such flexibility include movable furniture, multiple write-on surfaces, a research library, multimedia tools, ICT (Information and Communications Technology) for group work, and space configured for small or large group sizes. The ambition is "to create an environment in which strategies for business growth could be developed in a fun, dynamic, rapid and novel way" (Lewis & Moultrie, 2005, p.73), taking into account the different activities that occur in this environment. Another important factor that "promotes both team communication and inter-team interaction is workstation visibility" (Haner, 2005, p.110), as it "allows for assessing the other's engagement in activities and the opportunity for personal interaction".

Design effects

"The focus is on the immediate physical part of the work environment (i.e. building and layout) which through its structuring can affect individuals and teams and their performance in creativity and innovation processes" (Haner, 2005, p.109). Many research studies proved that physical environment in general and architecture in specific influence creative output. (McCoy, 2005; Deasy, & Lasswell, 1990).

Architecture Language

So what is architectural language? It is proportions, quality of light and space, compositions of rooms, and relationships between and within light and structures (Santelli, et al., 1989). It is the connection between spatial location and interaction. (Moultrie et al., 2007), and in order for it to be a rewarding experience, it must "affect the sensations, influencing by its very presence, relying on its shapes and textures to activate the mind" (Bhatia, 1994, p.304). Further studies in the behavioural architecture field explain the visible cause-and-effect connections that appear between the features of the building and its effect on people's moods and their behaviour in its premises (Deasy & Lasswell, 1990). However, this will go beyond the scope of this study.

The blueprint on the architect's graph paper is meant not only for shielding heads from the rain, rather it decides on how a space will be used, and how it will "provoke change in our apprehension of built space" (Lévesque, 2007, p.6), and hence its connection with creativity. Most of the studies conducted have focused on the creative design itself, in other words, the creative product or building. I am interested in the creative environment these buildings induce, meaning, in what ways might architecture affect our own creativity in order for us to create more innovative outcomes? According to Bhatia (1994), "Architecture does not merely accommodate, it also enhances" (p.301), so if the building reinforces the relation with our surroundings, architecture in this sense invariably "reorders our perceptions of the structure and built product and how it relates to us in daily encounters" (Bhatia, 1994, p.308). Juhani Pallasmaa (Pallasmaa, 2007) explained that "A building doesn't argue; it opens up to our interpretations. It allows us to dream, but does not indoctrinate or bind us". The end user is the one who will decide how to use the place.

Consequently, if we conclude that architecture in fact has the power to evolve and change, then for it to be a continual phenomenon, we need not rely on the final outcome, instead we rely on the element of its potential (Lévesque, 2007). To further understand the connection between creativity and all possible outcomes from architectural design, some studies have revealed the relationship between the features of the space and the creative characteristics, or behavior it influences.

In a recent study revealed by University of Minnesota (Meyers-Levy & Zhu, 1990), researchers claimed that "ceiling height represents an alternative and novel means of varying people's type of elaboration" (p.30) and can actually change the way people's minds work. The higher the ceiling, the more it stimulates creativity and activates the concepts of freedom and relational processing (provided that one notices its hight). In contrast, a lower ceiling primed confinement-related concepts, promoted attention to detail and encouraged quieter, more restricted play. Therefore, creativity potential lies in "exposure to physical settings that are high in complexity and challenge" (McCoy & Evans, 2002, p. 418). Another example is the availability of windows.

The window, for many, "symbolizes freedom" (Verderber,1986, p. 451), a release, however brief, from the immediate world to a different more expansive world. With no access to sunlight, feelings of risk and loss of freedom or openness befalls. In the absence of windows, different views will also stimulate varied activities, whether the views are natural, built, intimate or panoramic (McCoy, 2005).

More creativity links can be made with staircases, paths, and hallways. Staircases were shown to increase perceived distance (Haner, 2005; Abbaszadegan, 2000), since different efforts are required for both walking and climbing stairs. Paths are "naturally

leading to movement or in a certain direction" (Kristensen, 2004, p.90). In essence, paths, "guide much automatic behavior since we usually follow them without effort or conscious decisions" (Kristensen, 2004, p.90). In many cases, paths create the feeling of a linear hierarchy rather than a flat organization. Depending on the width of the path, people usually walk in it one by one, rather than in groups.

Hallways are also used to connect spaces. Yet considering that this is the place were most encounters happen between different departments or divisions, one can use this space to promote creativity, by constructing it to be more conductive to social exchanges. For example, "appropriately informed designs of temporal environments have the potential to be unobtrusive, subliminal stimulants of creativity" (McCoy & Evans, 2002, p.425)
From our architecture discussion so far, it is worth quoting Christophe Guignard when addressing the architects who are concerned with the poetics and ethics of their domain, "Dimension is not a reference anymore; it is a parameter, one of many" (Guignard, 2007).

Interior Expression

The interior of a building is no less important than its outside look. Many designers claim that paying attention to details in colors and textures makes a person feel happy about being in a place and therefore work better. Following is an example of a place that integrates creativity concepts in its design.

The Shipyard "Future Center" is a dedicated creative facility in the Dutch Tax and Customs Administration office that was built to recognize the different activities employees take to solve problems at work. Rooms were named according to their uses, such as, *The Ballroom;* where meetings are conducted, *The Garden Room;* for having lunch, *The*

Treasure Chamber; for sharing knowledge, and *The Silence Room;* one of the most valued and used rooms (see figure 2).

Even with such dedicated names, the center maintained its flexibility to accommodate changes throughout time by offering different qualities of hybrid infrastructure workstations and non-territorial working environment, opening it to all users of the office, and paying special attention to soft factors – colors and materials – to allow for both divergent and convergent activities to take place. (Haner, 2005; Van der Lugt, Janssen, Kuperus & de Lange, 2007). Moultrie and others demonstrate this by stating "if the intent is to generate and capture radical ideas, then the facility may emphasize group dislocation, playfulness and provide physical or visual sources of inspiration (p.60). While on the other hand, a decision making activity can use a room with sufficient write-on surfaces, technology and closer seating arrangement for much needed discussions.

Figure 2. The Future Centre as an example of a creative facility.

The Shipyard (De Werf) Silence room used to step away from office atmosphere to regain work effectiveness.

Picture taken from: http://www.xpin.nl/materiaal/fc/5%20dutch/five_dutch_future_centers_for_th.htm

McCoy and Evans' (2002) study enhance the understanding of these dimensions found in the Shipyard. Their research was conducted to "determine if people's perceptions of creative potential for interior physical settings could be linked to physical design elements explicit to the settings" (p.418). They identified five environmental characteristics that predict greater perceived creativity: access to natural views, use of natural materials, less use of manufactured surface materials, less cool colors, and availability of complex visual detail. Following, is a more focused look on each of these characteristics.

Access to natural views. The importance of natural views is portrayed by windows' availability in the structural design. It is interesting to mention that even obscured views were preferred over no view at all. Views of restorative environments, i.e., natural wood, or wood grain, were found to "foster creativity" (McCoy & Evans, 2002, p.419).

Use of natural materials. The study unfolded on "the importance of the type of finish and visible construction materials" (McCoy & Evans, 2002, p.419). Texture of wood proved to be as a strong predictor variable to creativity. A reason behind this, they proposed, is that "humans have such a strong biological affinity for nature, the presence of wood and wood grain may itself produce positive affect" (McCoy & Evans, 2002, P.420). On a different scope of this affinity, Zelensky (2002) stated that people who work in an environment filled with fish tanks are calmer because they are surrounded by water and nature. According to the American Pet Products Manufacturers Association, the soothing motion of vibrantly coloured fish swimming mesmerizes and relaxes the viewer (http://www.appma.org).

Less use of manufactured surface materials. McCoy & Evans noted that manufactured materials (as in metal, plastic or concrete) gave the feeling of a rigid environment; impermeable and unchangeable. Creativity, as is known through research and studies, thrives on change, dynamism and freedom (Isaksen, et al., 2001; Amabile, Conti, Coon, Lazenby, & Herron, 1996).

Less cool colors. The interior expression takes into account the environment stimulants provided by colors. The Color Marketing Group maintained that employees prefer colors that are nurturing and remind them of the calming influence of water, such as aqueous greens and iridescent blues, and predicted that warm pink tones will be adopted in many office settings (http://www.colormarketing.org/).

Availability of complex visual detail. The final dimension of the physical environment that enhances perceived creativity is the visual complexity. McCoy and Evans' study found that

> … high levels of spatial and visual complexity enhance the creativity potential of places. This place would offer visual interest and opportunity for discovery, and a challenging setting that provides intellectual and cognitive stimulation consistent with values of the creative personality, hence fostering creative behavior (p.424).

Some of these cognitive stimulations are only possible when externalized (Kristensen, 2004), and so the "lack of visual clues may reduce the memory" (p.93). Brann (1991) claims that memory is facilitated by "internalizing experiences in a spatial-temporal settings" (p.282). This use of space to enhance our memories is not a new find in the field.

> The Greeks and Romans used contemporary architecture and sculpture as a foundation of the art of memory. A spacious and varied building with which the individual was very familiar was memorized, including the decorations and sculpture in the rooms. The speech to be remembered was associated with specific images, and the images were stored in a consistent and organized manner in the places within the building. When it was necessary to remember the speech, the orator would travel in his imagination through the building, retrieving the images from the places upon which he had placed them. The order was fixed by the order of the building. In this manner, very long speeches could be remembered verbatim (Mann, 2002, p.156).

Space Effect

From the discussion so far, it seems that through design and texture, we convey sensations that express its intent to those who are to use a space and those who are to be influenced by it, all the while keeping flexible to how they can interpret it according to their needs and activities (Bhatia, 1994; Moultrie et al, 2007). Teresa Amabile and Göran Ekvall are two of many who have done extensive research in the field of creative environment and their work focused on the psychological atmosphere but lacked any evidence of the physical effect on our perceived creative environment. However, McCoy & Evans referred to Amabile's studies to support their model on applying the creative environment's aspects into a physical setting of the workspace. For example, when Amabile stated the importance of having challenging work for a place to be perceived as creative, McCoy & Evans translated this into a physical setting that conveys complexity of internal organization, level of perceived flexibility, and concept of view offering more

information. This can be further demonstrated by multiple shapes in walls and ceilings and "use of personal items, books, artwork, lamps, etc" (p.418).

Re-examining the earlier example of the Future Center (The Shipyard) and its perception of space effect, Van der Lugt et al.(2007) revealed four purposes identified in that space. These purposes needed a place for: inspiration, information & interaction, imagination, and innovation.

Inspiration. "Arousing people to learn from each other and broaden their horizons by providing a meeting space for people who share an interest in creativity and innovation" (van der Lugt et al., p.70). The frequency of interaction is crucial to innovation project success. What's more is that this frequency depends on the physical distance between communication partners, as well as shorter travel routes, and less territorial offices (Haner, 2005; McCoy, 2005). Shared spaces that act as a team's "conceptual and technical playground" (McCoy, p.180) suggest an optimized opportunity for developing a sense of cohesiveness, multiple problem solving approaches, creativity norms & identity, and expression of the diversity of ideas. PUSH advertising agency in Orlando gives a qualitative example to opening up a space. They found that the more walls they erected, the less "cross-pollination of ideas" (Zelensky, 2002, p.107) emerged. An added bonus to their new open space design resulted in one of their clients moving into their blueberry-coloured conference room twice a week because "he felt energized there" (p.107). A space must also provide the privacy and enclosure necessary for sustaining team focus and concentration, without which, there seems to be a "perceived loss of privacy" (Kristensen, 2004, p.93).

Information and interaction. For the place to function as an information hub there needs to be "stimulating exchange of knowledge within the organization, as well as exchanging information with outside parties" (van der Lugt, 2007, p.70). The social interaction among team members encourages sharing of ideas and better coordination of activities. Random encounters further support this communication, suggesting playful behavior (McCoy, 2005). As such, freedom, support and openness may be communicated by quality of the provided space and its resources. Amabile's interviews of office workers revealed that of the nine qualities that encouraged creativity, 52% of respondents stated that it was very important to have access to the necessary resources, including facilities, equipment, information, funds, and people (Amabile, 1988). "A creative space should allow the peculiarities of the present disciplines to deal with the particulars, while enabling communal space for intensive exchanges and collaboration" (Kristensen, 2004, p.92). Regardless, spatial arrangements in work environments – together with appropriate information and communication technologies (ICT) – can support the sharing of ideas that is essential to creative teamwork, and coordinate activities that allow a group of individuals to develop into a team (McCoy, 2005; Haner, 2005).

Imagination. In the Merriam-Webster dictionary, imagination is defined as "the act or power of forming a mental image of something not present to the senses or never before wholly perceived in reality". The etymological origin of the word imagination "is having a picture in the mind's eye" (Kristensen, 2004, 93). Incidentally, unlike the dictionary's date of reference for the creation of this word (14th century), the 'mind's eye' term and that very definition of imagination was rather first developed in the 8th century by the Persian

philosopher Ibn Sina (also known by his Latinized name Avicenna). As the most famous physician, philosopher, encyclopaedist, mathematician and astronomer of his time (Asimov, 1986), he described in his "Book Of Healing" the five mental senses we posses as: a) common sense, b) imagination, c) estimation, d) representation, and e) recollection (Francis, 2007, Braud, 2003). In how these senses are related, Ibn Sina explained, "for all beauty which is suitable and goodness which one perceives, that one loves and desires, the principle of perceiving them relies on the senses, imagination (*khayal*), the estimative faculty , conjecture and the intellect" (Gonzalez 2001, p.5).

Ibn Sina wrote about creativity in general, and focused on the imagination and its affect on self and other's behavior. "The imagination of man can act not only on his own body, but even on others and very distant bodies. It can fascinate and modify them; make them ill, or restore them to health" (Regardie, 1974, p. 90).

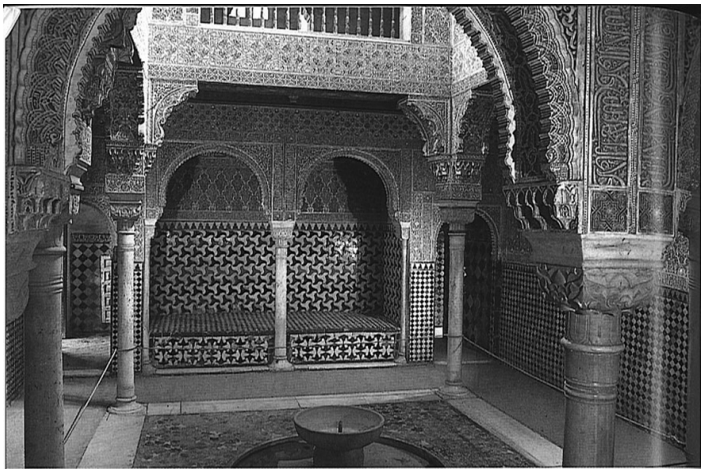
Van der Lugt and his team researchers explained how imagination is needed to provide views of the future environment, and of the various parts of a workplace, thus stretching employees' flexibility and insight about what happens – or might happen – in the organization. Connecting with this study, the *representation sense* exemplifies the "optimal diversity as a blend of skill, talent, and concerns, allowing a mix of experienced and inexperienced members who will encourage flexibility and receptivity to new ideas and theories" (McCoy, 2005, p.177), hence developing their *imagination sense* as accounted by Ibn Sina. Such diversity suggests the need for the physical office environment to support multiple levels of communication and unique ways of working.

Innovation. The same diversity that ignites imagination is an essential ingredient in developing innovation in companies. The local resource of visual materials and stimuli, intensive social and cultural activity and the established reputation of the location becomes as a source of inspiration (Moultrie et al, 2007). "The capacity for individuals to stay focused and endure long hours may be influenced by the ergonomic or physiological comfort of the individual's work area and the display of artifacts reflecting norms and culture of the team" (McCoy, 2005, p.176). Innovation can also be seen as a new idea, method, or product. We can stimulate new ideas by means of process facilitation and provide purposeful new methods to solve issues (van der Lugt et al, 2007). Based on the analysis so far, we can assume that "creativity can be stimulated by complex, challenging situations presented in a coherent context" (McCoy & Evans, 2002, p.418).

Taking our discussion back to a larger scope and exposing the creative milieu in cities, there is often a need for meeting areas that take place outside the structured forms, more or less by chance. Ray Oldenburg (1989) uses the term *third place* as the anchor of community life which facilitates and fosters broader, more creative interaction outside our home (*first place*) and work (*second place*). Examples of such places may be coffee shops, internet cafés and spa resorts. This notion was used since the middle ages as the Turks developed the public bath *(Hammam)* to serve as a place of social gathering, ritual cleansing, as architectural structures, institutions, and (later) elements with special customs attached to them (http://en.wikipedia.org/wiki/Hammam). To better understand how such public place can influence creative thoughts, The Royal Bath in Alhambra palace provides an example of how the geometric design has an effect on the bather's experience.

Constructed between 1238 and 1358 by the Moslem kings of the Nasrid Dynasty in Granada, the Hammam with its contrasting forms and horizontal panels inlaid in the lower area of the walls stimulate the relationship between the walls and the user's physical body through the sense of sight. "The smallest movement, or the slightest lowering and opening of the eyes, activates this dynamic physical-optical relationship between the seer and the seen" (Gonzalez, 2001, p.86). The Arabic inscriptions poetically describe and comment upon this activity, and echo in literary terms this stimulation of the senses by the visual forms (see figure 3). The space, in essence, persuades the body to move on to the next experience, mirroring the activities that would take place inside its walls. It is easy to see how such a complex, yet simply beautiful place will be a central part of a city's dynamics.

Figure 3. Alhambra Palace in Spain offers an example of a different experience.



The Royal Bath, Alhabra (Gonzalez, 2001), and its moving geometrical forms persuades the body to move on to the next experience, mirroring the activities that would take place inside its walls.

Scheherazade, the unforgettable protagonist of the "Thousand and One Nights" used to say: "A town is incomplete without its Turkish bath".

Reflection

My main objective was to identify what qualities in the space feed into an effective inner creative process. Many studies and fields provide examples on how the physical aspect of our surrounding can indeed influence our behaviour, and ultimately our creativity, and the need continues for more enquiries and perhaps a way to measure such effect. My focus has barely touched the surface of architecture and interior design aspects in relation to creativity. Other fields such as the outdoors and landscape design have not been examined in this paper, albeit their use in many creative activities.

Another piece of the puzzle is the online world and how it impacts work, home, and social networks with many businesses setting up virtual offices or teams, and using technology for business, shopping, studying and social contact. How does the study of design translate to this realm? How does it affect our behavior in the virtual world?

Furthermore, how will this study translate to other cultures' sense of design? The Chinese Feng Shui for instance practices the arrangement of space to achieve harmony with the environment, and it's universal application includes both architectural planning as well as internal furniture arrangements. Proponents claim that Feng Shui has an effect on health, wealth, and personal relationships (Mann, 2002), and one might think, what about creativity? How can we integrate this concept with our current findings of the environment's influence on creative output? What about Islamic art and its moving geometrics? Can they be introduced in a third place to suggest moving ideas and thoughts among residents? An example of the effect of basic geometric shapes is found in the appendix.

Suggestions to Organizations

Traditionally the workspace has been designed favouring one particular setting – offices or cubicles vs. open-plan space – and this pattern cannot accommodate the different phases of creativity. As a consequence, it is to be expected that offices offering hybrid infrastructure will become more popular in organizations (Haner, 2005), suggesting that "if the firm is to invest resources in the creation of a dedicated innovation environment, then it is essential that the strategic intentions underpinning this space are explicit" (Moultrie et al, 2007, p.61). In this sense, VanGundy (1992) persuades companies to design a creativity room specifically for this purpose and load it with materials, books, idea generation aids and group setting. Design firms such as IDEO also develop spaces that support visualization, exploration and inspiration through access to materials and artifacts. Another example is a space developed to improve and advance pharmaceutical products (Kristensen, 2004), as they provided a separate area with walls and floor filled with objects and models, bulletin boards, flat tabletops, drawers, cabinets, progress reports, sketches, computers with CAD, metal and wood workshops, competing products, props, wood and metal workshops, recording of previous sessions, bulletins displayed previous attempts, isolation from disturbance. Companies can add to this list by providing different layouts for the activities taken in the office; such as access to information and support, gathering zones and interaction areas for informal as well as formal meetings and sections and moving furniture for different thinking processes. Other organizations might want to adopt some guidelines to creativity and problem solving. A well known model developed by Alex Osborn and Sid Parnes is called the Creative Problem Solving (CPS). Supporters of this method use stages to move between steps. Those stages can be installed in the design

blueprint and plan for rooms that can be called: The Clarification Chamber ® (CC), The Transformational Hall ® (TH) or the Implementation Lab ® (IL). (Puccio, Murdock, & Mance, 2007; Taher, 2008).

As per the architectural design, while some design values are targeted at encouraging specific behaviours (i.e. futuristic, playful, minimalist, etc), the use of imagery can reinforce actions, i.e. triangular room for creative divergence (Moultrie et al, 2007, p.61). I am not suggesting constructing the building itself as triangular, as this might impede future changes to the place, but the use of temporary architecture has more to offer than meets the eye. Those installations can exist "without a determinate function, because they are free to suggest uses rather than being governed by them, and because they are free to exist on sites inaccessible to permanent architecture (Lévesque, 2007, P.2). As in the unfinished, Levesque presumes, "one can imagine new realities" (P.2).

In conclusion, the essential meaning of the space is to allow emotions to surface in the work area to further enhance the performance of the occupants and not necessarily suppress them for productivity sake. Whether it is the movable walls that support small and big group sizes or the warm colors that contrast a high-stress environment, movable furniture that accommodate informal idea development, or the geometrical propositions that stimulate various expressions of movement, serious effort on understanding the effects of such atmosphere will stimulate creative behavior in the work environment.

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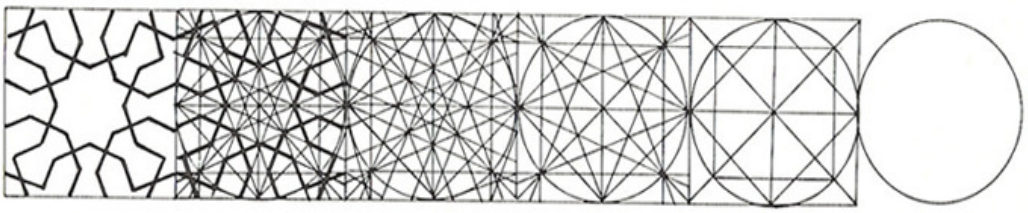
Appendix: Shape expression

According to the principle of geometry in Islamic art and architecture, the circle is the principle of all geometric patterns. It represents unity, equality, continuity and prosperity and it has always been a symbol of time (Al-Bayati, 1983). “When three circles come to rest with their outermost points just touching, the triangle is established” (p.32) (see figure 4). A hexagon can be completed with seven circles, and along with the square and triangle, they can “independently fill a surface without leaving a gap (p.32).

Figure 4. The basic of geometric patterns.



From right to left, the circle is the principle of all geometric patterns in Islamic art and architecture. It is considered the symbol of unity, equality, prosperity, and time (Al-Bayati, 1983)

As the triangle emerges from the three circles, it has its symbolic affects on those who perceive it within a space. Ludwig Wittgenstein (as cited in Gonzalez, 2001) portrays how this triangle can resemble many things. It can be seen as

> a triangular hole, as a solid, as a geometrical drawing; as standing on its base, as hanging from its apex; as a mountain, as a wedge, as an arrow or pointer, as an overturned object which is meant to stand on the shorter side of the right angle, as a half parallelogram, and as various other things (p.65).

In essence, each of these shapes has its rules and organizational behaviour and will inevitably influence a different state of mind and emotions, and therefore, affect performance and relation to the place.