



## ARCHITECTURE FOR HEALING: PHENOMENOLOGY OF SPATIAL AWARENESS TO EVOKE HEALING ENVIRONMENT IN URBAN REALM

Muhammad Hishamuddin Zakaria<sup>a\*</sup>, Ahmad Sanusi Hassan<sup>a</sup>,  
Ku Azhar Ku Hassan<sup>a</sup>, and Mazran Ismail<sup>a</sup>

<sup>a</sup> School of Housing, Building & Planning, Universiti Sains Malaysia, MALAYSIA

### ARTICLE INFO

#### Article history:

Received 19 January 2018  
Received in revised form 08  
May 2018  
Accepted 14 May 2018  
Available online  
18 May 2018

#### Keywords:

Architectural spatial  
quality; Phenomenology;  
Urban space; Materiality;  
Built Environment;  
Visual perception;  
Psychological perception;  
Spatial layout;  
Architectural design.

### ABSTRACT

Architecture plays an important role to perceive and experience urban spaces for the positive feelings and participation of the urbanites through its sensations, contemplation and physical engagement. A lot of theories and possibilities in term of designing a healing environment through spatial awareness in a very challenging urban context where all kinds of social and environmental issues are gathered have been reviewed. Previous researches have been revised through to understand different theories and approaches to achieve healing sense through representation of architectural spatial quality. Based on the study, exploration of all architectural elements and principles on the spatial quality have high tendency to stimulate the healing environment in a persona with the stimulation of five human senses with a thorough studies, order and translation into the tactile phenomenology of built form. These architectural elements will stimulate positive healing environment within the urban context while handling with the existing issues.

© 2018 INT TRANS J ENG MANAG SCI TECH.

## 1. INTRODUCTION

This study focuses on the exploration of the perception on phenomenology, specifically spatial awareness. The concept of phenomenology is associated with any defined space that have physical substance; shape, colour, texture and joined together to perform an environment character, and activities that taking place on that space (Schaller, 2012). This perception on phenomenology entails aesthetic experience, where the relationship between users, objects, and their surroundings is immediate. On the other hand, it consist of a sense of feeling while we perceive a space is necessary, as this is the mediator between occupants and the world that can only be possible with it.

The objective of this study is to identify different ways to perceive and experience a space in order to enhance the quality of space for social interaction through sensations, contemplation, and physical engagement in the urban realm. This also will seek the few answers on the enhancement of spatial quality on giving healing sensation to the occupants. These are the fundamentals elements in a space for making architecture more than just a physical expression but a medium for meditation. Space awareness also can be eternally memorable regardless of its temporal and permanent conditions that have been applied on it.

User situations, conceptual meanings, materiality, and user experiences are analyzed in order to study architecture as an urban piece that can be adapted to a variety of situations. This journal seeks to provide medium for creating an intimate connection between human beings and architecture, hence triggering the human senses in a way that viewers cannot remain as pure spectators but must become players within the spaces. The creation of an architecture built form could be perceived as “temporary” with the users; however, experiences and memories will be metaphysically existed or “permanence” in users’ picturesque (Isaac, 2010).

In this study, the concept of phenomenology of spatial awareness is to describe the precise combination of colors, forms, materials, scale and textures that make architecture a complete piece of art for healing. The combination of these architectural elements will be essential for a space so that it can provide users with a memorable and valuable experience for a further healing environment.

## **2. Literature Review**

The following research material has been structured in a certain way that allows for a better understanding of the very different aspects explored during the research stage in perceiving the urban context to actually feeling a particular space within the environment. The scope of the study will be narrowed down from the vast topic to more specific field of the study. The literature review will be focused on theoretical study, the theoretical and philosophical bases from researchers that have been analyzed to build up this study.

### **2.1 THEORETICAL STUDY**

#### **2.1.1 PERCEIVING AND EXPERIENCING THE CITY.**

While dealing with a city, users are always expecting a great impression of a public space as a place where they can live, work, and play at the same time. A city should be enjoyable to the urbanites to certain extend they can cheer what they see and infill with curiosity and surprise elements so that experiencing its spaces will not become a dull routine. This creates a complex rationale for why certain people perceived a city differently, because they have found connections while navigating and experiencing these spaces within urban environment.

According to (Pallasmaa, 2005) the users should encounter in architecture, as well in art, our “being in the world” in an intensified manner. This means that architecture should have the capability to create images and emotions in user minds as equally true as the actual encounters in life. The process of experiencing, remembering, and imagining any place in users minds should move them as by anything actually encountered if they have found genuine connections while dealing with any particular space . The city seems to be the main scenario where participative and interactive architectural spaces can dwell. Culture and society is the driving forces in designing a city’s pattern; social diversity entailing races, cultures, and genres have been constantly circulating around the city in order to express frequently changing of ideas, thoughts, and feelings. In the book “Art Space and the City”, Shields explains, “The city itself can be treated as a representation of the society which constructed and used it.” (Miles, 1997, p.14)

### **2.1.2 ARCHITECTURE AND INDIVIDUAL RELATIONSHIP**

Architecture should establish an individual relationship based on personal experiences that can be permanently bind with user’s intangible elements through own connection that will be transcended with user’s perceptual process. Kevin Lynch states that “Moving elements in a city, and in particular the people and their activities, are as important as the stationary physical parts. We are not simply observers of this spectacle, but ourselves a part of it, on the stage with the other participants.” (Lynch, 1960, p. 2)

The city is the main place to experience an architecture as a form of symbolization of cultural, entertainment and knowledge, as well as a medium for encountering phenomenology of healing sensation. Due to that, architects have translated abstract-based concepts into tangible built form as a way of contemplation and experimentation within the public realm for the occupants. Current buildings, parks and streets have infused with elements of arts to gain interest and participation from the users. Architecture should also focus on social relations to spontaneously invite the occupants to perform and construct physical, architectural, urban and social meanings.

### **2.1.3 FEELING AND EXPERIENCING SPACE**

Perceptual process is an important mechanism in feeling and experiencing a space. Perceptual process is considered as an individual capacity for processing, ordering, and translating certain experiences through our senses: taste, sight, smell, sounds, and touch (Isaac, 2010). The perceptual process includes a sequence of steps that begins with the environment that leads to capture stimulus and an action in responding to that stimulus. Sensation that can be described as the immediate basic experiences that are generated by simple stimulus will be involved within the process of perceptions. Meanwhile, visual perception is the reaction between user’s stimuli to generate an internal representation of phenomena that occurring around occupant. This information is analyzed afterwards and goes to our memory. Finally, interpretation and final representation of a unique architecture character will be transformed into sensorial memory in persona’s mind.

Zumthor (2006, p. 25) explains that, the phenomenon of perception entails experiential sensations. Design work starts from a physical feeling, and the fact that someone has to feel the

essence of architecture deep inside one's body for experiencing it. Experiencing architecture in a concrete way means to touch, see, hear and smell it. By experiencing architecture we have the opportunity to act and later interact with any space, and it is through interaction between the human body-mind and the physical elements of a building that we are able to feel architecture.

Touching a particular object or listening to certain natural music is one of variety responses during reaction with environment. These actions will produce sensational experimentation within a space and triggers the interaction between the space and users. Experiencing architecture means being able to feel light, shadows, colors, textures, and materials; which are all part of the complete process of perceiving architecture, and for this reason: "Architecture, more fully than other forms, engages all our sensory perceptions. The passage of time; light, shadow and transparency; color phenomena, texture, materials and detail all participate in the complete experience of architecture." (Holl et al., 1994, p. 41)

#### **2.1.4 PHENOMENOLOGY OF SPACE FOR HEALING**

The space is not as simple as a defined form, but comprises of prime principles which have physical substance such as shape, texture, and color that merge together to form certain environment's personality. This personality allows certain spaces, with similar or even matching purposes in accord with the unique cultural and environmental situations, to embody very diverse properties within which place they exist (Bachelard et al., 1994). Phenomenology engages the partiality concept to produce unique conversation between a space and elements surround it

A space must inherit certain criteria in order to challenge the occupant before occupy it so that this type of spatial quality makes it atypical to certain average space. Due to this quality, the users must utilize their mental construct in dealing with challenging space so that they can have more opportunity in healing senses with this kind of built environment. Exercising the mind in this way is an important way to stay mentally sharp and healthy, while also giving a distraction to their ailment. The language of forms in architecture also has a correlation to the feeling one obtains from the space. For an example, (Redstone, 1978) mentioned about natural environment has soft edges, without right angles. The architecture of healing must reinterpret and imitate the qualities of natural behavior into built form although right angles are endlessly been used on common architecture. This is because, organic imitation on the space create no constrained than rectilinear space. The fluidity of organic space seems less detrimental and more eyes comforting.

The integration of all the senses helps complete the highest potential of an environment to allow for healing to emerge. For example, the sound of moving water is one aspect of a space that can elicit emotions for relaxation and tranquility. Thus, the architecture can integrate the water as an aspect of the design to allow for a healing environment to emerge. Lighting design in healthcare environments is a major factor in creating healing situations. It is proven that people who are surrounded by natural light are more productive and live healthier lives. When patients are sick, and surrounded by medical equipment and white walls, the last thing they need is a dark, stuffy room. These is why it is important for every room to have a window for natural light to come into

and help create a healing environment for the patient (Tyson et al., 2002). Also by bringing nature indoors, it has many psychological benefits. Plants are soothing and restful. Plants represent life, growth, and hope. They can provide interest and diversion. Plants are used as a therapeutic tool.

### 3. Case Study

#### 3.1 BAMBOO PLAYHOUSE

Location : Perdana Botanical Garden, Kuala Lumpur, Malaysia

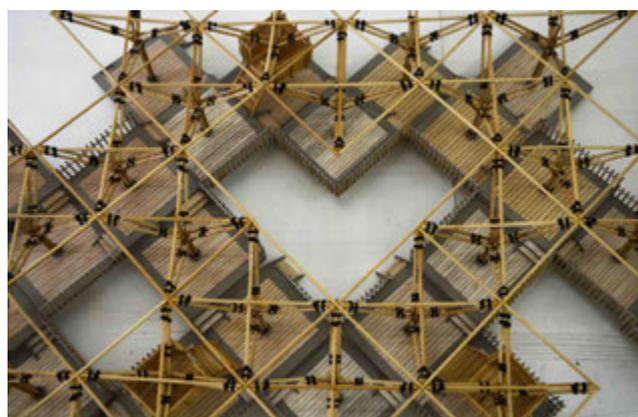
Architects : Eleena Jamil Architects

Characteristics: Public Pavilion



**Figure 1:** Overall perspective of Bamboo Playhouse.

Eleena Jamil Architects, Figure 1 uses bamboo as the main construction material for this pavilion as consider as very unusual for Malaysia to use this kind of sustainable material. This design explores the potential of bamboo to imitate the overall concept of playhouse and portrays the characteristics of ‘wakaf’, a vernacular structures found in Malaysia’s villages. This open structure pavilion is the repetition of raised square platform ‘wakaf’ that grouped together with multiple levels to form a united playful bamboo structures.



**Figure 2:** The scale model that shows the spatial configuration of the pavilion.

This structure is situated at the edge of the lake that offers various possibilities and opportunities for the users to design its uses and occupations. Figure 2, this repetitive modular pavilion consists of thirty-one identical square platforms, set on different height with each other in creating a playful playhouse. This pavilion is supported by the tree-like columns that raised from

the ground to support the roof of this structure.

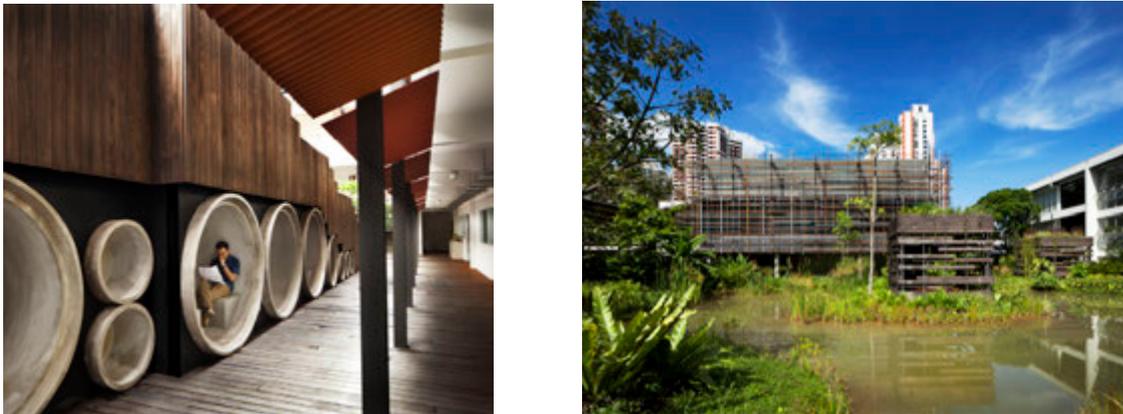
### 3.2 ENABLING VILLAGE

Location : 20 Lengkok Bahru, Redhill, Singapore

Architects : WOHA

Characteristics : Community building

Enabling Village is the rejuvenation and adaptive project of reusing the masterplan of Bukit Merah Vocational Institute built in 1970s. Before the re-development, the masterplan did not contribute to the neighbouring users. Then, the reimages of this new masterplan take the consideration of providing linkages to the neighbourhood by seamless connecting ramps, landings and elevators. This community building integrates various program for the communal uses such as work, training, retail and living lifestyle as well as connecting people with disabilities and the society.



**Figure 3:** The integration of architectural elements with the landscape.

This community building is targeted to provide and deliver a better holistically integrated environment with the architecture. The new main building is anchored with the main pond that functions as a beacon to draw the pedestrian flow through improved linkages. There is a timber terrace plastered over the main courtyard at the Playground, stepping and ramping down the amphitheater, Figure 3. Open spaces and resting area are merged very well with the design by making uses of the pocket spaces such as below the amphitheater, around the courtyard and garden. The Enabling Village focuses on sustainability and sociability by promoting the learning, bonding and healing of people with varying abilities within a biophilic environment. This creates an inclusive space that enables and values everyone.

### 4. ANALYSIS

The relationship between phenomenology of a space and healing factors will be describe further under data analysis from how a single element in a space can stimulate any healing senses through manipulation of design principles and approaches. The healing factors can be as tiny as an ant up to a prime element that can be observed directly. Manifestation of biomimetic architecture through space will be also discussed to promote healing senses. Both theoretical case studies will be

studied and compared on how the consideration of design principles been derived onto the spatial quality to stimulate healing senses.

#### 4.1 BAMBOO PLAYHOUSE

The location of Bamboo Playhouse although not at the nucleus of the city, this structure still gives a significant impacts to the urbanites. Through the imitation of the ‘wakaf’, a vernacular typology for a resting place in the traditional villages, has evoked the nostalgic memories of the peaceful and calming village’s scenery. The creation of these feelings are indirectly tied the connection between persona with the architecture through reimagining and remembering specific local culture and certain society in persona’s mind. Using bamboo, an intricate structures from natural material as construction material, create a contrast against solid and bold of urban skyline. This contrast creates specialty in persona picturesque of viewing a city through the space quality of Bamboo Playhouse.



**Figure 4:** Contrast against solid and bold of urban skyline.

The art of making this structure as a form of living shelter makes it ideal built elements to establish a connection with individual relationship, Figure 4. The repetition of modular system creates a series of memory lane in user’s mind through various opportunities. The interpretation of tangible things into abstract concept of built form defined the space as a form of art plus a structure. This offers different possibilities for the user to understand the structure as a part of the experimentation process within the urban realm. The phenomenology of space happens without disruption within this shelter. Permeability of space and no obstruction of views create a direct dialogue with its surrounding context and freedom for the occupants to focus on views. Hence, this process creates a form of contemplation for the spectator to have indirect dialogue with architecture.

Furthermore, Bamboo Playhouse is designed with different height between each modular platform and a basket-like space is attached to some tree-inspired columns. The adaptation of different height platform or some spaces will activate the mind and physical part of the user. This will create a form of challenge for the occupant to occupy the space. This type of space makes it atypical area from average space. This challenging architecture giving the users an opportunity in term of mental construction while engaging with the built environment. The utilization of their mind will create an act of mind exercising. This form of activity is vital for them to be in mentally sharp and healthy mind to promote distraction from their stresses and ailments.



**Figure 5:** Split levels and different platform height evoke various emotions

Moreover, the manifestation of the Bamboo Playhouse to portray the natural environment will have high tendency to support any healing reactions to occur in user's mind, Figure 5. The imitation of tree through its columns and correlation with its setting allows the structure and its spaces to inherit various properties as similar as the existing culture and environmental situation it originated. The biomimetic approach also gives the flavor to the ordinary space to be more unique and stronger in character making. The setting for the structure is at the edge of the lake making the pavilion having a close relationship with the lake and engaging with the idea of partiality. This concept idea evolved a unique dialogue with the lake and natural surrounding as a unified architectural built form with its context.

## 4.2 ENABLING VILLAGE

In contrast, the location of Enabling Village is sandwiched with various typology within urban context such as residential, institutional and educational buildings at Bukit Merah, Singapore. The existence of the complex neighbourhood establish the importance of this communal building to be functioned as the nucleus to the urbanites who living around its membrane. The building entails pathways to be acted as the connection between its neighbourhood. The easements given through manipulation of corridor space as an alternative for the urbanites to cross by provoke the sentiment of the commoners that certain building must remain within the building boundary itself.

This design approach not only proves its coexistence with neighboring context as well as to stimulate the perception among urbanites in perceiving urban life. The regularity in the participation with the architecture specifically urban space composes an image and emotion. Hence, proper design of public space at the same time gives positive emotions in user's emotions and minds while navigating through communal building. These image and emotions erect a real connection between users with urban context while experiencing this space. The uses of the indigenous plants for the landscape invent a relaxation ambiance for the corridor next to it as well as soften the rigid urban elements. The biodiversity and thematic environment for the landscape will have tendency to manipulate different perspective in human mind through the natural expression portrayed. This perspective will activate healing sense and kind of contemplation within

urban context through indirect participation and communication between the users and space.



**Figure 6:** Indoor quality of Enabling Village.

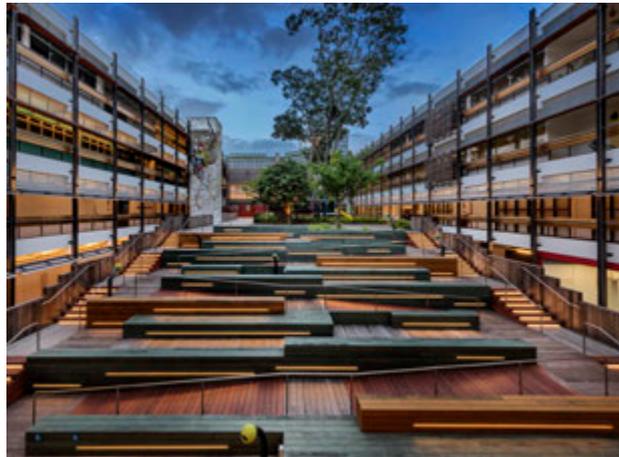
On the other hand, permeability and transparency of the building envelope plays as vital element as major architecture built form in space quality making. Building envelope is the catalyst to the reaction between emotions, feeling and spaces to widen more possibilities to trigger stimulus so that healing process can happen. WOHA Architect taking a brilliant step and approach to infused its signature façade design to the building envelope of Enabling Village's building. The permeable building façade elements will allow indoor space to have a direct interaction with the surrounding elements. Figure 6, this will grant natural lights to penetrate, interesting shadows to cast and nature sounds to emerge into the space. These ingredients will stimulate human senses within an inactive space and to certain extend evoke healing sensations. This ambiance is also allows human perception to create a mental mapping for the sensorial information to retain as a memory while experiencing the space.



**Figure 7:** Porosity in space planning and integration with landscape.

Figure 7, Porosity of Enabling Village building complex planning opens various perception to evolve. The pocket gardens and scattered smaller spaces infused together with garden become an interesting value to be celebrated in overall planning. The loose arrangement between each and certain spaces draws a line of activity to occur in between two points of locations. On the other hand, ramp that constructed to respond to natural building terrain and contour prepare construction of physical and emotional stimulation. The tilted surface of ramp will mobilize different emotions

perceived by users when go through inclined or declined surface. Inclined surface of the ramp for example can switch on the challenge mood while declined surface will exhilarates and provokes joy to the persona. The different in gravity will eventually affect the degree of acceleration on the potential movement of the user. Hence, the different surface and arrangement of spaces have important role in expressing it power of existence towards healing factor, Figure 8.



**Figure 8:** Appreciation of natural topography.

## 5. DISCUSSION

Architecture projects should celebrate diverse culture, way of life, different capabilities and abilities of the urbanites through interpretation of ideas onto its space. By considering the key factors and needs of the occupants, different possibilities can be achieved and surrendered a good impression on spatial quality in urban realm. So, space quality within urban membrane should inherit an active participation of the user. However, none of the theoretical case studies show the qualities. The users can become a player in a space despite only a spectator. This spatial awareness can diminish a barrier to the occupants in expressing their changing state of mind, soul and feelings. The static and inactive state of the occupant in the other hand, limit their capabilities in creating possibilities within a space to express their emotions and avoid healing process to take place.

When architecture and space integrate occupant consideration into its design palate, it connects the individual relationship with the space. Establishment on personal experience through spatial awareness can draw an individual relationship with the user although different people from all type of walks would occupy the space. In order to hit on the target, spatial quality can translate different kind of cultural and natural character into tangible built form. This masterpiece can add the flavor into spatial quality to enhance the process of healing in architecture.

Furthermore, a successful spatial quality must take into account in stimulating all human senses towards a healing environment through its envelope. A designer must creatively process, arrange and translate architecture elements as stimulus to stimulate these senses. The senses, as the

receptor will construct a visual and psychological perception in experiencing a space. In order to achieve this kind of spatial quality, architecture and nature must be seemed to be coexisted and its presence can be noticed and appreciated.



**Figure 9:** Materiality affected on healing environment

One of the ways to construct this kind of phenomenology is by infusion of materiality, Figure 9. Materiality is one of the prime factors in this overall reaction and will be affected on healing environment. Materials in indirect way can control the quality of spatial environment, circulate movement, human comfort and other action in the space. So, powers of materials placement will be a part of criteria in creating a space and play a main factor in associating with healing environment. For instance, the concept of natural environment can be imitated by arrangement of timber inside the space. This material gives nostalgic, warmth, soft and comforting vibes to the users. Steel in the other way can be associated with strength, stability and neatness. Meanwhile, sand that is soft to touch, but hard on our feet can stimulate user sense of touch by surrender a therapeutic value. This prove that when materials incorporate with a spatial program, it create a quality to embody a space's vision towards healing environment within urban realm.

Other than that, the concept of openness, transparency and permeability determine the effectiveness of not usually though materials such as light, sky, water and greeneries to evoke certain healing response in built environment. This concept eventually can activate stimulus inside user mind and perpetual visioning about a space. The intention of building envelope as a barrier or protection from unwanted weather can be reinterpreted as a medium to allow direct interaction of this material with a space. Multiplicity of materials, textures and shape of envelope create different environment to the spaces as accordance to its surrounding. This quality of space will engage user's mind in a playful manner due to its distraction casted in the space. Finally, spatial

awareness by the appreciations of natural, material and users to enhance spatial quality will provide necessary catalyst for the occupants to achieve a healing state in their mind, soul and body.

## 6. CONCLUSION

Phenomenology of spatial awareness is one of the solutions to stimulate healing environment in urban realm. Although healing is more involving psychological state in persona, with some alteration and articulated studies it can affect physical health also. In doing so, pragmatic studies must be conducted comprehensively to set a parameter for a space to follow in order to achieve 'healing architecture'. 'Healing architecture' suggests redressing user's problems and to invoke a sense of creating an environment, indoor and outdoor that physically healthy and psychologically appropriate for the occupant needs. The more complex issues arise when the architecture itself must incorporate with the serious problems within its context especially when dealing with urban realm. Various stigma and views on the city sometimes limit the possibilities of architecture to be the healer. Hence, spatial awareness highlight its importance to idealize 'healing environment' by considering perception towards experiencing the city itself, individual relationship in experiencing a space and expression of user's feelings towards overall phenomenology of space for healing.

## 7. REFERENCES

- Bachelard, Gaston, Maria Jolas, and John R. Stilgoe. (1994) *The Poetics of Space*. Boston: Beacon Print
- Holl, S., Pallasmaa, J., Pérez-Gómez, A. (1994). *Questions of Perception. Phenomenology of Architecture*. San Francisco: William Stout Publishers.
- Isaac, Lara Adriana. (2010) "Art-architecture": Engaging the City and its Inhabitants. Greensboro
- Lynch, Kevin (1960). *The City Image and Its Elements, The Image of the City*, Cambridge: MIT Press
- Miles, M. (1997). *Art, Space and the City. Public Art and Urban Futures*. London and New York: Routledge.
- Pallasmaa, J. (2005). *Encounters*. In MacKeith, P (Ed), Helsinki: Rakennustieto Oy.
- Redstone, Louis G. (1978). *Hospital Design and Construction, Hospitals and Health Care Facilities*, New York: McGraw-Hill
- Schaller, Brian. (2012) *Architectural Healing Environments*. Architecture Senior Theses, 64, New York: Syracuse University SURFACE

Tyson, G. A., Lambert, G., & Beattie, L. (2002). The Impact of Ward Design on The Behavior, Occupational Satisfaction and Well-Being of Psychiatric Nurses. *International Journal of Mental Health Nursing*, 11(2), 94-102.

Zumthor, P. (2006). *Atmospheres*. Basel-Boston-Berlin: Birkhäuser – Publishers for Architecture.

---



Muhammad Hishamuddin Zakaria is a graduate student at the School of Housing, Building and Planning, University Sains Malaysia (USM).



**Professor Dr. Ahmad Sanusi bin Hassan** teaches in Architecture Programme at the School of Housing, Building and Planning, University Sains Malaysia (USM). He obtained Bachelor and Master of Architecture from the University of Houston, Texas, USA. He was awarded a PhD degree from the University of Nottingham, United Kingdom. He was promoted to Associate Professor and later Full Professor. His research focuses on computer simulation on daylighting and thermal comforts, architectural history and theory, and housing in urban design. He is one of the nine regional writers involved in the preparation of *Guideline: Agenda 21 for Sustainable Construction in Developing Countries: A Discussion Document*, which was launched at The Earth/World Summit, Johannesburg in September 2002. At the university, he lectures in architecture courses related to urban design, studio, history, Computer Aided Design (CAD), and computer movie animation. He has integrated all these specialisations into his research, teaching, consultation and publications. He had designed several architectural projects such as mosque, USM guest house and a proposal for low-cost houses for fishermen community.



**Datuk Assoc. Prof. Dr. Ku Azhar** is a lecturer, architect and Chairman of Architectural Programme at the School of HBP. A member of Malaysian Board of Architect and Malaysian Institute of Architect. A former lecturer at University of Technology Malaysia (UTM) and architect for various firms which include Hijjas Kasturi Associates and Kumpulan Senireka Sdn. Bhd. His interests include Tropical Design, Traditional House and Architectural Practise.



**Dr. Mazran Ismail** is a senior lecturer in Architecture at the School of Housing, Building & Planning, Universiti Sains Malaysia (USM), Penang, Malaysia. He received his B.Sc (HBP) (Architecture), Bachelor of Architecture, M.Sc in Housing and Ph.D in Architecture (Energy Efficient Design) from USM. His main research interests are energy efficient design, green building, housing design, environmental design and thermal comfort studies in tropical building.

**Note:** The original work of this article was reviewed, accepted, and orally presented at the 3<sup>rd</sup> International Conference-Workshop on Sustainable Architecture and Urban Design (ICWSAUD 2017), a joint conference with the 3rd International Conference on Engineering, Innovation and Technology (ICEIT 2017), held at Royale Ballroom at the Royale Chulan Penang Hotel, Malaysia, during 13-15<sup>th</sup> November 2017.